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THE

ENCYCLOPÆDIA BRITANNICA

OR

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AND

OTHER EXTENSIVE IMPROVEMENTS AND ADDITIONS;

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AND NUMEROUS ENGRAVINGS.

VOLUME XI.

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ENCYCLOPÆDIA BRITANNICA.

GROTIUS.

GROTIUS, Hugo, one of the most illustrious characters of modern times, was born at Delft on the 10th of April 1583. His great-grandfather was Coneille Cornets, a gentleman of Franche-Comté, who settled in Holland, and married Ermengard the only daughter of Diederik de Groot, a burgomaster of Delft. Her father stipulated that the children born of this marriage should assume his own name, which literally signifies the Great, and is pronounced like the English word *groat.* Her son, named Cornelis de Groot, was distinguished by his learning. By Eselina van Heemskerck, related to one of the first families in Holland, he had two sons, Cornelis and Jan, or John. The younger of these brothers married Alida van Overschie, who likewise belonged to a very genteel family, and the issue of this marriage were three sons and a daughter. Jan de Groot had studied the law, and with his juridical knowledge he united much elegant erudition. He was four times burgomaster of Delft, and was one of the three curators of the university of Leyden. His eldest son, Huig de Groot, commonly known by the more classical appellation of Hugo Grotius, was a youth of the most amiable disposition and of the most promising talents: so premature indeed was his genius, that he seemed to pass immediately from the state of infancy to that of manhood. He was indebted to his father for a pious as well as a learned education; and one of the first fruits of it was a successful attempt, at the age of twelve, to convert his mother from the Romish faith.

At a very early age, he was sent to school at the Hague, where he was committed to the domestic care of Uytenbogard, a clergyman of great note and influence among the Arminians; and to his connexion with this individual, with whom he contracted a lasting friendship, the colour of his subsequent life may to a great extent be attributed. At the age of twelve, he was sent to the university of Leyden, which about that period was the most learned seminary in Europe. Here he continued for three years, residing in the house of Junius, a distinguished professor of divinity, from whom he might perhaps imbibe his decided relish for theological studies. Of that university Joseph Scaliger was then the brightest ornament, and he may indeed be safely characterized as the most learned man in modern times: he was greatly struck with the uncommon capacity of this young scholar, and not only encouraged, but likewise directed his studies. In 1597, when he had only reached the age of fourteen, he with much applause defended public theses in mathematics, philosophy, and jurisprudence, and thus exhibited a maturity of talents and attainments far beyond his years. He was speedily regarded as a literary prodigy, and was celebrated as such by various poets and scholars of that learned age. During the ensuing year, he accompanied count Justin of Nassau and the grand-pensionary Oldenbarneveldt, who were sent on an embassy to the court of France. M. de Buzanval, formerly ambassador to Holland, presented him to the king, who received him in a gracious manner, and gave him his portrait, together with a chain of gold. He had however to regret that he did not find an opportunity of paying his respects to the illustrious president De Thou; but on his return to Delft, he addressed to him a letter which produced a very friendly correspondence between a venerable judge and a beardless lawyer. In France he now resided for nearly twelve months; and it was at this period that he took the degree of LL. D. in the university of Orleans. He had not then attained the age of seventeen; but he had doubtless acquired a much larger fund of learning than has fallen to the share of many, not to say most, of those who have subsequently taken the same degree at a more mature age. On returning to his native country, he was called to the bar, and he pleaded his first cause at Delft in the year 1599.

But the practice of the bar, and the study of jurisprudence, did not engage his undivided attention. He continued to devote himself with great ardour to the study of classical literature, and had already distinguished himself by the spirit and elegance of his Latin verses. Among the earliest of his publications was an edition of the Satyricon of Martianus Capella, which was printed at Leyden the year 1599. When only fourteen years of age, he had received from his father a manuscript of this author, and, on communicating it to Scaliger, had been honoured with his injunctions to prepare a new edition. This task, which was by no means easy, he ventured to undertake, and he not only revised the text, but likewise wrote elaborate annotations. His edition excited the admiration of those who were most competent to judge of its merits or defects; and if he had not given many other proofs of his early proficiency, we might have been induced to suppose that he had received very material assistance from some scholar of riper years. His *Syntagma Arateorum*, printed at the same place in 1600, increased his reputation as a classical critic. This includes the Greek verses of Aratus, the Latin versions, so far as they could be recovered, of Cicero, Germanicus Cæsar, and Festus Avienus, together with the annotations of the editor, who was then seventeen years of age. As this metrical work relates to astronomy, it afforded him an opportunity of displaying his science as well as erudition. His brief notes on Lucan, accompanying an edition of the text, made their appearance in 1603. Some of his Latin verses had been printed so early as the year 1598, and others followed in 1599 and 1600. "Adamus Exul, tragœdia," was published in 1601; but this tragedy he afterwards considered as too juvenile to be admitted into the general collection of his poems. The use to which it was applied by Lauder, in his dishonest attempt to convict Milton of plagiarism, is well known to the more critical reader.[1] His "Tragœdia, Christus patiens," was printed in 1608, and was received with great applause. It was translated into English by George Sandys, and, at a more recent period, into German by D. W. Triller. With the former version he appears to have been much pleased. His third drama, "Sophompaneas, tragœdia," was not published till 1617. It relates to the history of Joseph, whom he thus describes by an Egyptian name. Of this tragedy a Dutch version was undertaken by Vondel, a poet of great note. The literary reputation of Grotius speedily procured him the appointment of historiographer to the republic; an appointment which he did not himself solicit, though it was eagerly solicited by several other scholars, and, among the rest, by Dominicus Baudius, a well-known professor of eloquence in the university of Leyden.

His first appearance at the bar produced a very favourable impression, and he soon rose to eminence in a profession which in most countries is considered as lucrative. In 1607, that is, at the age of twenty-four, he was promoted to the important office of advocate general of Holland and Zeeland. During the following year, he married Maria van Reygersberg, allied to one of the first families in Zeeland; and, as one of his biographers has remarked, it is sufficient commendation to add that she was a wife worthy of such a husband.[2] Their nuptials were commemorated in the verses of many learned poets. About this period, he was occupied with a professional work, which appeared in 1609, under the title of "Mare Liberum, sive de Jure quod Batavis competit ad Indicana Commercia, Dissertatio," and produced a controversy of no vulgar denomination. After an interval of some years, it was opposed in the "Mare Clausum" of Selden, an antagonist worthy of Grotius. The British cause was likewise maintained by William Wellwood, who had been a professor of law in the university of St Andrews; and his treatise "De Dominio Maris" was answered by Graswinckel, who published three different tracts in support of his countryman's positions. Other learned writers engaged in the same controversy, which however must ultimately be decided by the sword, rather than by the law of nature and nations. In 1610 he published a work "De Antiquitate Reipublicæ Batavæ;" and in the same year a Dutch translation, which was partly executed by his father. The book was afterwards translated into French. In 1613 Grotius was appointed pensionary, or syndic, of Rotterdam, and then fixed his residence in that city. In the course of the same year, he was sent on a mission to the court of London, for the purpose of remonstrating against the arbitrary proceedings of the English, who claimed an exclusive right to the Greenland fisheries. His diplomatic exertions appear to have been attended with little or no success; but he was very graciously received by the learned monarch, and likewise had the satisfaction of forming a personal acquaintance with Isaac Casaubon, a man of great worth and learning.

The republic was at this time agitated by theological dissensions. Arminius, an eminent professor in the university of Leyden, had publicly dissented from the doctrines of Calvin respecting predestination and grace. He was immediately opposed by Gomarus, another professor in the same university, and many controversial proceedings flowed from this origin.[3] Many of the magistrates were disposed to adopt the new opinions, but the clergy, and the great body of the people, very generally adhered to the established creed. Arminius died in the year 1609; and his adherents soon afterwards obtained the name of Remonstrants, from the circumstance of their having addressed to the states a remonstrance, subscribed by forty-six ministers, and containing a summary of their distinctive tenets. It was digested by Uytenbogard, and Grotius is supposed to have lent his assistance. The Gomarists produced a counter-remonstrance, and thus obtained the name of Counter-remonstrants. In order to allay the animosities that now prevailed between the two parties, the states issued an edict which was prepared by Grotius, but which was too favourable to the Arminians to prove satisfactory to the Gomarists. It was attacked by Sibrand Lubert, a professor in the university of Franeker, and was defended by Grotius, in a work published in 1613, under the title of "Ordinum Hollandiæ Pietas, a calumniis multorum, præsertim Sibrandi Luberti, vindicata." The professor replied in 1614; and before the close of the year, his antagonist produced "Bona Fides Sibrandi Luberti, ex libro quem inscripsit Responsionem ad Pietatem Hugonis Grotii." During the same year he likewise published "Ordinum Hollandiæ et Westfrisiæ Decretum pro Pace Ecclesiarum, munitum S. Scripturæ, Conciliorum, Patrum, Confessionum, et Theologorum Testimoniis." At this crisis, the learned author was deeply engaged in theological studies; and in 1617 he printed his "Defensio Fidei Catholicæ de Satisfactione Christi, adversus Faustum Socinum Senensem," which was speedily attacked by Ravensperger, and was defended by Vossius, an intimate friend of the author. It was afterwards attacked by Crellius, a person of no small consideration among the Socinians.

While he was thus exerting his powerful talents, the republic was torn by intestine divisions. With the view of repressing the seditions which followed these theological altercations, the grand-pensionary Oldenbarneveldt proposed to the states of Holland that they should empower the magistrates of the province to levy a military force; and although the proposal was strenuously opposed by Amsterdam, Dordrecht, and other three towns where the Gomarists had the chief influence, a decree to that effect was issued on the 4th of August 1617. Maurice of Nassau considered such a step as this, taken without his concurrence, to be highly derogatory to his authority as governor and captain general; and he now found an opportunity of satiating the hatred which he had formerly conceived against the grand-pensionary. Availing himself of the rancour of party-feeling, he exerted all his influence in favour of the Gomarists; and before the close of that year, they were emboldened to discontinue all communion with the Arminians. His elder brother the prince of Orange died on the 21st of February 1618, and Maurice thus became more formidable to his opponents. Supported by an armed force, and accompanied by the deputies of the states general, he made a progress through different provinces, and displaced the Arminian ministers and magistrates. Grotius and Hoogerbeetz, pensionary of Leyden, were dispatched to Utrecht by the states of Holland, for the purpose of encouraging the authorities to oppose the prince in his violent attempt upon that city: they accordingly made preparations for a vigorous defence, but some seditious movements took place among the soldiers as well as the citizens, and Maurice becoming master of the city, introduced such changes as suited his particular views. Having suddenly called together eight individuals, who described themselves as the states general, he procured a decree for the arrest of Oldenbarneveldt, Grotius, and Hoogerbeetz. On the 29th of August, the grand-pensionary was seized at the Hague, as he was returning to his own house, after attending a meeting of the states of Holland. The prince sent for Grotius and Hoogerbeetz, and when they presented themselves, they were immediately taken into custody, and committed to the castle of the Hague. The synod of Dordrecht was opened on the 13th of November 1618: the five Arminian articles were there condemned, and sentence of deposition was pronounced against the Arminian clergy. The fate of the state-prisoners was next decided. Oldenbarneveldt, a man distinguished by his talents and patriotism, was beheaded on the 13th of May 1619, all the principles of justice having been signally violated to remove a formidable obstacle to the ambition of the prince of Orange.

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[1] Lauder's Essay on Milton's Use and Imitation of the Moderns in his Paradise Lost, p. 50. Lond. 1750, 8vo.

[2] Burigny, Vie de Grotius, tom. i. p. 42. edit. Amst. 1754, 2 tom. 12mo.

[3] Brantii Historia Vitæ Jacobi Arminii. Amst. 1724, 8vo.

The trial of Grotius was conducted in the most irregular manner; and on the eighteenth day of the same month, being convicted of divers imaginary crimes, he was condemned to perpetual imprisonment, and all his property was confiscated. His wife's fortune, and whatever he had saved from his public appointments, were absorbed by this flagitious sentence; but as his father was still living, he was not left in a state of destitution. On the 6th of June he was removed to the fortress of Louvestein, near the town of Gorcum in South Holland. His father was denied the consolation of visiting him in his prison. While he remained at the Hague, his wife was refused all access to him, and was not even permitted to attend him during a severe illness. She was at first admitted to Louvestein under the express condition of remaining constantly in the fortress, but was afterwards allowed to quit it on obtaining leave for each occasion, and it was finally conceded that she might quit it twice a week. The presence of this excellent woman was a great source of consolation; and a mind regulated like that of Grotius was habitually sustained by the consolations of religion. In his literary pursuits, which were so numerous and diversified, he likewise found unabating delight, and he alternately applied himself to the study of philosophy, jurisprudence, and theology. Sunday and a portion of the other days of the week he devoted to his theological studies. He now wrote some short annotations on the New Testament, and a work in Dutch verse on the truth of the Christian religion. For the use of his daughter Cornelia, he composed a metrical catechism in the same language. It was printed at the Hague in the year 1619, and he afterwards translated it into Latin verse. Another of his labours during his imprisonment was his introduction to the Dutch law, "Inleydinge tot de Hollandse Rechtsgelehrtheyt." It was published in 1631, or perhaps earlier, and underwent many editions, several of which contain the additions of Groenewegen, well known for his treatise "De Legibus abrogatis et inusitatis in Hollandia." The course of his literary studies led him to examine the fragments of Greek poets preserved by Stobæus, and these he now began to translate into Latin verse, together with the reliques of Menander and Philemon. It is impossible to contemplate these various occupations of a man condemned to perpetual imprisonment, without being very deeply impressed with the value and importance of sound learning, united with a religious frame of mind. To an ordinary lawyer or statesman, under a similar sentence, the fortress of Louvestein would have proved a very desolate habitation.

After he had been imprisoned for about twenty months, his wife, who appears to have possessed a mind not less firm than tender, devised and executed a plan for his escape. On the 22d of March 1621, when the commander of the fortress had gone to Heusden for the purpose of levying soldiers, she shut her husband in a large chest, which had been in common use for sending clothes to Gorcum to be washed: she had previously ascertained that he was able to endure this confinement for the necessary length of time, and had taken the precaution of boring several holes for the admission of air. During the first year of his imprisonment, the guards had been accustomed to make a careful inspection of the chest; but having always found that it contained nothing but books and linen, they at length suffered it to pass without examination. She had taken occasion to inform the wife of the commanding officer that she was about to send away a chest full of books; and that her husband being in a very feeble state of health, she was grieved to see him apply so closely to his studies. When two soldiers took up the chest, they found the weight so great, that one of them exclaimed, "There must be an Arminian in it;" an expression which for some time became proverbial. Some demur however took place, but this precious load was at length deposited in a boat, and was safely conveyed to Gorcum, under the inspection of a female servant, to whom the secret had been confided. On reaching the town, the master of the boat proposed to place it on a sledge; but the servant informing him that it contained very brittle ware, and must be conveyed with caution, it was supported on a kind of litter carried with two poles, and was thus conveyed to the house of David Daetzelaer, the friend of Grotius, and the brother-in-law of Erpenius. Here he disguised himself as a mason, and, with a rule and trowel in his hands, hastened to embark in a boat, which landed him at Walwyck in Brabant. He there made himself known to some Arminians, and hiring a carriage to Antwerp, alighted at the house of Nicolaus Grevinchovius, who had formerly been a clergyman at Amsterdam. In the mean time, his faithful wife had acted with much presence of mind. She at first pretended that her husband was seriously indisposed; but when her servant returned with the intelligence that he had been conveyed across the Rhine, she boldly declared to the guards that their prisoner had escaped. On the arrival of the commanding officer, she was committed to close confinement. On the 5th of April she addressed to the states general a petition for her release; and although some individuals had the baseness to propose she should be retained as a prisoner, she obtained her liberty two days after this petition was presented, and she was permitted to remove all her goods from Louvestein. The escape of this illustrious man furnished a theme to some of the well-known poets of the time, particularly to Heinsius and Barlæus.

Grotius remained for a short while in the city of Antwerp; where on the 30th of March he wrote a letter to the states, informing them that he had effected his escape without either violence or corruption, and that the persecution to which he had been subjected would never diminish his love of his native country. Having resolved to seek an asylum in France, he was furnished with letters of recommendation by his zealous friend Du Maurier, the French ambassador in Holland; and from the president Jeannin he received a letter, which encouraged him to expect the protection of the king, as well as the friendship of the most distinguished persons in the kingdom. He reached Paris on the 13th of April 1621, and experienced a very kind reception from the president and other men of rank and eminence. One of those who hastened to wait upon him was Peiresc, who, without being himself an author, has enjoyed a degree of literary reputation to which but few authors attain. The states general lost no time in instructing their ambassador to exert his diplomatic arts in depressing the credit of Grotius, who still displayed his greatness of mind by speaking of his country as became a good citizen. Such arts were attended with no ultimate success, but, from the exhausted state of the treasury, a considerable interval elapsed before he received any pecuniary aid; and his wife having joined him in the month of October, he had been induced to take a house without having any adequate means of supporting himself in credit and comfort. The king, who had been absent from Paris, returned about the end of January 1622; and in the ensuing month of March, Grotius was presented by the chancellor and the keeper of the seals. His majesty received him very graciously, and bestowed upon him a pension of three thousand livres. On this occasion, he was chiefly befriended by the keeper of the seals, and by the prince of Condé.

Being placed in a situation of comparative tranquillity, he now resumed his literary labours. Before the close of the year 1622, he published an apology for himself and the party with which he had acted. It bears the title of "Apologeticus eorum qui Hollandiæ, Westfrisiæque, et vicinis quibusdam Nationibus, ex legibus præfuerunt, ante mutationem anni CIƆ IƆC XVIII; quo ea referuntur quæ adversus Hugonem Grotium et alios acta judicatave fuerunt." This apology, which speedily passed through several editions, he likewise published in the Dutch language. The statements which it contains are such as could not be refuted; and, instead of attempting a refutation, the states general condemned it as a most injurious libel on the sovereign authority of the provinces, and on the character of the prince of Orange: they commanded the author to be seized wherever he could be found, and, under the pain of death, prohibited their subjects from having the book in their possession. The violence of these denunciations induced him to address a *requête* or petition to the king, from whom he obtained a formal letter of protection, dated on the 26th of February 1623. During this year he published a work which he had commenced at Louvestein: "Dicta Poetarum quæ apud Joannem Stobæum exstant, emendata et Latino carmine reddita: accesserunt Plutarchi et Basilii Magni de Usu Græcorum Poetarum." Another of a similar description, and likewise begun in this prison-house, appeared in 1626, under the title of "Excerpta ex Tragœdiis et Comœdiis Græcis, tum quæ exstant, tum quæ perierunt, emendata et Latinis versibus reddita." Both these works were printed at Paris in quarto. Although the order of chronology is not strictly preserved, it may here be proper to add, that in 1630 he published, at the same place, but in an octavo form, "Euripidis Tragœdia Phœnissæ, emendata ex manuscriptis et Latina facta." This edition, which is dedicated to the president De Même, is unaccompanied with notes, but contains copious prolegomena. His poetical version is inserted in the very elaborate edition of Valckenaer, published at Franeker in the year 1755.

The president had offered him the use of one of his country houses; and at that of Balagni near Senlis he spent the spring and summer of 1623. Here he was engaged in the composition of the greatest of all his works, his treatise on the rights of war and peace. Here likewise he was visited by several men of eminent learning, and, among others, by Saumaise and Rigaut, more extensively known by the names of Salmasius and Rigaltius. In his literary researches he was greatly benefited by the liberality of François de Thou, who inherited the magnificent library of his father, and permitted Grotius to use it as his own. His wife had occasion to visit Zeeland in the summer of 1624, and during her absence he was attacked by a violent dysentery. On hearing of his illness, she was so much affected that a strong fever supervened; but as soon as it had abated, and without waiting to recover her strength, she hastened to Paris, and by her presence, as well as by her tender care, he was restored to health after a dangerous malady of two months. His first labour after his convalescence was upon his version of the Phœnissæ, of which he had lost some portion before he quitted his prison at the Hague. He next devoted himself to the completion of his great work, which was printed at Paris in quarto in the year 1625: "De Jure Belli ac Pacis libri tres." The plan of such a treatise appears to have been suggested to him by Peiresc,[1] who had evidently formed a very skilful estimate of his peculiar powers of mind. This work, which he gratefully inscribed to Louis the Thirteenth, was crowned with the most signal success: it has passed through a great variety of editions, and has been translated into many different languages; it was at once received as a standard production, and a mere enumeration of the writers who have illustrated it with notes or commentaries, would occupy no small space. It was speedily translated into the Dutch language. A Swedish version was executed by the command of Gustavus Adolphus. It was likewise translated into English. There are two French versions, by Courtin and Barbeyrac; and a German version was published by Schütz, with a preface by C. Thomasius. Of all these translators, Barbeyrac is the most celebrated. He was a professor of law in the university of Groningen, and to his juridical knowledge he added no inconsiderable fund of general erudition. The notes which accompany his translation are for the most part able and judicious; and he likewise published an edition of the original work, accompanied with Latin notes. Grotius may justly be considered as the founder of a new science, that of the law of nature and nations; for the subject is much more extensive than the title of his book. His treatise *De Jure Belli ac Pacis* will never cease to be regarded as a singular monument of his genius and learning. The previous labours of Alberico Gentili, and some other writers of inferior note, had but little effect in smoothing his path; but the resources of his own talents and erudition were not easily exhausted; and if he has not produced a perfect work, he has at least produced a work which in many respects is still unrivalled. "Grotius," says Dr Smith, "seems to have been the first who attempted to give the world any thing like a system of those principles which ought to run through and be the foundation of the laws of all nations; and his treatise of the laws of war and peace, with all its imperfections, is perhaps at this day the most complete work that has yet been given upon this subject."[2] The copiousness of his classical quotations cannot be supposed to be equally relished by readers of every denomination, but they certainly are not without their attraction to readers of classical learning and taste; and it is necessary to distinguish between such as are introduced to prove particular facts, and such as are merely introduced for the purpose of illustration. "Of what stamp," it has been asked by Bentham, "are the works of Grotius, Pufendorf, and Burlamaqui? Are they political or ethical, historical or juridical, expository or censorial? Sometimes one thing, sometimes another: they seem hardly to have settled the matter with themselves." In these suggestions we perceive nothing very ingenious or original. The principles of natural law are closely blended with the principles of ethical science, nor is it easy to make an entire separation between the general principles of law and politics; and examples, drawn from the history of mankind in various stages of society, may certainly find a suitable place in a work intended to illustrate the law of nature and nations.[1]

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[1] Gassendi Vita Nicolai Claudii Fabricii de Peiresc, p. 198. Paris. 1641, 4to.

[2] Smith's Theory of Moral Sentiments, p. 610.

The treatise of Grotius "De Veritate Religionis Christianæ," was published at Leyden in the year 1627, and the subsequent editions of this work are very numerous. It has been translated into almost all the cultivated languages of Europe, and into various languages of Asia. An Arabic version was executed by the learned Dr Pococke.

In the mean time, his residence in France was not entirely free from inquietude and mortifications. His pension had never been paid with any degree of regularity; and when the entire management of the state was entrusted to Cardinal de Richelieu, Grotius had too much self-respect to recommend himself to the good graces of that haughty and unprincipled politician. The death of Maurice prince of Orange, which took place on the 23d of April 1625, naturally inspired him with the hope of returning to his native country. Four months after that event, Hoogerbeetz was permitted to leave the fortress of Louvestein, on finding security, to the amount of twenty thousand florins, that he would not quit the United Provinces; but this liberty he did not long enjoy, having died in the space of about three weeks after he was released from confinement. Grotius, who relied on the favourable disposition of the new stathouder Frederick Henry, found that, his enemies being still numerous and powerful, his return to Holland was opposed by many obstacles. An action at law however enabled him to recover his property, which had been unduly confiscated. The advice of his beloved wife, and the encouragement of some distinguished friends, at length induced him to take the hazardous step of returning to a country in which he had received such unworthy treatment. He began his journey in the month of October 1631, and soon presented himself at Rotterdam, where he met with a reception less favourable than his former services had led him to anticipate. Before the close of the year he went to Amsterdam, and was there better satisfied with his treatment; but no city ventured to offer him an asylum, and he found himself environed with difficulties. Conscious of his innocence, he felt the utmost repugnance to solicit a pardon from the states general, nor did he seem to have any prospect of obtaining it without solicitation. With the view of occupying himself till his fate should be decided, he adopted the resolution of betaking himself to practice as a chamber-counsel; but all his plans were speedily disconcerted by an ordinance of the states general, which commanded all bailifs to use their endeavour to seize his person. To this ordinance, issued on the 10th of December 1631, little attention was however paid; and on the 10th of March 1632 it was followed by another, promising a reward of two thousand florins to any person who should deliver him into the hands of justice, and containing a threat of deprivation against any functionary who should neglect to make the attempt. On the 17th of the same month he left Amsterdam, and, taking the route of Germany, halted near the banks of the Elbe. Having spent a few months in a pleasant district, he fixed his residence at Hamburg before the close of the year. As he had not brought his books along with him, he was greatly indebted to the liberality of Lindenborg, who allowed him the free use of his library. Here he formed an intimacy with Salvius, vice-chancellor of Sweden, who was skilled in literature as well as politics, and who himself conceiving a high esteem for the illustrious exile, contributed to strengthen the favourable opinion already entertained by the grand-chancellor Oxenstiern. Gustavus Adolphus was solicitous to engage him in the service of the Swedish crown, but his own brilliant career was arrested at the battle of Lützen, fought on the 6th of November 1632. During the minority of his daughter Christina, the kingdom was chiefly governed by Oxenstiern, one of the first characters of the age. One anecdote of this great statesman deserves to be repeated. When his son had expressed great diffidence in accepting of some public employment which was offered to him, the chancellor rejoined, "Go, my son, and see with how little wisdom the world is governed." It appears that several other princes, and the king of Denmark among the rest, had signified a wish to obtain the services of Grotius, but he finally listened to the invitation of the Swedish chancellor; to whom he first paid his respects at Frankfort on the Main in the month of May 1634, and experienced a very gracious reception. After a short interval he was nominated ambassador to the court of France; and as he had now entered into the service of another state, he thought it expedient to make a formal renunciation of all connexion with his ungrateful country.

About the beginning of the year 1635, he took his departure from Germany, and soon arrived at St Denis; but it was not till the 2d of March that he made his public entry into Paris. The important functions of an ambassador he appears to have discharged with equal zeal and ability. The part which he had to perform was attended with no inconsiderable difficulties. The death of the victorious king of Sweden had necessarily impaired the national energies, and the arms of the protestant confederates experienced a great reverse in Germany. It had therefore become highly important to secure the aid of the French monarch against the formidable power of the emperor; and Grotius laboured with great assiduity and perseverance to fulfil his instructions, but was frequently exposed to the mortification which an honest man must feel in his transactions with mere politicians, who in all ages of the world have set honesty at open defiance. The Swedish finances were at this period in an exhausted condition, and his salary was but irregularly paid. Neither his public business nor private mortifications impaired his ardent love of letters; and during his diplomatic residence at Paris, he engaged in a great variety of literary pursuits. His brief annotations on Tacitus, who was one of his favourite authors, appeared in an edition printed at Leyden in the year 1640. Reverting to his juridical studies, he published a volume of more than 400 pages, under the title of "Florum Sparsio ad Jus Justinianeum." Paris. 1642, 4to. Of this work, which is still prized by civilians,[1] two different editions, both in duodecimo, were printed at Amsterdam in the course of the following year. It contains a series of annotations on the body of the civil law, and, as the title suggests, many of them are philological. He had long contemplated a poetical version of the Anthology, a task sufficiently formidable; and at the beginning of the year 1645 he had brought it so near a conclusion that he sent a specimen to Bleau, an eminent printer of Amsterdam; but as he soon afterwards quitted France, and did not long survive, this work was not then conducted through the press, nor indeed did it make its appearance till a very recent period. Another of his labours was the history of the Goths, likewise a posthumous publication; and a more considerable undertaking was the history of his native country, which was also published after the death of the author. To this latter subject he had naturally directed his attention on being appointed to the office of historiographer. In the composition of such a work he appears to have been engaged so early as the year 1614, but it had probably been laid aside during a long interval.

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[1] "Morum disciplina," says Mosheim, "quam Christus ejusque legati tradiderunt, meliorem formam, pluraque præsidia contra varii generis incommoda nacta est, postquam jus, quod natura seu recta ratio imperat, diligentius quam antea indagatum, et clarius explanatum est. Ducem se in hoc genere præbuit Hugo Grotius, vir incomparabilis, libris de Jure Belli et Pacis; quem ut maxima quæque ingenia alacriter sequerentur, ipsa rei dignitas et utilitas effecit." (Institutiones Historiæ Ecclesiasticæ, p. 851. Helmstadii, 1755, 4to.)

At this busy era of his life he completed most of his theological works. The publication in 1640 of his "Commentatio ad Loca quædam Novi Testamenti quæ de Antichristo agunt aut agere putantur," exposed him to many severe animadversions. Here he endeavours to prove that the pope is not Antichrist, and thus departs from the common opinion of protestants, an opinion which seems to be placed on a very solid foundation. His work was immediately assailed by Des-Marets, Du Moulin, Cocceius, and Slichtingius. The last of these writers was a Socinian, and published his tract under the assumed name of Joannes Simplicius.[2] To the first two Grotius replied in an appendix to a new edition; and Des-Marets, or Maresius, who soon afterwards became professor of divinity at Groningen, defended his own dissertation in a very copious work, entitled "Concordia discors, et Antichristus revelatus; id est, Hugonis Grotii Apologia pro Papa et Papismo modeste refutata." Amst. 1642, 2 tom. 8vo. Jacobus Laurentius, a clergyman of Amsterdam, likewise assailed him with great fierceness in a work of which the title sufficiently indicates the scope and spirit. "Hugo Grotius papizans: hoc est, Notæ ad quædam Loca in H. Grotii Appendice de Antichristo, Papam Romanam, et Doctrinam ac Religionem papisticam spectantia, et in quibus via sternitur ad Papismum Anti-Christianum." Amst. 1642, 8vo. The censure which he had thus incurred did not prevent Grotius from publishing another volume of a similar tendency: it bears the title of "Via ad Pacem Ecclesiasticam." Amst. 1642, 8vo. His professed object is to effect what is manifestly impossible, to conciliate the differences between the protestants and the papists. The principal portion of the volume consists of Cassander's consultation on the articles of religion controverted between the two parties, with the annotations of the editor subjoined. Both of them were men of a pacific spirit, and under almost every form the love of peace is entitled to commendation; but to expect a union of protestants with catholics, the parties still remaining catholics and protestants, is certainly to expect what is morally impossible. Is an infallible church to acknowledge itself guilty of error; or is a reformed church to stifle the clearest convictions of which the intellect is susceptible, in order to gain a hollow and miserable semblance of peace? Grotius, like Bishop Forbes and other learned individuals, was led by the spirit of conciliation to make unwarrantable concessions to the Romanists, not considering, what however was abundantly obvious, that all concessions short of the most absolute submission, must prove utterly unavailing. Beside the common bond of Christian charity, protestants can have no spiritual union with catholics. One of the most extraordinary projects of union was that which Dr Wake, archbishop of Canterbury, discussed with Du Pin, an eminent doctor of the Sorbonne.[3] This union was to proceed on the principle of the respective churches of England and France retaining the greatest part of their peculiar doctrines: what portion either the one or the other was expected to relinquish, does not so clearly appear. Any advances from a poor protestant church, especially if it had renounced the name and forms of episcopacy, would probably have been received with abundant coldness; but this popish church was sufficiently rich and splendid to attract the regard of a primate who evinced no particular inclination to conciliate the English dissenters.

On the religion of Grotius, the following epigram was written by Menage:

Smyrna, Rhodos, Colophon, Salamin, Pylos, Argos, Athenæ,
Siderei certant vatis de patria Homeri:
Grotiadæ certant de relligione Socinus,
Arrius, Arminius, Calvinus, Roma, Lutherus.[4]

Although he was completely entangled in the cobwebs of Arminianism, the charge of Socinianism seems to be destitute of foundation, nor do poets very strictly confine themselves to what is true or probable. But with respect to the claim of the Romanists, it must be admitted to be somewhat more plausible. Grotius had found an asylum in a catholic country: he may in some degree have been misled by his respect for antiquity, and attracted by the splendour of the popish hierarchy. He expressed a great veneration for the church of England, which has likewise dazzled the eyes of more modern presbyterians. His *Via ad Pacem* was immediately attacked by several antagonists, the most formidable of whom was André Rivet, professor of divinity in the university of Leyden. Grotius defended himself in a work entitled "Votum pro Pace Ecclesiastica," printed in 1642, and Rivet rejoined in the course of the following year. In 1645 Grotius published "Rivetiani Apologetici, pro Schismate contra Votum Pacis facti, Discussio," and in 1646 Rivet endeavoured to assert the genuine peace of the church against suspicious mediators. Grotius was about this period engaged in a theological undertaking of much greater importance, namely, his annotations on the different books of the Old and New Testaments. His notes on the Old Testament and the Apocrypha were printed at Paris in 1644, in three volumes folio. His notes on the gospels had been published in the same form three years earlier, but the concluding portions of this great work do not appear to have been printed before the year 1648. This is one of the works which have chiefly recommended his name to posterity; and writers of every denomination have agreed in ranking him among the ablest of biblical critics. "The learning," says Dr Campbell, "as well as the critical acumen and ingenuity of Grotius, has stamped a value upon his commentaries, especially on the gospels, which has hardly been equalled by any that has come after him. Yet I am far from saying he is to be followed implicitly. He has fallen into gross mistakes, which men of much inferior genius have detected and avoided."[1]

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[1] Schraderi Prodromus Corporis Juris Civilis, p. 262. Berolini, 1823, 8vo.
[2] Sandii Bibliotheca Anti-Trinitariorum, p. 128. Freistadii, 1684, 8vo.
[3] See Blackburne's Confessional, p. lxxvi. 3d edit. Lond. 1770, 8vo.
[4] Menagii Poemata, p. 140. edit. Amst. 1687, 12mo.

After having long discharged the functions of an ambassador, he at length solicited and obtained his recall. He had encountered many discouragements in the course of his negotiations; and the arrival of a Swedish agent, of whom he entertained a very unfavourable opinion, seems to have confirmed his wish to retire. This agent was M. de Cerisante, the son of Dr Duncan, a learned Scotish physician residing at Saumur. Having embarked at Dieppe, the ambassador landed once more in his native country, and was received with due honour at Amsterdam. He proceeded by sea to Hamburg, where he arrived about the middle of May 1645. On reaching Stockholm, he was very graciously received by the queen, who made him ample promises, and was anxious to retain him in her service. He could not however be induced to fix his residence in Sweden; and having been presented with a large sum of money, said to have amounted to twelve or thirteen thousand imperial crowns, he sailed for the port of Lubeck on the 12th of August. The vessel was speedily overtaken by a storm, and on the 17th was driven ashore within fourteen German miles of Dantzig. Travelling in an open carriage, he arrived at Rostock on the 26th, being then in a very feeble and exhausted condition. Here he had recourse to the aid of a physician, who speedily perceived that his case was hopeless. On requesting the attendance of a clergyman, he was visited by Quistorpius, professor of divinity in the university of Rostock, who has left an account of his last hours,[2] and they appear to have been spent in a manner suitable to his former professions of Christian piety. He expired on the 28th of August 1645, in the sixty-third year of his age. His remains were conveyed to Delft, and were deposited in the tomb of his ancestors.

He had prepared for the press various works which he did not live to publish. Soon after his death, one of these appeared under the subsequent title: "De Imperio Summarum Potestatum circa Sacra." Lutet. Paris. 1647, 8vo. This was soon followed by "Philosophorum Sententiæ de Fato, et de eo quod in nostra est potestate, collectæ partim et de Græco versæ." Paris. 1648, 4to. Amst. 1648, 12mo. Next appeared "Historia Gotthorum, Vandalorum, et Langobardorum, partim versa, partim in ordinem digesta." Amst. 1655, 8vo. His history of his native country was published not long afterwards: "Annales et Historiæ de Rebus Belgicis." Amst. 1656, fol. Amst. 1658, 12mo. This very title at once suggests Tacitus as the writer's model, and his style is evidently formed on that of the ancient historian. Whether this model was judiciously selected, may perhaps admit of some doubt. Such a style necessarily partakes of the enigmatical; and what may be admired in Tacitus is not so easily relished in his imitators. Notwithstanding the grievous injuries which he had sustained from Prince Maurice, he had the magnanimity to do justice to his character in this work.[3] Another posthumous publication was his tract "De Eucharistia,"[4] which was fiercely attacked by Salmasius under the assumed name of Simplicius Verinus. A very ample and interesting collection of his letters, consisting of nearly one thousand pages in double columns, was published by two of his grandsons: "Epistolæ quotquot reperiri potuerunt; in quibus præter hactenus editas, plurimæ theologici, juridici, philologici, historici, et politici argumenti occurrunt." Amst. 1687, fol. The poetical version of the Anthology, on which he had bestowed so much labour, was not communicated to the public till a century and a half after his death. The manuscript at length came into the possession of De Bosch, a man of learning and taste, who published the work in a splendid form, and added copious illustrations.[5] "Anthologia Græca, cum versione Latina Hugonis Grotii, edita ab Hieronymo de Bosch." Ultrajecti, 1795–8, 3 tom. 4to. "Hieronymi de Bosch Observationes et Notæ in Anthologiam Græcam, quibus accedunt Cl. Salmasii notæ ineditæ." Ultraj. 1810, 4to. "Hieronymi de Bosch Observationum et Notarum in Anthologiam Græcam volumen alterum, quod et indices continet. Opus Boschii morte interruptum David Jacobus van Lennep absolvit." Ultraj. 1822, 4to.

Grotius was a man of a goodly appearance, large and vigorous in his person, and possessing an agreeable countenance.[6] He was uniformly distinguished by the integrity of his character, and the generosity of his sentiments. That he had acquired uncommon stores of variegated learning, it seems scarcely necessary to state in formal terms, after the details which have already been given; and it was accompanied with those vigorous powers of mind, without which, learning cannot be rendered very available. He was a man of original genius, aided by unwearied industry. As a philosophical jurist, he has no equal, and among historians he occupies a high rank. His merits as a theologian have been amply acknowledged by writers of every communion. As a Latin poet, he is to be classed among the best of the moderns, and his talents as a commentator on the ancient classics are of no mean order. What individual of modern times has exhibited the same extent and variety of intellectual attainment?

His wife, who lived to deplore his loss, had borne him three sons and three daughters. The eldest and the youngest of his sons, Cornelis and Diederik, followed the profession of arms, without obtaining any considerable promotion. Pieter, the second son, having chosen the profession of an advocate, became pensionary of Amsterdam, and was employed as an ambassador to Sweden and France. The only daughter who survived their father was the eldest, named Cornelia, married to Jean Barthon, vicomte de Mombas, a nobleman of Poitou.

Gulielmus Grotius, or Willem de Groot, the brother of this illustrious man, must not be passed in total silence. Being bred to the legal profession, he became eminent at the bar, and was appointed advocate to the East India

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[1] Campbell's Lectures on Systematic Theology, p. 239. Lond. 1807, 8vo.—Dr Lardner, a learned divine of another creed, speaks of him in the following terms: "I much prefer Grotius's interpretations, upon the comparison, above Dr Clarke's. So far as I am able to judge, Grotius explains texts better than the professed Socinians. The reason may be, that he had more learning, and particularly was better acquainted with the Jewish style. But I am apt to think their late writers have borrowed from him, and improved by him." (Letter on the Logos, p. 43.)

[2] Hugonis Grotii, Belgarum Phœnicis, Manes ab iniquis Obtrectationibus vindicati, part. ii. p. 482. Delphis Batavorum, 1727, 2 part. 8vo.—The author of this anonymous work was Lehman, a copious, but not a very exact writer.

[3] Gibbon has justly censured the historian for his inconsistency in one very essential particular. "I am not satisfied with Grotius (de Rebus Belgicis, Annal. p. 13. 14. edit. in 12mo), who approves the imperial laws of persecution, and only condemns the bloody tribunal of the inquisition." (Hist. of the Roman Empire, vol. x. p. 192.)

[4] Several theological tracts of Grotius, which we have not enumerated, are to be found in the collection of his *Opera Theologica.* Amst. 1679, 3 tom. fol. Of his tracts on other subjects, we have not attempted a complete catalogue.

[5] Of the first four volumes, a notice may be found in Wyttenbach's Philomathia, lib. ii. p. 201.

[6] Du Maurier, Mémoires pour servir à l'Histoire de Hollande, p. 393. Paris, 1680, 8vo.

Company. He was likewise a man of erudition, and the author of several works. One of these is an "Enchiridion de Principiis Juris Naturalis," in which he illustrates the principles of a science that was so deeply indebted to another member of the same family. Another of his works, which was published after his death, and which is still held in great estimation by civilians, bears the title of "Vitæ Jurisconsultorum quorum in Pandectis extant Nomina." Lugd. Bat. 1690, 4to. He appears to have been a most affectionate brother, and to have sympathized very deeply in the fortunes of a kinsman whose moral and intellectual endowments reflected so much lustre on the family to which he belonged. (x.)

GROTTO, or Grotta, a large deep cavern or den in a mountain or rock. The word is Italian, *grotta*, formed, according to Ménage, from the Latin *crypta*. Ducange observes, that *grotta* was used in the same sense in the corrupt Latin. The ancient anchorites retired into dens and grottoes, to apply themselves the more attentively to meditation.

Amongst the natural caverns or grottoes of England, Okey-hole, Elden-hole, Peak's-hole, and Pool's-hole, are famous.

The entrance to Okey-hole, on the south side of the Mendip Hills, is in the fall of those hills, is beset all round with rocks, and has near it a precipitous descent of near twelve fathoms deep, at the bottom of which there continually issues from the rocks a considerable current of water. The naked rocks above the entrance show themselves about thirty fathoms high, and the whole ascent of the hill above is about a mile, and very steep. On entering this vault, you proceed at first upon a level, but advancing farther, the way becomes rocky and uneven, sometimes ascending and sometimes descending. The roof of this cavern, in the highest parts, is about eight fathoms from the ground, but in many places it is so low that a man must stoop to get along. The breadth is not less various than the height, for in some places it is five or six fathoms wide, and in others not more than one or two. It extends in length about two hundred yards. People talk much of certain stones in it, resembling men and women, and other things; but there is little that is curious in these, which are only shapeless lumps of common spar. At the farthest part of the cavern there is a good stream of water, large enough to drive a mill, which passes all along one side, and at length glides down about six or eight fathoms amongst the rocks, and then pressing through their clefts, discharges itself into the valley. The river within the cavern is well stored with eels, and has in it some trouts; which can scarcely have come from without, as there is a considerable fall near the entrance. In dry summers, a great number of frogs are seen all along this cavern, even to the farthest part of it; and on the roof of it, at certain places, hang vast numbers of bats. The cattle that feed in the pastures through which this river runs have been known to die suddenly sometimes after a flood; which is probably owing to the waters having been impregnated, either naturally or accidentally, with lead ore.

Elden-hole is a huge profound perpendicular chasm, three miles from Buxton, and ranked amongst the natural wonders of the Peak. Its depth is unknown. Cotton tells us he sounded 884 yards, yet the plummet still drew. But he might easily be deceived, unless his plummet was very heavy; for the weight of a rope of that length might render the landing of the plummet scarcely perceptible.

Peak's-hole and Pool's-hole are two very remarkable horizontal caverns under mountains; the one situated near Castleton, and the other close by Buxton. They seem to have owed their origin to the springs which flow through them; for when the water had forced its way through the horizontal fissures of the strata, and had carried the loose earth away with it, the loose stones would of course fall down; but where the strata had few or no fissures, they remained entire, and thus formed those very irregular arches, which are now so much admired for their grotesque appearance. The water which passes through Pool's-hole is impregnated with particles of limestone, and has incrusted the whole cavern in such a manner that it appears as one solid rock.

Grotto del Cani, a little cavern near Pozzuoli, four leagues from Naples, the air of which is of a mephitical or noxious quality; whence it is called *bocca venenosa*, the poisonous mouth.

Grotto del Serpi, is a subterranean cavern near the village of Sassa, eight miles from the city of Braccano in Italy.

Milky Grotto, *Crypta Lactea*, a mile distant from the ancient village of Bethlehem, is said to have been thus denominated on occasion of the blessed Virgin letting fall some drops of milk whilst suckling Jesus in this grotto; and hence it has been commonly supposed that the earth of this cavern has the virtue of restoring milk to women who have grown dry, and even of curing fevers.

Grotto is also used to signify a little artificial edifice made in a garden, in imitation of a natural grotto. The exterior of these grottoes is usually adorned with rustic architecture, and the interior with shell-work, fossils, and the like, finished likewise with jets d'eau or fountains.

GROUND, in painting, the surface upon which the figures and other objects are represented.

The ground is properly understood of such parts of the piece as have nothing painted on them, but retain the original colour upon which the other colours are applied to form the representations.

A building is said to serve as a ground to a figure when the figure is painted on the building.

Ground, in etching, denotes a gummy composition smeared over the surface of the metal to be etched, to prevent the aquafortis from eating, except in the places where this ground is cut through with the point of a needle or style.

Ground-Angling, fishing under water without a float, only with a plumb of lead, or a bullet, placed about nine inches from the hook. This method of fishing is most proper in cold weather, when the fish swim very low.

GROUP, in painting and sculpture, is an assemblage of two or more figures of men, beasts, fruits, or the like, which have some apparent relation to each other. The word is formed of the Italian *groppo*, a knot.

Groups, *The*, several groups of islands in the South Pacific Ocean, seen by Captain Cook in 1769, and extending from north-west by north to south-east by south about nine leagues. There are two principal islands, separated from each other by a channel about half a mile broad, and surrounded by small islands which are mostly narrow strips of land ranging in all directions. The southernmost island is in long. 142. 42. W. and lat. 18. 12. S.

GROUSE, or Growse, *Moor-fowl*, or *Moor-game*. See Ornithology.

GROUTHEAD, or Greathed, Robert, a learned bishop of Lincoln, was born at Stow in Lincolnshire, or, according to others, at Stradbrook in Suffolk, towards the close of the twelfth century. His parents were so poor, that when a boy he was obliged to perform the meanest offices, and even to beg his bread, until the mayor of Lincoln, struck with his appearance and the quickness of his answers to certain questions, took him into his family, and put him to school. Here his ardent love of learning, and admirable capacity for acquiring knowledge, soon appeared, and procured him many patrons, by whose assistance he was enabled to prosecute his studies, first at Cambridge, afterwards at Oxford, and lastly at Paris. In these three seats of learning he spent many years in the indefatigable pursuit of knowledge, and became one of the best and most universal scholars of the age. He was a great master not only of the French and Latin, but also of the Greek and Hebrew languages, which was a very rare accomplishment in those times. We are also assured by Roger Bacon, who was intimately acquainted with him, that he spent much of his time for nearly forty years in the study of geometry, astronomy, optics, and other branches of physical and mathematical learning, in all of which he very much excelled. But theology was his favourite study, in which he read lectures at Oxford with great approbation. In the mean while he had obtained several preferments in the church, and was at length elected and consecrated Bishop of Lincoln in the year 1235. In this station he soon became celebrated for the purity of his manners, the popularity of his preaching, the vigour of his discipline, and the boldness with which he reproved the vices and opposed the arbitrary mandates of the court of Rome. Of his independence in this last respect it may be proper to give one example. Pope Innocent IV. had granted to one of his own nephews, named Frederick, who was but a child, an appointment to the first canon's place in the church of Lincoln which should become vacant; and he sent to the Archbishop of Canterbury, and Innocent, then papal legate in England, a bull commanding them to see the provision made effectual, which bull they transmitted to the Bishop of Lincoln. But that brave and virtuous prelate boldly refused to give effect to this unreasonable mandate, and sent an answer to the papal bull containing very severe reproaches against his holiness for abusing his power. The bishop did not long survive this noble stand against the corruption and tyranny of the church of Rome, for he fell sick at his castle of Bugden that same year; and when he became sensible that his end was drawing near, he called his clergy into his apartment, and made a long discourse to them, to prove that the reigning pope, Innocent IV. was antichrist. With this exertion his strength and spirits were so much exhausted, that he soon afterwards expired, on the 9th of October 1253.

GROVE, in *Gardening*, a small wood impervious to the rays of the sun. Groves have in all ages been held in great veneration. The *proseuchæ*, and high places of the Jews, whither they resorted for the purposes of devotion, were probably situated in groves (see Joshua, xxiv. 26). The *proseuchæ* in Alexandria, mentioned by Philo, had groves about them; for he complains that the Alexandrians, in a tumult against the Jews, cut down the trees of their *proseuchæ*. The ancient Romans had groves near several of their temples, which were consecrated to some god, and, as Cicero alleges, called *luci*, by antiphrasis, *a non lucendo*, as being shady and dark. The veneration which the ancient Druids had for groves is well known. Modern groves are not only ornaments to gardens, but also afford shelter from the heat of the sun.

Groves are of two sorts, either open or close. Open groves are those which have large shady trees, standing at such distances that their branches approach so near to each other as to prevent the rays of the sun from penetrating through them. Close groves have frequently large trees standing in them; but the ground under these is filled with shrubs or underwood, and the walks are private and screened from winds; by which means they are rendered agreeable for walking, at times when the air is either too hot or too cold in the more exposed parts of the garden. These are often contrived so as to bound the open groves, and frequently to hide the walls or other enclosures of the garden; and when they are properly laid out, with dry walks winding through them, and on the sides of these sweet-smelling shrubs and flowers irregularly planted, they have a charming effect.

Grove, *Henry*, a learned Presbyterian divine, was born at Taunton in Somersetshire in 1683. Having obtained a sufficient stock of classical literature, he passed through a course of academical learning, under the reverend Mr Warren of Taunton, who had a flourishing academy. He then removed to London, and studied some time under the reverend Mr Rowe, to whom he was nearly related. Here he contracted with several persons of merit, and particularly with Dr Watts, a friendship which continued till his death, though they were of different opinions in several points warmly controverted amongst divines. After two years spent under Mr Rowe, he returned to the country, where he began to preach with great reputation. An exact judgment, a lively imagination, and a rational and amiable representation of Christianity, delivered in an agreeable and well-governed voice, soon rendered him generally admired; and the spirit of devotion which prevailed in his sermons procured him the esteem and friendship of Mrs Singer, afterwards Mrs Rowe, which she expressed in a fine ode on death, addressed to Mr Grove. Soon after he began to preach, he married; and on the death of Mr Warren, he was chosen to succeed him in the academy at Taunton. As this obliged him to reside there, he preached for eighteen years to two small congregations in the neighbourhood; and though his salary from both fell short of twenty pounds a year, and he had a growing family, he performed his duty cheerfully. In 1708, he published a piece entitled The Regulations of Diversions, drawn up for the use of his pupils. About the same time, he entered into a private dispute by letter with Dr Samuel Clarke; but as they were not able to convince each other, the debate was dropped with expressions of mutual esteem. He next wrote several papers printed in the Spectator (numbers 588, 601, 626, 635), the last of which was republished, by the direction of Dr Gibson, bishop of London, in the Evidences of the Christian Religion, by Mr Addison. In 1725, Mr James, his colleague in the academy, having died, he succeeded that person in his pastoral charge at Fulwood, near Taunton, and engaged his nephew to undertake the other duties of Mr James as tutor; and in this situation Mr Grove continued till his death, which happened in the year 1738. His great concern with his pupils was to inspire and cherish in them a prevailing love of truth, virtue, liberty, and genuine religion, without violent attachments or prejudices in favour of any party of Christians. He represented truth and virtue in a most engaging light; and though his income, both as a tutor and a minister, was insufficient to support his family without encroaching on his paternal estate, he knew not how to refuse the call of charity. Besides the pieces above mentioned, he wrote, 1. An Essay towards the Demonstration of the Soul's Immortality; 2. An Essay on the Terms of Christian Communion; 3. The Evidence of our Saviour's Resurrection considered; 4. Some Thoughts concerning the Proof of a Future State from Reason; 5. A Discourse concerning the Nature and Design of the Lord's Supper; 6. Wisdom the first spring of Action in the Deity; 7. A Discourse on Saving Faith; 8. Miscellanies in prose and verse; 9. Sermons. After his decease, his posthumous works were published by subscription, in four volumes octavo.

GROWTH, the gradual increase of bulk and stature which takes place in animals or vegetables during a certain period. The increase of bulk in such bodies as have no life is called *expansion*, *swelling*, &c.

The growth of animals, nay even of the human species, is subject to great variations. A remarkable instance of this was observed in France in the year 1729. At this time the Academy of Sciences examined a boy who was then only seven years old, but who measured four feet eight inches and four lines in height without his shoes. His mother observed on him at two years of age, the signs of puberty, which continued to increase very quickly, and soon arrived at the usual standard. At the age of four he was able to lift and toss the common bundles of hay in stables into the horses' racks; and at the age of six he could raise as much as a sturdy fellow of twenty. But though he thus increased in bodily strength, his understanding was not greater than is usual with children of his age, and their play-things were also his favourite amusements.

Many other instances of extraordinary growth might, if it were necessary, be collected. It is at first sight astonishing that children of such early and prodigious growth do not become giants; but when we consider that the signs of puberty appear so much sooner than they ought, it seems evident that the whole is only a more than usually rapid expansion of the parts, as in hot climates; and accordingly it is observed that such children, instead of becoming giants, always decay and die apparently of old age long before the ordinary term of human life.

GRUB, the English name of the hexapod worms, produced from the eggs of beetles, and which are at length transformed into winged insects of the same species with their parents.

GRUBENHAGEN, a province called a principality of the kingdom of Hanover. It consists of three portions, the most westerly of which is surrounded by Brunswick and the province of Göttingen; the centre by the province of Hildesheim, by Brunswick, and the Prussian territory; and the eastern portion by Blankenburg and Brunswick. It extends over 537 square miles, and contains a population of 83,200 persons. The Hartz Forest forms the larger portion of the province, some of the hills of which are 2600 feet in height, and covered to their tops with pine woods. The chief object of the district is mining, which occupies the labour of most of the inhabitants, to the exclusion of agriculture, for which purpose the soil is not adapted. The chief aliments are furnished from the surrounding provinces. In a few of the warm valleys some cows are kept, and in others tobacco and hops are raised. The mines yield gold, silver, copper, lead, iron, zinc, vitriol, and sulphur, and there are some saline springs. There are several manufactories of iron, copper, and brass utensils; and the females in winter spin much linen yarn. The climate is cold, raw, and gloomy, and the inhabitants are in general in a state of great poverty. About three fourths are Lutherans, and one fourth Catholics.

GRUNBERG, a city of Prussian Silesia, the capital of a circle of the same name. It is a fortified place, containing 1145 houses, and 9144 inhabitants. It is also a great manufacturing place for spinning cotton and linen, and for woollen cloths. In the neighbourhood are vineyards, which have been rapidly extending, and produce tolerable wine, but in some years more vinegar than wine. Fuller's earth is found copiously near the city. Long. 15. 26. E. Lat. 51. 57. N.

GRUNBERG, a city of the grand duchy of Hesse, in Germany, of the province of Upper Hesse. It stands at the sources of the river Wetter, and contains 373 houses, with 2342 inhabitants. It is the capital of a bailiwick of the same name, which comprehends one city, one town, thirty villages, and 9553 inhabitants.

GRUPPO, or *Turned Shake*, a musical grace, consisting in the alternate prolation of two tones in juxtaposition to each other, with a close on the note immediately beneath the lower of them.

GRUS, in *Antiquity*, a dance performed yearly by the young Athenians around the temple of Apollo, on the day of the Delia. The motions and figures of this dance were intricate and various, some of them having been intended to express the windings of the labyrinth in which the Minotaur was killed by Theseus.

GRUS, in *Astronomy*, a southern constellation, not visible in our latitude.

GRUTER, or GRUYTERE, JAN, in Latin *Janus Gruterus*, a celebrated philologist and antiquary, was born at Antwerp on the 3d of December 1560. His father was burgomaster of that city, but having been banished on account of religion, he retired into England with his wife, who was a native of that country. This lady, whose name was Catherine Tishem, had received an excellent education and made considerable progress in learning; she spoke several of the living languages, understood the Latin, and was so well acquainted with the Greek as to be able to read Galen in the original. "There is perhaps not one physician in a thousand," says a panegyrist of Gruter, "who could do as much." The English wife of the Antwerp burgomaster was the first instructor of her son. Gruter continued the studies in which he had thus been initiated, at the university of Cambridge; and at the age of nineteen he quitted England, and proceeded to Leyden, where he studied civil law, and took the degree of doctor in that faculty. In a short time he began to make himself known by his poetical essays; and as works of a more solid kind soon extended his reputation, he became successively attached to different universities. In the capacity of professor, he taught at Rostock, at Wittemberg, and at Heidelberg, in which last city he fixed his residence, and had the charge of the palatine library, the manuscripts of which, transported to Rome in the year 1622, had recently been restored to their original locality. Gruter was called to France and to Denmark, but declined the invitations in both instances. The university of Padua also made him advantageous offers; but as it would have been necessary, in the event of accepting these, to renounce the public exercise of the Protestant religion, he preferred remaining in Germany. This circumstance proves that he has been unjustly accused of irreligion, and that Pareus, who reproached him with being an atheist, and attaching more importance to a single thought of Petronius or Apuleius than to all the precepts of Jesus Christ, has published a calumny. Bayle cites another proof of the religious sentiments of Gruter. "This pretended atheist," says he, "replied to those who proposed the alternative, 'You must either leave your country or change your religion;' I prefer the former to the latter; if I cannot pass my days in a town, I will pass them in the fields or the woods; God will there supply me with some herbs or roots which will support the little of life that remains to me." For this Bayle refers the reader to the panegyric of Gruter by Venator. But he is mistaken. It is not to Gruter, but to Sched, his old and faithful servant, that Venator attributes this answer. Gruter was very laborious, and exceedingly anxious to be productive; nor are there many learned men to whom Roman literature owes so many obligations. We shall take a short survey of his works. His essays in Latin poetry, which have already been mentioned, appeared in 1587, under the title of *Pericula*. In the verses of Gruter there is more science than energy. His Elegies are rugged and dissonant, from the affectation of employing polysyllabic words in the end of his pentameters. This is an imitation of the manner of the Greeks, and of that of Propertius, particularly in his first book; but it is not executed with sufficient taste, or a due regard to the measure. He next published, under the title of *Suspiciones*, conjectures on the Latin authors, in nine books, which he wished to extend to thirty; but he had not time to execute his design, in which, however, he appears to have made considerable progress. Burmann the second, whose library was so rich in works of criticism, possessed a large portion of this inedited supplement. In 1594 Gruter published a commentary on Seneca the philosopher, in which, notwithstanding the saucy remark of Scaliger (*labeur d'escolier ou d'imprimeur*), he gave proofs of great accuracy. Seneca the tragic poet, Titus Livius, Tacitus, Martial, and Florus, of which author he published two editions; Statius, on which he left inedited notes, cited by Taubmann (*ad* Plaut. *Amph.* l. i. p. 83); Plautus, which was the occasion of a long and indecent quarrel between him and Pareus; Paterculus, Pliny the younger, the Panegyrists, the writers of the Augustin History, Cicero, and Publius Syrus, successively occupied his attention. In the edition of this last author, published by Havercamp and Preyger, may be found a posthumous commentary of Gruter, in which the text of Publius Syrus disappears amidst an enormous assemblage of parallel passages. Gruter collected, under the title of *Deliciæ Poetarum Italorum, Gallorum, Belgicorum,* the best Latin poems of the Italians, the French, the Flemings, and the Dutch, and, in the title-page of this collection, assumed the name of *Ranutius Gherus,* which is the anagram of *Janus Gruterus.* When he published the *Deliciæ Poetarum Germanorum,* a collection of the same kind as the preceding, he concealed himself under the initials A. F. G. G., which, read backwards, signify *Gruterus Gualtheri filius, Antuerpianus.* Lamonnoie on Baillet (tome iv. p. 184) has given a list of all the poets contained in the fifteen volumes to which these collections extend. The *Lampas sive Fax Artium Liberalium,* is another compilation, in six large volumes, wherein Gruter has collected a great number of commentators and critics, who had become rare in his time, or whose works had not been printed. A table of their names may be found in the *Bibliographia Antiquaria* of Fabricius (c. 3, sect. 7). In 1737 Palesi commenced a new edition of this collection, but he died before it was completed, and only four volumes appeared. To the six volumes of the original edition, Frankfort, 1603–1612, a seventh was, after the death of Gruter, added by Pareus in 1634, containing remarks on Plautus, in which Gruter, who had concealed his name under that of Pflug, in order to attack Pareus, is, by way of reprisal, outrageously insulted. In publishing his *Chronicon Chronicorum* he assumed the name of *Johannes Gualterius;* but this was a more honourable disguise; for the name he assumed was that of his father, which he no doubt hoped to immortalise by means of that useful and excellent work. We are also indebted to Gruter for other vast compilations, particularly a continuation of the *Polyanthea* of Langius; the *Bibliotheca Exulum,* Strasburg, 1624, in 12mo; and the *Corpus Inscriptionum,* Heidelberg, 1601, in folio. This last work is one of great importance, and of itself would be sufficient to sustain the literary reputation of Gruter. It is an immense collection of Greek and Latin inscriptions, which had been begun by Smetius, and which he considerably augmented, subjoining the *Notæ Romanorum veterum Tullii Tironis et Annæi Senecæ;* but the only edition now consulted is that of Grævius, 1707, in four volumes folio. The Emperor Rodolph II., to whom Gruter had dedicated his Inscriptions, wished to grant him, as a proof of his imperial satisfaction, the privilege of publishing all his books, and the title of count palatine; but his majesty died before having signed the "acts," as they are called; and Gruter, who had all the modesty of true learning, not choosing to bring his claims under the notice of the new emperor, lost without regret the favours which he had so well merited. The war which ravaged the palatinate disturbed his last years, and probably accelerated his end. His books were pillaged, and the palatine library, where he might have consoled himself for the loss of his own, was despoiled of its numerous manuscripts. Exiled, persecuted, and wandering from town to town, Gruter died on the 20th of September 1627, at the moment when the university of Groningen had offered him the chair of history and of Greek. (A.)

GRY, a measure containing one tenth of a line. A line is one tenth of a digit, and a digit one tenth of a foot, and a philosophical foot one third of a pendulum whose diadromes or vibrations, in the latitude of forty-five degrees, are each equal to one second of time, or one sixtieth of a minute.

GUADALAXARA, a city of New Castille, in the kingdom of Spain, in latitude 40. 33. It is the capital of a department called Alcarria, and is situated near the head of the river Tajuna, which empties itself into the Tagus. It gives name to a province which is 163 leagues in extent, and contains a population of 157,338 souls. The territory is but slightly provided with grain from its own soil, but it produces wine and oil; and there are extensive pastures, on which Merino flocks are fed. In the city there was a considerable manufactory of the best cloths, but, like most royal trading concerns, it proved very unprofitable, and, if restored with the expulsion of the French, must be in a very languishing condition. It employs 656 looms, and 4800 weavers and spinners; there is also one house for soap-boiling, which yearly produces 2250 hundredweight. This city contains 12,000 inhabitants.

GUADALAXARA, an intendancy of Mexico, in South America. It is bounded on the north by Sonora and Durango, on the east by Zacatecas and Guanaxuato, on the south by Valladolid, and on the west, for an extent of coast of 123 leagues, by the Pacific Ocean. Its length is estimated at about 350 miles, its breadth at about 300, and it has an extent of surface of 9612 square leagues. The eastern part of the intendancy is all table-land, and the climate is agreeable. The maritime regions abound in forests affording excellent timber for ship-building; but here the air is very hot and unhealthy. It is traversed from east to west by the Rio Grande de Santiago, which communicates with the great lake of Chapala. This intendancy was reckoned one of the most valuable in the viceroyalty. Humboldt estimated the value of its agricultural produce in 1802 to be about L.500,000, and its manufactures of woollens, calicoes, tanned hides, and soap, at L.700,000. The chief mines of Guadalaxara are those of Bolanos, Asientos de Ibarra, Hostiotipaquillo, Copalo, and Guichichila. This intendancy contains two cities, six towns, and 322 villages. Guadalaxara, the provincial capital, is situated on the left bank of the Rio de Santiago, in latitude 20. 50. north, and longitude 105. west. It was founded in 1551, and in 1570 was created an episcopal city, the see of Compostella being removed here. It possesses some flourishing manufactures, and, according to the latest accounts, the population amounts to above 70,000. If this be a correct statement, the city must have made very rapid advancement; for Humboldt, an accurate observer, states the population in 1803 at only 19,500. Compostella, the other city, claims a higher antiquity than Guadalaxara. It is situated to the south of Tepic, in latitude 21. 20. north, and longitude 106. 11. west; but little else is known of it except its situation. Indeed, information regarding this intendancy is very scanty, a considerable portion of it still remaining undescribed. There is here a volcanic mountain called Colima, which frequently throws up ashes and smoke. Its elevation is computed to be 9000 feet above the level of the sea, and it forms the western extremity of the volcanic chain which traverses Mexico.

GUADALCANAL, a town of Spain, in the province of Estremadura. It is the principal mining port of the kingdom. The silver mines have been worked by private companies, most of whom were foreigners. M. Vauquelin, a French chemist, discovered, in analysing some ore, that it contained one tenth of its weight in platina, a metal hitherto only found in two small spots in South America, and recently in Russia. The interruption given to these mining companies, by the invasion of the French armies, has not yet permitted them to continue their labours; but at some future period they will be resumed, and most probably with great success; and there are more sanguine hopes now entertained, from the great success that, within a few years, the miners for lead have experienced.

GUADALOUPE, an island in the West Indies, belonging to France, is situated in longitude 62. west, and latitude 16. 20. north. It consists properly of two islands, separated from each other by a narrow channel called La Rivière Salée, which is navigable by vessels of fifty tons burden. The eastern island or division is called Grande Terre, and the western Basse Terre. Guadaloupe was discovered by Columbus, who found it inhabited by a warlike people; but they were soon subdued by the Spaniards. In 1635 it was taken possession of by the French, who commenced hostilities against the natives; but in 1640 a peace was concluded between the contending parties. For sixty years after its occupation by the French, the island made little advancement; but at length, about the beginning of the eighteenth century, it began to improve, and made rapid progress. In 1759 it was conquered by Britain, but restored to France in 1763. After this period it was twice taken by Britain; but, by the political adjustment of affairs which took place in 1814, it reverted to France, of which country it is now a colony.

Grande Terre is about six leagues in breadth and fourteen in length, and Basse Terre is fifteen leagues in length by fourteen in breadth. The small islands Desiderade on the east, Marie-Galante on the south-east, and the isles Des Saintes on the south, are subject to the government of Guadaloupe. The surface of these islands taken together has been estimated at 334,142 English acres. There are several volcanic mountains in Basse Terre, one of which, called La Soufrière, still emits volumes of smoke, and occasionally sparks of fire. This portion of Guadaloupe is agreeably diversified by hills, woods, gardens, and enclosures. It is also copiously watered, and very fruitful. The wild lemon-tree, the plant which produces gallianum, the erythrina corallodendrum, and the thorny volkameria, grow in the enclosures. The sugar-cane, although it reaches a great height, is of an inferior quality; and the coffee is not equal to that which is produced in some other of the West India islands. The principal town is called Basse Terre. It possesses many fine buildings, fountains, and public gardens, and is defended by a fort, which also commands an open road, having all the advantages of a safe harbour. Grande Terre is marshy, sterile, and flat, and also labours under a deficiency of water. The metropolis, which contains 15,000 inhabitants, is called Pointe à Pitre. It possesses a spacious port, and here the principal part of the trade is carried on. Desiderade is famed for its cotton, and coffee and sugar are raised on the hills of Marie-Galante. The exports consist chiefly of sugar, coffee, cotton, cacao, wood of various kinds, and a little cloves and spices. The value of the imports into France from Guadaloupe in 1831 was 26,642,222 francs, and the exports from France into the island amounted to 12,146,853 francs. By the returns for the same year, 195 ships, of 47,623 tons burden, were entered, and 194 ships, of 47,772 tons burden, were cleared out. According to the last census, which was for the year 1829, the population amounts to 112,111, consisting of whites and people of colour.

GUADALQUIVIR, a Spanish river which rises in the Sierra Cazoria, runs for 255 miles through Jaen and Seville, and falls into the ocean near St Lucar. It is navigable for fifty-five miles above Seville. Its tributary streams are the Guadiana el Minor, Almudicl, Guadalbon, Guadiato, and Xenil.

GUADALUPE, a low chain of mountains in Spain, which nowhere rise higher than 2307 feet. It begins at Tembleque in Toledo, under the name of the Sierra de Marchal, and ends in the Portuguese province of Estremadura, with the mountains of Espichel.

GUADARRAMA, a chain of Spanish mountains, which begins near Xalon and Tajuña, passes through Castille and Leon, and extends to the sea in the Portuguese province of Beira. One of its highest points is the Penaglada, which is 8502 feet above the level of the sea.

GUADARRAMA, a Spanish river, which rises on a hill of the same name, and falls into the Tagus near Mazallabeas.

GUADIANA, a river of Spain, which rises out of the earth in Mancha, in the Lagunen of Ruidera, runs twenty-five miles and a quarter north-west, and, after disappearing under the earth, rises to light again in Estremadura, runs through a part of Portugal, and falls into the ocean on the confines of Algarve, near Rebondela. Its whole course is 347 miles, and it is navigable for forty-six miles and a quarter. Its tributary streams are, Bullaque, Suja, Mutachel, Guadayra, Ardila, Albarragena, and Chaya.

GUADIN, a small city in the kingdom of Granada, in Andalusia, in Spain. It is situated on a river of the same name, which falls into the Guadalquivir. The surrounding country is productive of fruits, oil, and wine, and near it are the medicinal baths of Græna, much resorted to by invalids. There are manufactories here for sail-cloth, linen, silks, and clasp-knives. It is the seat of a bishop, and contains a cathedral. Its population amounts to 8314 souls.

GUALIOR, a strong and very celebrated fortress of Hindustan, in the province of Agra, in a very elevated situation on a hill, one and a half mile in length, but in few places exceeding 300 yards in breadth. At the north end the sides are so steep as to be nearly perpendicular, and its height is 342 feet. It has several reservoirs of good water, and a small river runs close past it. A stone parapet extends all round the slope of the hill, behind which are collected piles of round stones, which form an excellent defence, and it was judged unassailable until it was stormed in 1780 by Major Popham. The town, which stands at the bottom of the hill, is large and populous, and contains many good houses of stone, which is furnished in abundance by the neighbouring hills, that form an amphitheatre round the town and fort at the distance of from one to four miles. The town carries on an extensive trade with the Mahratta and British territories, and derives also considerable benefit from the Mahommedan pilgrims, who visit the town of Ghose al Alum, a celebrated religious person, who is interred within the fort. Gualior is of such antiquity that its origin is lost in remote tradition. It must have been at all times a military post of great consequence, both from its central situation, and its peculiar position, which in the estimation of the natives rendered it impregnable. It is first mentioned in authentic history in the year 1023, when it was summoned by Sultan Mahmoud of Ghizni. It was taken by the Mahommedans in the year 1194, and was used as a state prison, in which several princes met their death from opium or the dagger. On the decline of the Mogul empire, it was taken by the Mahrattas, and afterwards by the British, as mentioned above, in 1780. It was subsequently taken possession of by Scindia, and during the war of 1804 it again surrendered to the British troops after a breach was made in the walls. It was not, however, taken possession of by them, and by the treaty with Scindia in 1805 it was ceded to that chief. The travelling distance from Delhi is 197 miles, from Lucknow 211, from Benares 355, from Nagpour 480, from Calcutta by Birbhoom 805 miles. Long. 78. 14. E. Lat. 26. 18. N.

GUAM, or GUAHON, one of the Ladrone Islands, in the Eastern Seas. It is a large island, about 120 miles in circuit, high and shelving on each side, and fenced with steep rocks, against which the surf perpetually beats.

There is a harbour on the west side, in which there are several small bays. The climate is mild and salubrious, and the soil yields a great profusion of vegetables and fruits, particularly guavas, bananas, cocoas, oranges, and limes. Here the bread-fruit tree was first seen by the Europeans, who have since become more familiar with its manifold benefits in the islands of the South Pacific Ocean. Capers are also produced from a shrub which is indigenous to the soil. The native inhabitants of this island are stout and well made, copper-coloured, and have long black hair. They are dispersed in twenty-one hamlets or villages situated along the coast, the interior being overrun with woods, and in a state of nature; and they all pursue agriculture to the neglect of the fisheries. A town called Agana, built by the Spaniards, stands on the shore, about twelve miles from the harbour, which is defended by a strong battery. The population is uncertain. The island was discovered by Magellan in 1521, and at that time the inhabitants, a wild and savage race, were numerous. But they were greatly reduced, by the barbarity of the Spanish invaders, from many thousands to about 800 or 900. The whole are collected in Guam, and by lenient treatment they had been augmented to 1500. But there is no recent enumeration of them.

GUAMANGA, a town of Peru, in South America. It was founded by Pizarro, on the site of an Indian village of the same name, for the convenience of trade between Cuzco and Lima. It contains a splendid cathedral, two parochial churches, seven monasteries, three nunneries, and about 26,000 inhabitants. Long. 73. 57. W. Lat. 12. 56. S. It is situated in a district or province of the same name, which is very fertile in green pasture.

GUANAXUATO, a state, formerly an intendancy, of Mexico, is bounded on the north by San Luis Potosi, on the east by Mexico, on the south by Mechoacan, and on the north-west by Guadalaxara and Zacatecas. It lies wholly on the ridge of the Cordillera, and, according to Humboldt, its length from the Lake of Chapala to the north-east of San Felipe is fifty-two leagues, and its breadth from Celaya to Villa de Leon is thirty-one leagues. It is one of the finest and most populous states in Mexico, and is famous for its rich mines. It comprehends three cities, four or five towns, thirty-seven villages, and thirty-three parishes. Guanaxuato has a surface of 911 square leagues, and the number of inhabitants are estimated at about half a million. Santa Fe de Guanaxuato, the capital, is romantically situated amidst a labyrinth of porphyritic hills, which environ it completely, and also intersect it. A narrow defile leads into the city, and when first entered no idea of its extent can be formed. When viewed from some neighbouring heights, in some places it is seen spreading out into the form of an amphitheatre, in others stretching along a narrow ridge, whilst the ranges of the houses, accommodated to the broken ground, present the most fantastical groups. The city is well built of hewn stone, and contains three convents, a college, two chapels, and five hermitages. The mines in the district of Guanaxuato are the most productive in the world. Those of Valenciana were famous for the extent of the excavations and quantity of precious metal which they produced. Guanaxuato is also an agricultural district. The lands are fertile, and cultivated to the base of the mountains. The city, however, suffers from two evils. The only water which can be had is that collected in cisterns by the wealthy inhabitants; and those who do not possess these private tanks have to purchase the water, at rather a high rate, from individuals who gain a livelihood by bringing it from a large reservoir distant about two miles from the city. During the rainy season, also, the city is liable to be injured by the torrents which rush from the mountains down the ravine in which the city stands. According to Humboldt, the population of Guanaxuato in 1802 was within the city 41,000, and in the suburbs and mines surrounding it 29,600, making a total of 70,600 inhabitants. From a census taken in 1822, however, the inhabitants of the city amounted to 15,379, and the total population was only 35,733. The town or suburb of Valenciana alone formerly contained a population of 22,000 souls. It is now in ruins, and does not contain more than 4000 inhabitants. Guanaxuato is situated in long. 100. 55. W. and lat. 0. 21. N.

GUANCA VELICA, a town of Peru, and capital of a jurisdiction of the same name. The district is bleak and cold, but famous for its mines of mercury. The town stands in a breach of the Andes, 12,308 feet above the ocean level. It is rich, but it has declined from its former opulence, and the population is now reduced to about 5000. It is situated in long. 74. 46. W. and lat. 12. 45. S.

GUARANTEE, or WARRANTEE, in *Law*, a term relative to warrant or warranter, and properly signifying him whom the warranter undertakes to indemnify or secure from damage.

GUARANTEE is more frequently used for a warranter, or a person who undertakes and obliges himself to see a second person perform what he has stipulated to a third.

GUARANTY, in matters of polity, the engagement of mediatorial or neutral states, by which they plight their faith that certain treaties shall be inviolably observed, or that they will make war against the aggressor.

GUARD, in a general sense, signifies the defence or preservation of any thing; the act of observing what passes, in order to prevent surprise; or the care, precaution, and attention employed to prevent any thing from happening contrary to our intentions or inclinations.

GUARD, in fencing, implies a proper posture to defend the body from the sword of the antagonist.

GUARD, in the military art, is a duty performed by a body of men, to secure an army, place, or post, from being surprised by an enemy.

Advanced GUARD is a party of either horse or foot, or both, which marches before a more considerable body, to give notice of any approaching danger. These guards are made stronger or weaker, according to the situation, the danger to be apprehended from the enemy, or the nature of the country.

Artillery GUARD is a detachment from the army, to secure the artillery when in the field. This *corps de garde* is usually placed in the front of the artillery park, and the sentries are dispersed round it.

Artillery Quarter GUARD is a non-commissioned officer's guard from the royal regiment of artillery, whose *corps de garde* is always in front of their encampment.

Artillery Rear GUARD consists of a corporal and six men posted in the rear of the park.

Corps de GARDE are soldiers intrusted with the guard of a post, under the command of one or more officers. This word also signifies the place where the guard mounts.

Grand GUARD, three or four squadrons of horse, commanded by a field-officer, posted at about a mile or a mile and a half from the camp, on the right and left wings, towards the enemy, for the better security of the camp.

Forage GUARD, a detachment sent out to secure the foragers, and which is posted at all places, where either the enemy's party may come to disturb the foragers, or where they may be spread too near the enemy, so as to be in danger of being taken. This guard consists both of horse and foot, and must remain at their posts until the foragers have all come off the ground.

Main GUARD is that from which all other guards are detached.

Piquet GUARD, a number of horse and foot, kept in readiness in case of an alarm.

Baggage Guard is always an officer's guard, and has the charge of the baggage on a march.

Quarter Guard is a small guard commanded by a subaltern officer, posted in the front of each battalion.

Rear Guard, that part of the army which brings up the rear on a march, and which is generally composed of all the old grand guards of the camp.

Rear Guard is also a corporal's guard, placed in the rear of a regiment, to keep good order in that part of the camp.

Standard Guard, a small guard under a corporal: it is drawn from each regiment of horse, and mounts on foot in the front of each regiment.

Trench Guard only mounts in the time of a siege, and sometimes consists of three, four, or six battalions, according to the importance of the siege.

Provost Guard is always an officer's guard, and attends the provost in his rounds, to prevent desertion, marauding, rioting, and other crimes or offences. See Provost.

Ordinary Guards, such as are fixed during the campaign, and relieved daily.

Extraordinary Guards, or detachments, which are only commanded on particular occasions, either for the further security of the camp, to cover the foragers, or for convoys, escorts, or expeditions.

Guards also imply the troops kept to guard the king's person, and consist both of horse and foot.

Horse Guards, in England, were originally gentlemen chosen, for their bravery, to be intrusted with the guard of the king's person; and they were divided into four troops, called the first, second, third, and fourth troop of Horse Guards. The first troop was raised in the year 1660, and the command given to Lord Gerard; the second in 1661, and the command given to Sir Philip Howard; the third in 1693, and the command given to Earl Feversham; the fourth in 1702, and the command given to Earl Newburgh. Each troop had one colonel, two lieutenant-colonels, one cornet and major, one guidon and major, four exempts and captains, four brigadiers and lieutenants, one adjutant, four sub-brigadiers and cornets, and sixty private men. But the four troops were afterwards turned into two regiments of Life Guards.

The *Horse Grenadier Guards* were divided into two troops, called the first and second troops of Horse Grenadier Guards. The first troop was raised in 1693, and the command given to Lieutenant-general Cholmondeley; the second in 1702, and the command given to Lord Forbes. Each troop had a colonel, a lieutenant-colonel, a guidon or major, three exempts and captains, three lieutenants, one adjutant, three cornets, and sixty private men.

The *Yeomen of the Guard* were first raised by Henry VII. in the year 1485. They are a superior kind of foot guards to the king's person, and are generally called by the nickname of the *Beef-Eaters*. They were anciently two hundred and fifty men of the first rank under gentry, and of larger stature than ordinary, each being required to be six feet in height. Of this body there are about a hundred on duty, and seventy more not on duty; and when any one of the hundred dies, his place is supplied out of the seventy in non-activity. Their first commander or captain was the Earl of Oxford.

The *Foot Guards* are regiments of foot appointed for the guard of his majesty and his palace. They were raised in the year 1660, when the command of the first regiment was given to Thomas Lord Wentworth; that of the second to General Monk, then Duke of Albemarle; and that of the third to the Earl of Linlithgow. The second regiment is always called the Coldstream Guards, from a market-town in Berwickshire, where it was first embodied. This regiment is older than the first, having been raised sooner, and commanded by General Monk, from whom it derived its name of Monk's regiment or corps, and in compliment to whom it was made one of the three royal regiments by Charles II.

Scotch Guards, a celebrated band, which formed the first company of the ancient *gardes du corps* of France. From the ancient intercourse between the two countries, the natives of Scotland had often distinguished themselves in the service of France. On this foundation the company of Scotch Guards, and the company of Scotch Gendarmes, were instituted; both of them owed their institution to Charles VII. of France, by whom the first standing army in Europe was formed, in the year 1454.

The ancient rights and privileges of the Scottish Life Guards were most honourable. The author of the Ancient Alliance between France and Britain says, "On high holidays, at the ceremony of the royal touch, the erection of knights of the king's order, the reception of extraordinary ambassadors, and the public entries of cities, there must be six of their number next to the king's person, three on each side; and the body of the king must be carried by these only, wheresoever ceremony requires. They have the keeping of the keys of the king's lodging at night, the keeping of the choir of the chapel, the keeping the boats where the king passes the rivers; and they have the honour of bearing the white silk fringe in their arms, which in France is the *coronne coleur*. The keys of all the cities where the king makes his entry are given to their captain in waiting or out of waiting. He has the privilege, in waiting or out of waiting, at ceremonies, such as coronations, marriages, and funerals of the kings, and at the baptism and marriage of their children, to take duty upon him. The coronation robe belongs to him; and this company, by the death or change of a captain, never changes its rank, as do the three others."

This company's first commander, who is recorded as a person of great valour and military accomplishments, was Robert Patillock, or Patullo, a native of Dundee; and the corps, ever ardent to distinguish itself, continued in great reputation until the year 1578. From that period, the Scotch Guards were less attended to, and their privileges came to be invaded. In the year 1612, they presented a remonstrance to Louis XIII. on the injustice they had suffered, and placed before him the services they had rendered to the crown of France. Attempts were then made to re-establish them on their ancient foundation; but the negotiation for this purpose proved ineffectual. The troops of France became jealous of the honours paid to them; the death of Francis II., and the return of Mary to Scotland, at a time when they had much to hope, were unfortunate circumstances; the change of religion in Scotland proved an additional blow; and the accession of James VI. to the throne of England altogether disunited the interests of France and Scotland. The Scotch Guards of France had therefore latterly no connection with Scotland except in the name.

Guard-Boat, a boat appointed to row amongst the ships of war which are laid up in any harbour, or in ordinary, and to observe that their officers keep a good look out, calling to the guard-boat as she passes, and not suffering her crew to come on board, without having previously communicated the watch-word of the night.

Guard-Ship, a vessel of war appointed to superintend maritime affairs in a harbour or river, and to see that the ships which are not commissioned have their proper watch-word kept duly, by sending guard-boats round them every night. They are also destined to receive seamen who are impressed in the time of war.

GUARDA, a city of Portugal, in the province of Beira. It is situated near the head of the river Mondego, on one branch of the Sierra de Estrella. It is a very ancient place, and the old walls with turrets, and a castle, are still in existence, though the city has retrograded towards decay. It has some manufactures of woollen cloths, amounting to 120 looms. It is the seat of a bishop, and contains 707 houses, and 2298 inhabitants.

GUARDIA, a town of Spain, not far from Cedron, in the province of Toledo, with 3344 inhabitants.

Guardia-Alferez, a town of Italy, in the kingdom of Naples, and in the Contado di Molise, with a bishop's see. Long. 14. 56. E. Lat 41. 39. N.

GUARDIAN, in *Law*, a person who has the charge of anything; but it more commonly signifies one who has the custody and education of such persons as have not sufficient discretion to take care of themselves and their own affairs, as children and idiots.

Guardian, or *Warden, of the Cinque Ports*, is an officer who has the jurisdiction of the Cinque Ports, with all the power which the admiral of England has in other places.

Camden relates, that the Romans, after they had established their empire in our island, appointed a magistrate, or governor, over the eastern parts, where the Cinque Ports are situated, with the title of *Comes littoris Saxonici per Britanniam*, having another, who bore the like title, on the opposite side of the sea. Their business was to strengthen with munitions the sea-coast against the outrages and robberies of barbarians; and the same antiquary considers our warden of the Cinque Ports to have been instituted in imitation of this officer.

Guardian of the Spiritualities, the person to whom the spiritual jurisdiction of any diocese is committed during the time the see is vacant. A guardian of the spiritualities may likewise be either such in law, as the archbishop is of any diocese within his province, or by delegation, as he whom the archbishop or vicar-general for the time appoints. Any such guardian has power to hold courts, and grant licenses, dispensations, probates of wills, &c.

GUARINI, Giovanni Battista, a celebrated Italian poet, was born at Ferrara, on the 10th of December 1537. He studied at the university of Padua, under the direction of his father, Alexander, to whom he owed the greater part of his acquisitions in knowledge, and more particularly his taste for poetry. Guarini succeeded his father in the chair of humanity at Ferrara, though then scarcely twenty; but some lyrical compositions already published by him had inspired such hopes of future eminence as fully justified his promotion. Called to the court of the Duke of Ferrara, at that period the resort of men of the first talents in Italy, he there became acquainted with Tasso, who was seven years younger than himself, gained his friendship, and afterwards became his most zealous defender and ardent panegyrist. The duke having knighted Guarini, intrusted him with several important missions to the different courts of Europe; but, during fourteen years that he remained in the service of this prince, he never obtained the slightest recompense, and in the mean while had expended the greater part of his fortune. Guarini complained of this; the duke, conscious that his complaints were well founded, became irritated; recrimination ensued, and the poet retired in disgust from court. Some time afterwards, he passed into the service of Emanuel Philibert, duke of Savoy, and next into that of Vincent, duke of Mantua; but as, at both courts, he received much praise and no salary, he at length retired to his estate of Guarina, near Reggio. Having lost his wife, he formed a design of taking holy orders, and with this view repaired to Rome. But Guarini had too much ambition to persevere in such a scheme, and, accustomed as he had been to the gaieties of courts, he found himself but little disposed to relish the sweets of retirement. He accordingly returned to Ferrara, and thence proceeded to Florence, where the Grand Duke Ferdinand loaded him with presents and honours. His good fortune, however, was not of long duration. The grand duke, wishing to establish suitably a lady of Pisa to whom he had been attached, induced one of the sons of Guarini to marry her without the knowledge of his father, whose delicacy on the point of honour was well known to him. When the latter was made acquainted with the marriage of his son, his indignation knew no bounds, and, justly offended at the despotic proceeding of the grand duke, he quitted Tuscany without the ceremony of taking leave. But after passing some months with his protectress, the Duchess of Urbino, he became reconciled to the Duke of Ferrara; and, in 1603, he was sent by that prince to Rome as ambassador to Pope Paul V. Guarini, however, was constantly the sport of fortune; for, besides the ingratitude of the great, of which he had had painful experience, his life was embittered by domestic misfortunes. He had lost in the flower of her age a wife whom he adored; and his three sons frequently stirred up domestic quarrels about the division of a fortune almost entirely exhausted. But the most severe blow he received was by the tragical death of his daughter Anna. On returning from one of his journeys, he went to visit his beloved child, and when he fondly expected to fold her in his arms, he found only a bloody corpse. She had just fallen a victim to the jealousy of a suspicious and violent husband. But all these misfortunes did not prevent Guarini from occupying himself with his works, the principal of which are, 1. Il Pastor Fido, a pastoral tragicomedy in five acts, and in verse, which passed through forty editions during the lifetime of the author, and by which his name has been rendered for ever famous; 2. Verrato Primo, Ferrara, 1588; 3. Verrato Secundo, Florence, 1595; 4. Il Segretario, dialogo, Venice, 1594–1600; 5. Idropica, a comedy in five acts, and in prose, Rome, 1614. A very beautiful edition of the works of Guarini was published at Ferrara, in 1737, four vols. 4to, with superb engravings, and very beautiful vignettes. The second volume contains the lyrical compositions of the author, some of which are highly esteemed; the fourth is filled with annotations, and apologies or defences of the *Pastor Fido*, by different authors. Guarini also left a treatise on public liberty, which reasons of state, however, prevented him from publishing. His death took place at Venice, whither he had latterly retired, on the 6th of October 1612, in the seventy-fifth year of his age. Guarini's claim to the character of a great poet must rest exclusively on his *Pastor Fido*, which, with all its faults, contains innumerable redeeming beauties, and still maintains its place as an Italian classic. His style, though it wants the purity, sweetness, and elegance, which characterise that of Tasso, is full of rich and sparkling imagery; and his sentiments, if not always natural or just, are seldom deficient in force and vivacity. The greatest blemish of the *Pastor Fido* is its frequent indecency and exceptionable morality. It is no doubt true that Corisco repents towards the conclusion of the piece, and that there is an apparent conformity in this respect to the established rule; but this professed repentance comes only after having displayed a character equally vile and perfidious, and promulgated maxims of the most relaxed morality. Although the *Pastor Fido* had been represented in all the courts of Italy, and even before popes, yet it was afterwards put into the *Index* by reason of the licentiousness which pervades it, and particularly on account of the passage commencing *Se'l peccar è si dolce e il non peccar si necessario.* But with all these defects, it is a work of undoubted genius, and will continue to maintain the reputation which it originally acquired for its author. (A.)

GUARNIX, a town of Spain, in the province of Old Castille. It is situated on the river Santander, and on its banks are founderies both for brass and iron cannon. In a dock-yard there are conveniences for repairing large ships; and some of the largest line-of-battle ships in the royal navy were built here.

GUASTALLA, a duchy in Italy, between Modena and the Austrian province of Mantua. It is thirty-three square miles in extent, containing the city of the same name, and four small places, with 7200 inhabitants, who cultivate with great care and success wheat, barley, rice, maize, olives, and silk, and breed many black cattle. The city stands in a marshy situation, at the junction of the Crostolo with the Po. It is surrounded with walls and ditches, has an ancient castle, several churches, and 5500 inhabitants, who carry on the trades of spinning and weaving silk. Long. 10. 34. 26. E. Lat. 44. 54. 57. N.

GUATIMALA, or GUATEMALA, one of the new states into which the western world is divided. From the circumstance of its position, it has assumed the name of Central America. The constitution is modelled upon that of North America. This republic comprehends that portion of territory which stretches from the southern extremity of Mexico to the northern point of Colombia, from about the eighty-third to the ninety-fourth degree of west longitude. It extends about eight hundred miles in length, comprehending a great part of the isthmus of Panama, and embracing an extent of surface computed at about twenty-two thousand square leagues. This tract of country was subdued by Alvarado, who was sent thither by Cortes, the Spanish general, at that time pursuing his career of conquest in Mexico. Alvarado arrived in the year 1524, at a time propitious for the success of his enterprise, for two of the most powerful nations of the country were then at war. Too jealous of each other to unite against a common enemy, the numerous tribes or nations inhabiting Guatimala fell one by one under the dominion of the Spaniards, notwithstanding that a formidable resistance was made to them in some quarters. The methods resorted to by the Spaniards for reducing the Indians to subjection were similar to those practised in other parts of the American continent. The people whom they subdued by treachery and the sword were not at all inferior to those of Mexico and Peru. The conquerors found large cities, well fortified by castles, and adorned with splendid palaces and other sumptuous edifices. The Guatimalans were of course idolators, and, with the missal in the one hand and the sword in the other, the Spaniards succeeded in forcing them reluctantly to substitute the Christian worship for their own. One part of the country, however, called Vera Paz, which baffled the efforts of the Spaniards to subdue it, received milder treatment at the hands of some pious ecclesiastics, who employed persuasion instead of force, and thus succeeded in bringing then also under the Spanish yoke. From the period of its conquest until it declared its independence, the country, under the appellation of the kingdom of Guatimala, was governed by a captain-general appointed by the court of Spain, and a royal audiencia or pretorial court. The jurisdiction of this court extended from eight to seventeen degrees north latitude, and from eighty-two to ninety-five degrees west longitude, comprehending an extent of surface computed at 26,152 square leagues, with a population of about 1,200,000 souls.[1] The kingdom was divided into fifteen provinces, which were governed by inferior officers, amenable to the audiencia. There was scarcely any thing like a military force kept up, but spiritual matters were managed by a competent number of ecclesiastics, under the direction of the Archbishop of Guatimala, and four suffragans. Things continued in this state until the political events which took place in various parts of South America increased the discontent which had been generated in Guatimala by some acts of despotism committed by the mother country. In the year 1821, when the fate of Mexico was decided, several meetings of the most influential individuals took place, at which it was agreed to shake themselves free of Old Spain. Several of the provinces joined together and published a manifesto to this effect; but San Salvador protested against it, and immediately formed a provisional government of its own. The government of Guatimala dispatched troops to attack San Salvador, but they were repulsed. In this emergency they solicited support from Mexico, which being granted, San Salvador yielded to General Filisola in February 1823. In March the general congress was convoked, and in the month following it met and assumed the name of Constituent Assembly. To this congress all the provinces sent deputies, with the exception of Chiapa, which continued firm in its adherence to Mexico. One of the first acts of the constituent assembly, after the nomination of an executive, was to publish a decree, declaring "these provinces independent of Spain, Mexico, and every other power, either of the old or new world." This decree is dated the 1st of July 1823. Towards the end of the same year was published the basis of its future constitution, by which Guatimala was declared a federal republic, comprehending five states, joined together under the denomination of the United Provinces of Central America.

It was ordained that the *legislative* power should reside, first, in a federal congress, composed of representatives elected by the people; and, secondly, in a *senate*, composed of two senators popularly elected by each state. The privileges of this body were, to sanction the acts of the federal congress, to counsel the executive on important cases, to nominate the individuals employed by the federation, and to watch over their conduct. The *executive* power was declared to be vested, 1. in a president popularly chosen; 2. in a vice-president; and, 3. in a supreme court of justice. The internal affairs of each state were decreed to be regulated by itself upon the following principles: 1. By an assembly of deputies properly chosen; 2. by a council, similarly elected; 3. by a chief; 4. by a vice-chief; and, 5. by a supreme court of judicature. These individuals or bodies were invested with certain definite powers, by which, it was hoped, good government would be obtained, and equal justice administered to the people. The constituent assembly now began to form a constitution, leaving, in the mean time, the different states to regulate their own concerns. The assembly subsequently had various sittings, and drew up a great number of articles, by which the government was to be regulated. Guatimala, however, like the republics in the South American continent, has never remained at rest with itself since it was erected into a free state. Continual insurrections have broken out; at one time one party, at another time another party, predominating. Peace and good order can scarcely be said to be as yet restored to it. The following table exhibits the number of departments, towns, and villages, in each state:—

I. Guatimala, consisting of thirteen departments. Capital, Guatimala.

Departments.	No. of Towns and Villages.	Departments.	No. of Towns and Villages.
1. Sacatepequez	18	8. Escuintla	12
2. Chimaltenango	11	9. Chiquimula	8
3. Solalá	11	10. San Augustin	8
4. Totonicapam	4	11. Vera Paz	5
5. Güegüetango	8	12. Salamá	7
6. Quezaltenango	7	13. Peten	9
7. Suchitepequez	6		

Comprises about 114 towns and villages. Population computed at 700,000.

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[1] Humboldt's *Political Essay*, vol. iv. p. 322.

II. Salvador, consisting of four departments. Capital, San Salvador.

Departments.	No. of Towns and Villages	Departments.	No. of Towns and Villages.
1. San Salvador	23	3. San Miguel	10
2. Sonzonate	14	4. San Vicente	8

Comprehends fifty-five towns and villages. The population is computed at 350,000.

III. Honduras, consisting of twelve departments. Capital, Comayagua.

Departments.	No. of Towns and Villages.	Departments.	No. of Towns and Villages.
1. Comayagua	6	7. Gracias	5
2. Tegucigalpa	5	8. Llanos	5
3. Choluteca	4	9. Santa Barbara	6
4. Nacaomi	4	10. Truxillo	2
5. Cantarranas	4	11. Lloro	2
6. Jutigalpa	3	12. Segovia	11

Comprehends fifty-seven towns and villages. The population is computed at 200,000.

IV. Nicaragua, consisting of eight departments. Capital, Leon.

Departments.	No. of Towns and Villages.	Departments.	No. of Towns and Villages.
1. Leon	7	5. Subtiava	5
2. Granada	10	6. Masaia	12
3. Managua	4	7. Nicaragua	6
4. Realejo	4	8. Matagalpa	5

Comprehends fifty-three towns and villages. The population is computed at 200,000.

V. Costa Rica, consisting of eight departments. Capital San José.

Departments.	No. of Towns and Villages.	Departments.	No. of Towns and Villages.
1. San José	3	5. Iscan	2
2. Cartago	5	6. Alajuela	1
3. Ujarras	3	7. Eredia	3
4. Boruca	2	8. Bagases	3

Comprehends twenty-one towns and villages. The population is computed at 50,000.

These five states, taken together, exhibit the figure of an irregular triangle, the vertex of which is in the province of Panama, and the base in the line that separates the country from New Spain. They are bounded on the west and north-west by Mexico, on the south-east by the province of Veraguas, on the north by the Atlantic, and on the south and south-west by the Pacific. Our knowledge of the physical geography of Guatimala is imperfect. Generally speaking, the face of the country is covered with mountains, but their elevations, or the volcanic phenomena which they exhibit, are but little known. The mountains, in some places bordering on the Atlantic, in others coasting the Pacific, and again in situations traversing the middle of the isthmus, give their own peculiar character to the country. The prevailing rocks are granite and porphyry; and in crossing them the traveller often feels himself transferred from a hot to a cold and chilling temperature. The productions, of course, vary in their nature, according to the elevations where they grow. At a height of from twelve to fourteen hundred feet, indigo, cotton, and cocoa flourish. At an elevation of from four to five thousand feet the productions of the temperate zone exhibit themselves. Wheat is cultivated upon lands from six to nine thousand feet above the level of the ocean; and on the tops of the highest mountains the hardy pine is to be found. There are a number of volcanoes, which have at different times spread terror and destruction over the contiguous country. In the valley of Guatimala stands the three-peaked Volcan de Fuego, from which the old city has repeatedly suffered injury, and which still, by occasionally emitting smoke and flame, seems to threaten an eruption. Other seven volcanoes exhibit the same phenomena, and may be said to remain still in a state of activity. These are Tajamulco, in the province Quezaltenango; Izalco, near Sonzonate; Momotombo and Mazaya, in Nicaragua; St Vincent and St Salvador, in the state of the same name; and Atitan, situated in one of the interior provinces, and which sent forth an eruption in 1827. It was accompanied by an earthquake; and throughout Guatimala earthquakes are frequent. The rivers are numerous, but not in general navigable, except by canoes. They are, besides, rapid, owing to the steep acclivity of their course, and their entrance is obstructed by bars. The largest river is the Lempa, which runs chiefly through the province of San Salvador. At its lowest ebb it is an hundred and forty yards in breadth, and its current is very rapid. Of lakes there are three of considerable size and depth. The Lake of Nicaragua is of vast extent; and should the proposal of a junction between the Pacific and it take place, it will become of great importance in a commercial point of view. Lake Peten is said to be twenty-six leagues in circumference, and in some parts thirty fathoms deep. Lake Atitan covers eight leagues from east to west, and four from north to south. Its depth has not been fathomed; and although several rivers flow into it, there is no visible outlet for the waters which it thus receives. These, and numerous other sheets of water, abound in fish; in many of them there are little islands, picturesquely wooded, and in some instances inhabited. On the banks of the rivers, and on the shores of one or two of the lakes, salt is collected in large quantities, and constitutes a considerable branch of trade in some of the provinces. Medicinal and other springs, both cold and hot, are found in various parts of the country.

Of the zoology of Guatimala little is known. Of the quadrupeds usually found in such climates there is abundance; and of the feathered tribes there is an infinite variety, from the minute and beautiful humming-bird to the heavy-winged vulture. The quezal, from the beauty of its plumage, is perhaps the most remarkable. The guacamaya, or great macaw, the wild peacock, the raxon, the chion, and the chulpilchoc, also attract the traveller of the woods by the splendour of the colours which they exhibit. In the warmer provinces serpents and reptiles infest every bush; and those smaller animals which come under the head of entomology are of every genus and species. In short, every branch of the animal kingdom of Guatimala abounds in objects of interest. Nor is the vegetable kingdom less productive. During the whole of the year the greater part of the mountains and plains are covered with a profusion of beautiful flowers. Forty genera of fruits are reckoned to grow spontaneously upon the hills. There are numerous thick forests, in which valuable woods of great size are to be found in abundance. Cedars are met with exceeding five fathoms in circumference, and mahogany trees of little less magnitude. Resins, balsams, and medicinal herbs, are also abundant. Of almost every production, both of a tropical and intertropical climate, may be enumerated amongst grains, maize, producing in some places three hundred fold, and sometimes two or three crops annually; wheat, barley, and rice. Potatoes, greens, and all other kinds of vegetables, are also abundant. Amongst fruits may be enumerated several species of plantains, apples, pine-apples, peaches, and apricots; whilst pears, melons, grapes, oranges, figs, cherries, pines, and a great many others little known in Europe, are everywhere to be met with. To these may be added, as productions of the country, bark, sarsaparilla, cinnamon, hellebore, coffee, ginger, cassia, tamarinds, aniseed, Brazil wood, indigo, cocoa, cochineal, vanilla, sugar, flax, tobacco, cotton of various species, pepper, sulphur, saltpetre, musk, and a multitude of other articles.

We shall now give a brief account of the different provinces. Guatimala is the central province, comprehending the great chain of volcanic mountains, and the slope downwards from them to the sea. Within these mountains is situated what is called the great valley of Guatimala, which consists properly of nine valleys. There is great variety of climate, and the productions of the country are found in the highest perfection. The city of Guatimala, the present capital of the republic, is situated in the midst of the plain of La Virgen, which is five leagues in diameter, and forms part of the valley of Mexico, one of the nine small valleys. The city lies in 14. 37. north latitude, and 90. 30. west longitude, and is ninety leagues from the Atlantic, twenty-six from the Pacific, and four hundred from the city of Mexico. The valley is very fertile, being watered by several streams; and the city is surrounded by numerous villages, which supply its markets with fruits and vegetables. The houses consist only of one storey, and occupy a great space of ground; so that, to the eye of a European, the city, when viewed from a distance, appears to be much more populous and extensive than it really is. It contains about sixty *manaznas*, or squares of houses, formed by the intersection of streets at right angles, which vary in extent from a hundred and fifty to three hundred and fifty yards in front; and these are arranged so as to form one large square. On each side of the city, as the suburbs have increased, other houses have been erected, without much regard to uniformity. The streets are broad, but ill paved; and sloping downwards from each side, they form a gutter in the middle. The market-place is a square extending about one hundred and fifty yards each way, with a fountain in the middle. Besides the daily market, there are numerous temporary stalls; and the square is surrounded by buildings, offices, and shops. The public edifices are numerous, consisting of a university with twelve professorships, five convents, four nunneries, a cathedral, four parish churches, and fifteen other churches or chapels of minor importance. There are also a treasury, mint, government offices, and a spacious prison. The style of architecture is in general good, and some of the buildings are handsomely decorated. The houses are well built and commodiously arranged, and there is generally attached to them a stone reservoir for containing water. The city is remarkably well supplied with water. From a spring in the mountains it is conducted by pipes into twelve public reservoirs, from which it is distributed to every private dwelling. There are here two public or endowed schools for boys, and the girls are taught in the convents; but the Guatimalans in general are very imperfectly educated. Literature is at a very low ebb, although there are various printing establishments, and several newspapers are published. The religious processions which take place here are very numerous, but they partake more of buffoonery than solemnity. Guatimala is situated at about five hundred feet above the ocean level, in a temperate and salubrious climate, being neither exposed to the intensity of a summer's sun, nor to the stormy blasts of winter. The average heat during the day is about 69 degrees in the shade; and throughout the year the thermometer scarcely varies. The scenery of the surrounding country is majestic and beautiful, and the soil is capable of producing all kinds of fruits and vegetables; but it is very much neglected. The cultivation of the cochineal insect has since 1821 been pushed to a great extent. Large plantations are situated in the neighbourhood of the city. Earthquakes sometimes occur; but they are not so destructive now, as, from the accounts of the early historians, we are led to believe that they previously were. The population has been estimated at about 35,000, consisting of European Spaniards, white Creoles, Mulattoes, and Indians.

La Antigua, or Old Guatimala, is situated some leagues nearer to the Pacific Ocean. It was formerly one of the handsomest cities in the new world, the seat of an archbishop, and the metropolis of the kingdom. Previously to 1773, it had been to a greater or less extent destroyed by earthquakes; and in that year seven successive shocks were experienced, upon which the governor issued a decree, commanding the citizens to quit their habitations, and remove farther from the volcanoes. This they were compelled to obey; and the government was accordingly transferred to New Guatimala. The old city remained in a deserted and ruinous condition for some time, until at length many of its former occupants resumed their old habitations; and again it has gradually become peopled, and partially rebuilt. It is still, however, far inferior in size and population to the new capital.

There are few other towns in Guatimala of sufficient importance to require a detailed description. The inhabitants of the province are employed, first, as carriers, in which capacity they supply all the other states; secondly, in the production of cochineal, a little indigo, about five hundred cargoes of cocoa, and some flour; and thirdly, in the manufacture of some coarse woollens, of which it is calculated a quantity equal in value to two hundred thousand dollars is furnished to the other states.

The province of Salvador, anciently called Cuscatlan, or the land of riches, is bounded on the south by the Pacific Ocean, on the north by Honduras, on the east by Nicaragua, and on the west by Guatimala. The natural productions of this province appear to be similar to those of Guatimala. It possesses mines of silver, iron, and other metals; and a considerable quantity of indigo is produced, in which consists the chief trade of Salvador. Sugar and cotton are also raised, and the inhabitants are principally employed in the cultivation of these, particularly the former article. San Salvador, the capital, was founded in 1528 by the Spaniards, who had conquered the country three years previously to that period. This city, which now ranks second in the republic, is situated in 13. 36. north latitude, and 89. 46. west longitude, at the distance of eight leagues from the Pacific Ocean. It is surrounded by hills and mountains covered with wood, and terminating on the north-east in a dormant volcano. The streets run in right angles, the houses are commodious, and the market is well supplied. It contains a population of about 16,000 inhabitants.

The province of Honduras stretches east and west on the shores of the Atlantic. It is bounded by the Bay of Honduras on the north, by Nicaragua on the south-east and east, by San Salvador on the south, and by the department of Chiquimula on the west. Its territory is for the most part rugged and mountainous, but rich in metals. The whole coast is flat, marshy, hot, and extremely unhealthy, although some parts of the interior rise into hilly and temperate tracts. In consequence of the unpropitious nature of the climate, this part of the country is thinly peopled. It abounds in thick forests, containing the most valuable mahogany and logwood trees. Comayagua, the capital of the province, is situated in a beautiful plain, in about 14. 50. north latitude, and 87. 46. west longitude, and is distant from Guatimala about a hundred and forty-four leagues. Truxillo, formerly the capital of a province, stands on an elevation of about thirty yards above the level of the sea, in latitude 15. 48. north, and longitude 86. west. This place is well fortified, but the population is small. Gracias a Dios, once a flourishing city, is situated about thirty-eight leagues from Comayagua, in latitude 14. 40. north, and longitude 88. 30. west. At present the population is small, and the city itself is in a state of great decay. The inhabitants of Honduras are principally employed in the rearing of about forty thousand head of cattle, introduced annually into San Salvador and Guatimala, and in the cultivation of tobacco.

The British settlement of Honduras, situated in the province of Merida or Yucutan, belonging to Mexico, is uniformly, in works upon geography, described along with Guatimala; but as it is now beyond the limits of that republic, an account of it will be given under the head of Honduras.

The province of Nicaragua is bounded on the north by Honduras, on the east by the Atlantic, on the south by Costa Rica and the Pacific Ocean, and on the west by Tegucigalpa, a department of Honduras. From west to east it extends eighty-five leagues, and from north to south about seventy-five. The chain of the volcanic Andes here terminates, and the territory is in general low and moist. It is rich in all the tropical fruits, but those peculiar to a temperate zone are not to be met with. Here there are vast savannahs, covered with herds of cattle, some of which are sent to the city of Guatimala. Leon, or San Leon de Nicaragua, is situated in latitude 12. 20. north, and long. 86. 16. west. It is four leagues from the Pacific, and a hundred and eighty-three from Guatimala. Previously to the revolution, it was one of the most beautiful cities of the kingdom, and was rapidly advancing in prosperity when political animosities split the inhabitants into parties; but the city was torn to pieces by the factions, and for a time nearly deserted. Nicaragua is not very large, but occupies an advantageous position on the north-western shore. It contains about 7000 inhabitants, of whom about 1000 are Spaniards, with a college, which, in 1812, was converted into a university. Mazaya, a village containing about 6000 inhabitants, almost entirely Indian, is said to be the most trading place in the province, though inconveniently situated at the bottom of a deep rocky dell, which is almost destitute of water. The inhabitants of this province are chiefly employed in the breeding of cattle, and in raising cocoa.

Costa Rica, or Rich Coast, notwithstanding its name, is the poorest and most destitute of all the provinces. It extends an hundred and sixty leagues from west to east, and about sixty leagues from north to south. Its climate is warm but healthy, and its population very widely scattered. It has however mines of gold and silver, once said to have been rich, but now unproductive. Cartago, the ancient capital, is situated in about 9. 10. north latitude, and 82. 46. west longitude, four hundred leagues east-south-east from Guatimala, thirty leagues from the Atlantic, and thirty from the Pacific. San José, to which the seat of government was transferred about the time of the revolution, has about the same amount of population. There is little trade except in mahogany and cedar, which is shipped from Peru, the inhabitants of this province raising little more of any article than is necessarily consumed within itself. The growth of maize, and the manufacture of panelas (small loaves of unrefined sugar prepared from the cane), are common to all the states.

To the east and south-east of the province of Honduras lies a tract of country called Poyais and the Mosquito shore. It consists of a vast and savage forest, beat by the burning rays of the sun, and occupied by a race of Indians, who consider themselves as under the protection of Britain, although the British government claims no territory in this part of the country. The Mosquito-men possess great muscular strength. Tall and erect, and little encumbered with clothing, with vacant countenances, and long greasy hair, they present a wild and savage appearance, and afford fine specimens of the powerful barbarian. Poyais is memorable on account of the unhappy issue of an attempt made by some Englishmen to form a settlement in this quarter, whither they had been led by the promises and representations of an adventurer, called, or calling himself, a cacique.

With regard to agriculture and commerce, Guatimala is still very far behind, considering her natural resources. One great drawback to improvement in this respect is, the great expense attending the transport of goods by land, and the want of proper ports upon the coast. On the Pacific, the only ports frequented are Conchagua, situated a few leagues from San Salvador, which possesses an excellent harbour; and Acajutla, an unsheltered bay, five leagues from Sonzonate, which is used as the port of Guatimala. From this place it is fifty-five leagues distant, and the road lies over a rough and mountainous tract of country. Another point, however, has been fixed upon as an eligible spot for a harbour. It has been called the Port of Independencia; and, as it is situated nearer to the capital, and the road lying between the two places is better than the other, it affords every convenience and advantage for carrying on an extensive traffic in the Pacific Ocean. For some years previously to the revolution, the commerce was retrograding; but since that event occurred, it has certainly improved. The most important production of the country is indigo, which is celebrated for its excellence. Of the exact quantity raised no idea can be formed. The cultivation of cochineal has rapidly increased. In 1826, or about five years after its introduction, the harvest was estimated at ninety thousand pounds. Considerable quantities of tobacco and cotton are also raised; and sugar and cocoa are likewise cultivated, but little coffee is grown. There are some manufactures in the country; but articles of wearing apparel, and those for domestic use, are principally imported from Europe. The only remaining source of national wealth is the mines. Since the revolution some very exaggerated statements have been published as to the mineral wealth of Guatimala, and several of the mines are in the hands of companies, who are attempting to work them; but, by all accounts, the speculation will not be so profitable as was anticipated, the working of the mines being expensive. Of the amount of foreign goods imported into Guatimala only a rude guess can be formed. It has been estimated at about two millions of dollars, whilst the quantity of produce exported does not amount to two thirds of that sum. The exports consist chiefly of cochineal, indigo, cocoa, cotton, hides, and drugs. The imports are principally made by the ports of Omoa and Yzabal. The former, which is about an hundred leagues distant from Guatimala, is the principal depôt for goods from the Havannah and the peninsula, with which some small trade is carried on; and the latter for British merchandise from Belize, in the British territory of Honduras. The goods are transported from one place to another by means of mules, which are rather scarce in the country. By the parliamentary papers for 1831, it appears that during that year the official value of the imports from Guatimala into Great Britain amounted to L.8065. 4s. 6d.

Notwithstanding all its advantages, the chief of which is the variety of its productions, it is much to be doubted whether Guatimala will ever attain to any very high pitch of prosperity as a nation. Indeed this will be nearly impossible, until the present inhabitants, who have little enterprise, and are very indolent, shall have their moral character elevated by a large infusion of European intellect and industry. It would seem that at present the very advantages which Guatimala possesses were the means of retarding its improvement. For, in countries where the soil is so rich and the climate so propitious as to produce spontaneously almost all the necessaries of life, which, to a considerable extent, can be appropriated at pleasure by the natives, there is an inducement held out to indolence which cannot well be resisted, especially by a population at least two fifths of whom are of a low order of intellect; individuals who are sufficiently satisfied with such articles as are necessary for their own subsistence, with-

Guatimala.

out having any regard to personal aggrandisement or extension of individual power. Guatimala contains about one million and a half of inhabitants, who are mixed in the following proportions, according to the authorities of Humboldt and Thomson:[1]

	Thomson.	Humboldt.
Whites and Creoles	20 per cent	20 per cent.
Mixed classes	40 per cent	28 per cent.
Indians	40 per cent	52 per cent.

A society consisting of four different classes, which are not only distinct from one another, but which present nearly opposite characteristics, can scarcely be supposed ever to become firmly knit together so as to constitute a strong political body. Speaking generally, the strength of states results from the union of the people; and union arises from congeniality of feeling, identity of interests, similarity of habits and tastes, and such an equality of moral character as is usually met with amongst the individual races of mankind. But in Guatimala, the Europeans, proud of their Castillian blood, look with contempt upon the natives, whom they place far below them in intelligence, which the latter have no alternative but to acknowledge, though at the same time they accuse the Spanish nation of being the cause of all he evils which have distracted the country. The Europeans are chiefly composed of individuals who left their own country young, and by their talents and industry acquired wealth in Guatimala. The leading Americans, or white Creoles, are descendants of the Spaniards, who at an earlier period acquired fortunes in the same place. The latter are again divided into two parties, the liberals, and the serviles or noblesse as they call themselves, both differing widely in feeling and in sentiment. The next class is the mulatto or mixed race, which forms as it were the physical force of the nation; for whilst they would seem to equal or nearly equal the Indians in numbers, they possess an energy and cunning, a sort of rude intelligence, to which the latter have no pretensions. This mixed people are always impressed into the service of either of the two former classes during civil dissensions. The last class, or aboriginal Indians, are the lowest of all in every respect; but they in some measure assist in balancing the other powers, for they thoroughly hate the mixed race. The greater proportion of the Indians live in villages built after the Spanish manner, and employ themselves variously in raising maize and vegetables, manufacturing mats and baskets, or as porters and carriers; a second portion live on farms, where they are regularly employed; and both these classes are governed by officers chosen from amongst themselves. There are other two classes, the Indians composing which either live in huts or long straggling villages, or form, like the Lazzaroni of Italy, a sort of half mendicant race, lounging in idleness during the day, and sleeping at night under the piazzas of the squares. The Indians have been known at times to display considerable hardihood and daring, but they are generally characterised by pusillanimity. This, however, only applies to the interior Indians; the unsubdued Mosquito-men are remarkable for their reckless valour and invincible energy. The Indian of Guatimala, although incapable of violent effort, can endure considerable fatigue. Of his capacity for improvement by superior education, little can be said with certainty, as the experiment does not seem to have been made upon a scale ample enough to entitle us to form a correct judgment upon the subject. Some of those who have been admitted into convents have displayed ability; and others in whom talent was apparent, have been educated at the university, where they displayed some quickness of apprehension; but after a few years, they became addicted to intoxication, and relapsed into their original barbarism. The Indians excel in the imitative arts, and mould waxen figures with taste, ingenuity, and correctness to nature. The only dress of the men consists of a cincture made of *pita* (the fibres of a plant, which, when twisted, resemble the thread made of hemp); and the women wear merely a light cotton dress from the middle downwards. The houses are nearly destitute of furniture; a mat spread on the floor, or at best a small hammock, serves for a bed. Their food consists chiefly of maize variously prepared. Thus, with his hut and his native corn, the Indian passes his days in indolence, alike ignorant of intellectual enjoyment and the luxuries and refinements of civilized life. (R. R. R.)

Guayaquil
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Guben.

GUAYAQUIL, an important department of that portion of the South American continent which until recently was designated Colombia; but since the separation of that republic into three different states, Guayaquil, it is presumed, belongs now to that part of Colombia which has resumed the name of New Grenada. It extends along the shores of the Pacific Ocean for about 200 miles, but having a very irregular figure, and being separated into two parts by an arm of the sea. The breadth cannot be determined with any degree of accuracy; it does not however exceed sixty or seventy miles. The country is very fertile, particularly in cocoa, for which there has always been a demand equal to the supply. This has been estimated at 600,000 fanegas, of three bushels each, which sells sometimes at seven dollars per fanega. There are also large plantations of tobacco; timber and salt are exported in vast quantities; and in the savannahs are reared great numbers of horned cattle, mules, and horses, which are driven into the interior. The capital of this department, which bears the same name, is situated on the Bay of Guayaquil, in longitude 79. 41. 15. west, and latitude 2. 11. 30. south. It was founded by Pizarro in 1533, and is now one of the most flourishing cities in South America. The houses are irregularly but picturesquely scattered along the sides and top of a hill. They are commodious and handsome, but the public edifices are destitute of any degree of splendour. The dockyard is of very considerable extent, and vessels of great size have been built here. The fruit of this place is remarkably fine; the plantain in particular is highly relished; but animal food is of inferior quality. Guayaquil is infested with insects and reptiles of a very annoying and even dangerous description. Mosquitoes and other flies, whose bite is most tormenting, abound in the atmosphere; whilst the ground is covered with snakes, centipedes, and other filthy reptiles. The ants are so numerous, that often when articles of diet served up at table are cut open, thousands of these animals are seen making their escape in all directions, leaving the interior a complete vacuity. Alligators and caymans swarm on the coast, and so great is their fecundity, that no exertion can limit or reduce their numbers. Guayaquil contains about 20,000 inhabitants. (R. R. R.)

GUAYRA, a district of the province of La Plata, in South America, having Brazil on the east, and Paraguay on the west.

GUBBIO, or EUGUBIO, a town of the delegation of Urbino, in the papal dominions, in Italy, at the foot of the Apennines, containing 4000 inhabitants, who conduct manufactories of woollen and silk, and of wax bleaching.

GUBEN, a city of Prussia, the capital of the circle of the same name, in the province of Frankfort. It stands on the river Neisse, which is navigable to the Oder, is surrounded with walls, and contains 850 houses, and 7960 inhabitants, who carry on various manufactures in woollen and linen goods, and other commodities. Long. 12. 40. E. Lat. 51. 58. N.

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[1] Thomson's *Narrative of an Official Visit to Guatimala.*

GUBI, a town of Hindustan, in the rajah of Mysore's territories. It is a mean looking place, and dirty; but it carries on a considerable trade, and many of the inhabitants are prosperous. Here is held one of the greatest weekly fairs in the country. It is said to have been founded 400 years ago, by the Polygars, who were entirely dispossessed by Tippoo, but, on his overthrow, returned to their original profession of cultivators. Long. 77. 10. E. Lat. 13. 7. N.

GUDARAH, a district of Hindustan, in the Gujerat province, situated about the 23d degree of north latitude. It is mountainous and woody. The principal towns are Gundarah and Lunawara. The chief river is the Mahy.

GUDGEON, a species of cyprinus. See Ichthyology.

GUEBRES, or Gabres. See Gabres.

GUELPHS, or Guelfs, a celebrated faction in Italy, antagonists of the Ghibelins. See Ghibelins.

The Guelphs and Ghibelins filled Italy with blood and carnage for many years. The Guelphs stood for the pope, against the emperor; the Ghibelins for the emperor against the pope. The rise of the Guelphs is referred by some to the time of Conrad III. in the twelfth century; by others to that of Frederick II.; and by others, again, to that of his successor Frederick II. in the thirteenth century. The name of *Guelph* is commonly said to have been formed from *Welfe*, or *Welfo*. The Emperor Conrad III. having taken the duchy of Bavaria from Welfe VI., brother of Henry duke of Bavaria, Welfe, assisted by the forces of Roger king of Sicily, made war on Conrad, and thus gave birth to the faction of the Guelphs. But some derive the name *Guelfs* from the German *Wolff*, on account of the grievous evils committed by that cruel faction; and others deduce it from the name of a German called *Guelfe*, who lived at Pistoye, adding, that his brother, named *Gibel* or *Ghibel*, gave his name to the Ghibelins.

GUERANDE, a city of France, in the department of the Lower Seine, and, next to Nantes, the largest of the department. It is situated on the sea-shore, on the declivity of a hill covered with vineyards, is surrounded with fortifications, and contains 7250 inhabitants, who carry on manufactures of linen and of cotton. Near to it are salt marshes, from which a supply of 15,000 tons of salt is annually made by natural evaporation. Long. 2. 31. 31. W. Lat. 47. 19. 39. N.

GUERCINO. See Barbieri.

GUERICKE, Otto, or Otho, a German philosopher of considerable eminence, was born in 1602, and died at Hamburg in 1686. In conjunction with Torricelli, Pascal, and Boyle, he contributed much towards the explanation of the properties of air. He was counsellor to the elector of Brandenburg, and burgomaster of Magdeburg; but his greatest celebrity was derived from his philosophical discoveries, and in particular from the invention of the air-pump. Much about the same time Mr Boyle indeed made approaches towards the discovery of this instrument, but with that candour which is ever the characteristic of great and enlightened minds, he confessed that the merit of it belonged exclusively to Guericke, the accounts of whose experiments first enabled him to bring his design to any thing like maturity. Our author has also the merit of inventing the two brass hemispheres, by which the pressure of the air is illustrated; and an instrument for determining the changes in the state of the atmosphere, which fell into disuse on the invention of the barometer. By consulting his tube he predicted approaching storms, on which account he was deemed a sorcerer by the multitude. It is worthy of observation, that when his brass hemispheres were applied to each other, and the air exhausted, it resisted the efforts of sixteen horses to draw them asunder. He composed several treatises in natural philosophy, the principal of which is entitled *Experimenta Magdeburgica*, 1672, folio, which contains his experiments on a vacuum.

GUERNSEY, an island belonging to Great Britain, on the coast of France, being only twenty-five miles from Cape La Hogue, and thirty-five from Cherbourg, whereas it is nearly sixty from Portland, the nearest point in England, and 104 from Southampton, whence the packets usually sail. The south side of the island is hilly, but it gradually descends in proceeding north. The rivulets are numerous, and as snow seldom remains, there is a constant verdant face on the land. Forest trees are rather scarce, but those bearing fruit are numerous and prolific, especially the fig and apple-trees, from the last of which more cider is obtained than the inhabitants consume. Agriculture is not pursued with much skill, but, from the mildness of the climate, and the natural fertility of the soil, enough of wheat and potatoes is raised to supply food to the inhabitants, and all the culinary vegetables are afforded in abundance. There are scarcely any sheep kept in the island; and the cows, though a valuable race for the quantity of milk they yield, are not numerous, so that beef and mutton, and also poultry, are imported from England or France. Many pigs are reared and fattened till they attain a large size, and the bacon made from them forms an important article in the food of the inhabitants. The shores abound with every variety of fish, especially mackerel and whitings.

The commerce of this island consisted chiefly in smuggling French and other spirits, with tea and tobacco, along the coast of England; but the establishment of a custom-house has driven that kind of business into other channels. In time of war, but especially during the American revolutionary war, a great number of privateers were fitted out, and many fortunes made by such adventures. Since that time, great attention has been paid to the Newfoundland fishery, and many hands and much capital have found employment in that branch of commerce. One fourth of the male inhabitants are said to be accustomed to nautical pursuits, and they are generally daring and active seamen. The cluster of islands of which Guernsey forms one, have such rapid currents among them, varying with each change of tide, and are so beset with shoals and rocks, that whoever is accustomed to sail amongst them necessarily acquires a degree of active expertness which is not obtained in less perilous navigations. The inhabitants are for the most part of the Norman race. They speak the French language of an antique dialect, mixed with a number of English words, and are with difficulty understood by the modern natives of either England or France. Amongst the higher classes English is commonly spoken, but with some foreign accentuation. The fashions, articles of furniture, and implements of husbandry, are more French than English. The laws are those of ancient Normandy. Their established religion is that of England, and the ecclesiastical affairs are under the Bishop of Winchester; but there are places of worship for various sects of dissenters. The island is divided into ten parishes, with a church for each, all evidently built before the Reformation. The chief town is St Pierre or St Peter's, containing upwards of 10,000 inhabitants. It has a good harbour, formed artificially by a long pier, and there is a tolerable roadstead near the village of St Martin. The island is about nine miles in length and six in breadth, and extends over ninety-four square miles, or about 60,000 English acres. The population is very dense, having been in 1811, 21,293, in 1821, 20,827, and in 1831, 26,128, of which upwards of 2000 were sailors and strangers. It is between latitude 49. 22. and 49. 33. N., and between longitude 2. 38. and 2. 46. W.

GUETARIA, a town of Spain, in lat. 43. 18. 30. N., in the province of Guipuscoa, with a port in the Bay of Biscay. It is remarkable as the birthplace of a celebrated navigator, Don Juan Sebastian del Cano, whose statue is in the principal square. It contains 300 families.

GUGAH, a town of Hindustan, in the province of Sinde, and district of Tatta. It stands on a hill, and is bounded on two sides by a rivulet. In the surrounding country there are some large trees, and the soil is remarkably fertile. The town has not much trade, but is well supplied with provisions. The country is low, and so intersected by branches of the Indus that it is flooded at particular seasons of the year. Long. 68. 7. E. Lat. 24. 45. N.

GUIANA, or GUYANA, a large district of South America, in which the British, the Dutch, and the French, have considerable settlements. This name was formerly given to the whole of that vast tract of country which lies between the great rivers Orinoco and Amazons, but the extent of the country distinguished by the name of Guiana is now circumscribed to the land lying between the river Essequibo, which separates it from Colombia on the west, and the river Carapury, which divides it from Brazil on the east. It is bounded on the north by the Atlantic Ocean, and on the south by Brazil, being about 600 miles in length, and having an average breadth of about 250 miles. The settlements, however, do not extend nearly so far inland. Those belonging to Great Britain, viz. Berbice, Demerara, and Essequibo, have been described under these heads.

Dutch Guiana, or Surinam, is the settlement situated in the middle of Guiana, being bounded by Cayenne on the east, by British Guiana on the west, by the Atlantic Ocean on the north, and by Brazil on the south. It comprehends a tract of country of about 25,000 square miles, across the northern half of which runs the fifth parallel of north latitude; whilst the meridian line, which indicates the fifty-fifth degree of west longitude, traverses the eastern half. Like the rest of Guiana, this coast is flat and alluvial, and is traversed by several broad rivers, which come from a considerable distance in the interior. The Surinam is a large and beautiful stream, having a channel about four miles wide; but it is shallow and rocky, and can only be navigated by boats. The general aspect of Dutch Guiana has been said in some respects to resemble that of Holland and Lower Holstein. It presents a vast plain covered with plantations and enamelled with verdure, bounded on one side by a dark ridge of impenetrable forests, and washed on the other by the azure billows of the ocean. The country thus lying between the sea and the desert is irrigated by numerous streams, confined by dykes, and separated from each other by excellent roads or navigable canals. A number of small buildings are attached to each habitation, giving it the appearance of a small village; and the natural beauties of the country form a striking contrast with its rich cultivation. The Dutch have laboured most industriously to improve it, and it is daily rising in importance. Parmaribo, the principal, indeed the only town, is built on the right side of the river Surinam, at its mouth, where it affords excellent anchorage for vessels. The streets are lined with rows of fruit trees, and the walks are covered with fine gravel and sea-shells. The houses are fitted up with considerable splendour, the rooms being in general wainscotted with cedar, Brazilian, or mahogany wood. The productions of this settlement, and the objects of natural history which it presents, being similar to those already described under the heads BERBICE and DEMERARA, and in the account which follows of Cayenne, it is not necessary to describe them here. The amount of the population has been estimated at about 60,000, the greater part of which consists of men of colour. The value of the exports is calculated at more than L.1,000,000.

The French settlement of Cayenne extends along the coast from the river Maroni, which separates it from Dutch Guiana, to the river Carapury, which divides it from Brazil. This boundary, however, has been much disputed, and the Brazilians persist in occupying the country as far as the river Oyapock, which limits the extent of the French territory on the coast to about 150 miles. By the treaty of Amiens the French boundary had been extended to the river Arowari; but when the government of Portugal was established in Brazil, a small force detached from thence seized the province; and though, by the late treaties, it is restored to France, the boundary has been considerably contracted towards the south. The few settlements in the province are at the mouths of the rivers which water it, and produce its fertility. These rivers, like those of the English and Dutch settlements, have but short courses, their sources being in that range of mountains which runs parallel to the coast, about 150 miles distant, in a region which is denominated the country of the Caribb Indians, and which has not been penetrated by any European. The two rivers which now bound Cayenne have their sources in the Cordilleras, farther from the coast than the country of the Caribbs; they have therefore much longer courses, and discharge into the ocean much more copious waters than are contributed by those rivers which run through the French settlements.

The island of Cayenne, on which the capital is built, extends about eleven miles from east to west, and eighteen from north to south; it is separated from the main by a small river, which is fordable at low water, but at flood-tide is navigable by boats. The city is built on the north-west extremity of the island, at the mouth of a river of the same name. It is strongly fortified, and a hill within the enclosure commands the whole town and the anchorage of the shipping. It is situated in north latitude 4. 56., and west longitude 52. 15. from London. Both divisions of the town are ill built and badly paved; the streets in the new part are wider, and the houses larger, than in the old one, but neither is equal to the generality of even tropical towns in beauty and cleanliness. With the exception of the officers of government, very few of the inhabitants are of the unmixed white race, but are either mulattoes, quaderoons, sambos, or negro slaves. Debauchery, indolence, and knavery, are the characteristics of the greater part of the people of this city.

This colony was first settled in the year 1550, by the celebrated Admiral de Coligny, who, during the civil wars of France, wished to make it an asylum where the Protestants, if unsuccessful, might retire, to follow, in security, their worship and opinions. The course of events in Europe, after the return of Coligny, was such as to prevent the colony from being long an object of attention, and the few settlers were neglected by the government of France for nearly two centuries. In the mean time neither the settlers nor the negro slaves increased much, and the few descendants of the original Europeans were so incorporated, by successive intermixtures with the coloured inhabitants, that the difference of their race was with difficulty discoverable by their complexions. The colony of Canada engrossed so large a portion of the regard of the French court, that the establishment at Cayenne was only kept from sinking by the accession of a few isolated settlers, who occasionally fixed themselves there, as a last and desperate resource.

But when, by the loss of Canada, the other colonial settlements became of more value, an effort was made, upon a grand scale, to increase the population and promote the cultivation of Guiana. Under the administration of Choiseul, a fleet was equipped, which conveyed to Cayenne 15,000 persons. Few of them possessed property, few of them were handicraftsmen or labourers, and of those still fewer were disposed to work, supposing the climate would have enabled Europeans to labour. The settlers were soon visited with the dreadful fevers of the tropics, and those who had the means of returning to Europe abandoned the country with the utmost precipitation. In the year 1763, the number who landed was 13,060. Of these, 2000 quitted it either for France, Canada, or the West India islands; about 100 enlisted in the colonial battalion; and, at the end of the year 1765, there were only in the colony 430 persons left of the expedition; so that more than 10,000 must have perished in the first two years. The expense of this equipment is supposed to have amounted to thirty-three millions of livres, the whole of which, including a vast number of human beings, was sacrificed to a plan in which the splendid rather than the useful was considered, though it was sketched by the celebrated Turgot, and some other of the eminent economists of France.

From the period of this disastrous attempt, the colony continued to languish till the American war broke out, when the predatory cruisers, both French and Americans, carried in several valuable prizes. Many negro slaves were by these captures conveyed to the settlement, and this enabled the planters to extend their cultivation; so that, at the peace of 1783, the colony was in a more thriving condition than it had been at any former period, and it continued to increase in prosperity. The revolution of France extended its calamities to this colony at a very early stage of its progress. As the rumour of the intention to emancipate the negroes reached Cayenne, before the decree had passed in the Convention, the richer proprietors, frightened by the menaces of the slaves, fled from the colony; and the popular assembly, consisting principally of men of colour, proclaimed them emigrants, and decreed the forfeiture of their estates. When the decree was received and promulgated at Cayenne, the blacks supposed that their labour was at an end, and that, on the principles of equality, the whites, in their turn, should now be compelled to work for the majority. The whites from the various plantations fled for security to the capital, where the troops were so factious that they could scarcely obtain protection. The miserable slaves in the plantations soon found this boon of freedom to be the severest punishment which could have been inflicted. Cultivation became neglected; provisions in consequence grew scarce; and a short period produced a want of even the commonest aliments. Regulations for fixing the prices of labour were in vain established, for those who could pay their labourers had fled from the country. Though modifications of this decree were afterwards made, they failed to restore the former abundance of provisions, and, during the whole period of the war, scarcity continued to be experienced. During the agitations in France, several of the leaders of the unsuccessful factions were banished to this colony by the decrees of their triumphant opponents. But they were not a class of men who were likely to benefit the settlement, and many of them died from the effects of the climate, many from chagrin, and the few survivors who returned to Europe had experienced the most severe and mortifying hardships. As the military force had been neglected, the small body stationed at Cayenne very readily submitted to the Portuguese armament. When it was restored to the king of France, the number of white inhabitants did not exceed 1300, whilst the black and mixed races, including those of Indian origin, amounted together to between 10,000 and 11,000. Many negroes have since been introduced, both from Africa and the other French settlements; and by the last census, 1829, the total population is stated at 22,684.

The climate and seasons in Cayenne are so nearly similar to those in Demerara as to render any notice of them superfluous; but as the country is much less cleared of underwood, and as very little draining has been practised, it is far more unhealthy than any of the British or Dutch settlements on the same coast. That the climate is totally unfit for European labourers was demonstrated in 1794. When the decree for giving freedom to the negroes was promulgated, the soldiers of the regiment of Alsace, then stationed in the province, were induced, by high wages, to work in the plantations; but at the end of a month one half of the regiment had died, and the remainder were so ill as to be incapable of any duty.

From the scanty population of Cayenne, it is evident that its productions must be of inconsiderable magnitude; but the experiments which have been made sufficiently show that its capabilities are equal to those of the best soils in the tropical climate. The sugar-cane was, from the first, cultivated with success; but the production of that plant was vastly improved by the introduction of the canes of Otaheite, which the celebrated Bougainville brought from the southern hemisphere; and its sugar is now equal to that of Dutch Guiana or Demerara. A spirit called by the French taffia, an inferior kind of rum, is distilled from the canes. The coffee of Cayenne is inferior to that of Dutch Guiana; none of the plantations in it are extensive; and it is remarked that the trees degenerate when planted in the lower grounds. The cocoa plant is a native of Cayenne, and grows spontaneously on the borders of the Oyapock. Wild indigo grows in great quantities, and the dye that has been obtained from it is equal in quality to that which is extracted from the cultivated plant of the same species. This induced the French government to promote the production of that commodity in the soil which nature indicated to be well adapted for it. The first results were in almost every instance flattering, but the plant soon degenerated, and most of the indigo plantations, like those of St Domingo, were converted into sugar estates, but not till the proprietors had suffered very heavy losses. Cotton grows very luxuriantly, though not a native plant; or, if it be, the species varies from that now cultivated, which was brought from Guadaloupe when the ruinous project of colonization was attempted in 1763. This plant yields two crops in the year; the second, called by the planters *la petite recolte*, in the month of March, is frequently destroyed by a species of caterpillar which covers the trees after a shower of rain. All the fruits peculiar to warm climates are most abundant in Cayenne, and attempts have been repeatedly made to introduce the clove and the cinnamon trees, with the other plants of the East Indies. The seeds of the clove were distributed profusely by the government, which also encouraged the cultivation of the bread-fruit, the mango, and the sago.

The exportable article of greatest amount which Cayenne has lately furnished to Europe, is the rocou, or roucou, better known in England by the name of annotta, and which is extensively used as a dye, principally, however, for silks. The tree which yields this substance (*Bixa Orellana*) grows from twelve to fifteen feet in height, is very bushy, and bears a flower of a pale pink, resembling in shape and colour the dog-rose. The fruit contains a pulpy substance, intermixed with the seeds, of a very glutinous nature, which, by frequent washings and filterings, is separated from them. It is then suffered to ferment during eight or nine days, when it is placed in a vessel capable of bearing heat, over a fire, and as soon as it forms bubbles on the surface, the fire is withdrawn, and it is suffered to cool. The more gradually it cools, the better the substance becomes. That which is dried in the shade is much more valuable than that dried by the heat of the sun. When it is macerated in small quantities, it is black and of little value; and it is only of the best quality when the whole that is made at one time is a very great mass. Its purity is ascertained by the whole dissolving in water, without leaving behind it any extraneous substances. When in the state of a soft paste, it is moulded into the form of small cakes, and enclosed in the leaves of the *Canna Indica angustifolia*, and thus packed for its market. The whole process of preparing this drug is most prejudicial to the health and comfort of the labourers. The smell is offensive beyond the powers of description; and during the preparation the workmen are afflicted with a constant nausea, and most violent headach. Its offensive smell, however, gradually subsides, and, by the time it reaches Europe, is changed into an agreeable flavour, resembling that of the violet. On the continent of Europe this commodity is extensively used in the dyeing of various kinds of clothing; but in England it is almost exclusively applied as the colouring matter of cheese, to which purpose it is well adapted, being nearly tasteless, and perfectly harmless. The pepper to which this settlement has given a name, though produced every where in the tropics, was first sent to Europe from hence. It is the pod of a species of capsicum, gathered when ripe, and dried in the sun; it is then, with a little flour and some salt, made into a kind of paste, and baked to a biscuit. When perfectly dry and cold, the pepper is made by rasping them upon a grater. Some cassia and a small quantity of vanilla have been produced here for exportation. As no wheat is grown, the dependence of the inhabitants for flour rests on the United States of North America; but maize, cassava, and rice, are cultivated to a sufficient extent to supply food to the lower orders of the coloured inhabitants. The French seem to have exceeded other nations in the success of their efforts to conciliate the aborigines; and a much larger proportion of the natives have been reclaimed, and induced to labour on their plantations, than in either the Dutch or English settlements on the coast of Guiana. Though the soil of Guiana may be as prolific as that of Demerara or Dutch Guiana, yet its future products can scarcely be so great as those colonies. The coast is low, and dangerous to approach, on account of the great number of shoals and sand-banks which border it; and the only good navigable river on the whole line is that on which the capital is built. In the prevalence of fogs, in the humidity of the atmosphere, and in the uniform high temperature of the air, Cayenne is assimilated to the rest of Guiana.[1]

The real value of the goods imported from Cayenne into France in the year 1831 amounted to 2,442,158 francs; and the exports from France to Cayenne to 1,736,792. The products of Cayenne imported into France, and entered for consumption, with the duties charged on their introduction in 1831, are as follow (the quantities are estimated by the kilogramme, which is equal to 2·2 lbs. avoirdupois: Sugars of all kinds, 1,432,075 kilogrammes; coffee, 42,426 ditto; cacao, 22 ditto; cotton, 169,520 ditto; cloves and spices, 18,112 ditto; annotta, 82,122 ditto; wood of all kinds, 68,729 ditto; custom duties, 851,408 francs.

That portion of Guiana which formerly belonged to Portugal has been incorporated with Brazil, in the description of which country it has been included. Spanish Guiana now constitutes a province of Colombia, under which head an account of it will be found.

GUIBERT, Jacques-Antoine-Hippolite, Count de, a well-known writer on tactics, was born at Montauban, on the 12th of November 1743. Before he had completed his fourteenth year, he accompanied to Germany his father, who acted as major-general to the army commanded by Marshal de Broglie, and he served, either as captain in the regiment of Auvergne, or as an employé in the staff, during the six campaigns of the war of 1756. At an age when little could be expected but the ardent valour which is natural to that period of life, he attracted notice by the superiority of his dispositions and the justness of his observations; and from the experience he then acquired, he was enabled to lay the foundation of the theory to which he was afterwards indebted for his reputation as a military writer. During the interval between this war and that of Corsica, he devoted the whole of his time to that species of study for which he felt an increasing predilection. At the conclusion of the combat of Ponte-Nuovo, which secured to France the conquest of the island of Corsica, he received the cross of St Louis, and shortly afterwards a colonel's commission, although as yet he was not more than twenty-four years of age. He also displayed great zeal in raising and training the Corsican legion, of which he was appointed colonel-commandant in 1772. The year following he published his *Essai Général de Tactique.* But not wishing to abide, in his own country, the explosion which such a work was calculated to produce, he set out for Germany, which opened to him a vast field of instruction, and repaired to Prussia, whither a species of celebrity had preceded him. Here, however, he had considerable difficulties to encounter. It was, above all, necessary to overcome certain prepossessions of Frederick, who judged severely the theoretical attainments and views of the young tactician, and who besides was not by any means satisfied with what Guibert had published in his book on the subject of the Prussians. With this view he addressed a letter, in explanation and in defence, to the Prussian monarch, who was so well pleased with the composition that he received the writer with particular distinction. Ever since the year 1772, Guibert had conceived the design of also entering on the career of literature; and, from year to year, after his return from Prussia, compositions of his, either in the shape of tragedies, or of panegyrics on the great men of France, procured him much reputation in the saloons, where they were generally read by the author. An ardent and enthusiastic temperament; considerable talent, with not a little of pretension; great facility and an astonishing memory; an anxiety to occupy the attention of the public, and "march to glory by every road;" sincerity and hardihood; elevation of sentiment, and a desire to promote the general good; these, united with an active and craving ambition, formed the principal elements in the character of Guibert. He mistook for genius the gifts which he had received from nature, and persuaded himself that he not only could, but should undertake every thing. Laharpe, who appears to have disliked him, alleges that he contemplated nothing less than *à remplacer Turenne, Corneille, et Bossuet;* but little importance is to be attached to those sallies of enthusiasm, under the immediate influence of which he may perhaps have said and even believed, that a single individual might, in our time, be at once a Turenne, a Corneille, and a Bossuet. Guibert was recalled to his original occupation, by the appointment of the Count de Saint-Germain to the department of war; and having been honoured with the confidence of that minister, he had the rare merit of not abandoning him in his disgrace. In 1776 he was made colonel-commandant of the regiment of Neustrie; in 1782, brigadier-general; in 1788, *maréchal-de-camp,* or major-general; and next inspector of infantry in the province of Artois. When his father was appointed governor of the Hôtel des Invalides, he did all in his power to second him in his administration, and spared neither pains nor travel to extend to all parts of France the succours and consolations due to the veteran or disabled defenders of the state. In 1787 he was appointed member and reporter of the council of administration in the department of war. But as Guibert, in the discharge of his functions, combined his own peculiar ideas with those which the deliberations of the council rendered common, the whole appeared to emanate from the reporter, whose proper duty it was merely to give expression to the views of the council; and it was consequently against him that all the complaints and accusations of the discontented were directed. People judged without any indulgence the imperfection of the work and its results; the faults of the moment rendered them blind to the advantages which might afterwards be expected; and at length the projects and their author became involved in the same proscription. In a memoir addressed to the public and to the army on the operations of the council of war, Guibert undertook to prove, that, like the other members, he had only his opinion and his voice in the council; and that consequently he did not deserve the abuse and animadversion of which he had been made the sole object. But his reclamation seems to have convinced few, and to have silenced none of the malcontents; and the unlucky organ of the council continued as before to bear the opprobrium of all its unpopular acts. We have already seen that no species of ambition was foreign to Guibert; but in him, nevertheless, ambition was blended with the desire of doing good, and being useful to his country. Accordingly, in 1789, he aspired to become a member of the states-general of the kingdom, and thereby prepared for himself the bitterest mortification which he had ever yet experienced. His pretensions, both as a military man and a writer, had provoked censure, and even excited hostility. He was accused of having attempted to subject officers to imprisonment in irons; proposed to introduce the cane as an instrument for chastising the common soldiers; and recommended the detestable barbarity of hamstringing deserters. Guibert replied by a most formal denial of these imputations, which he declared to be atrocious falsehoods, as, we have no doubt, they were. But his disclamation met with no credit; and in the assembly of the bailliage of Bourges, the people went so far as to refuse him a hearing. Forced to retire, he printed, under the title of *Précis de ce qui s'est passé à mon égard à l'Assemblée du Berri*, a defence which, however, failed to excite the interest he had fondly hoped it would inspire. Whilst matters were in this state, the Count de Fontette-Sommery had the courage openly to take the part of the oppressed, and to publish the *Opinion d'un Gentilhomme de Bourgogne sur ce qui s'est passé à l'Assemblée de la Noblesse du Berry, relativement à M. le Comte de Guibert, en mars* 1789. But no salutary effect resulted from this generous interposition. The fatal blow had been struck; public opinion refused to acknowledge itself in error; and the innocent victim was accordingly immolated. Inconsolable at this injustice, Guibert retired from public life, and, after a short illness, died on the 6th of May 1790, in the forty-seventh year of his age. His works are, 1. Essai Général de Tactique, already mentioned, Liège, 1773, in one vol. 4to and two vols. 8vo; 2. Eloge de Catinat, Edinburgh (Paris), 1775, in 8vo; 3. Connétable de Bourbon, a tragedy; 4. La Mort des Gracques, a piece in three acts; 5. Anne de Boulen, the best of his dramas; 6. Eloge Historique de Michel de l'Hôpital, Chancelier de France, 1777; 7. Défense du Système de Guerre Moderne, ou Réfutation complète du Système de M. de Mesnil-Durand, par l'auteur de *l'Essai Général de Tactique*, Neufchâtel, 1779, in two vols. 8vo; 8. Discours de reception à l'Académie, 1786; 9. Eloge du Roi de Prusse, London (Paris), 1787, in 8vo; 10. Letter addressed to the National Assembly, in the name of the Abbé Raynal, Marseilles, 1789, in 4to; 11. Traité de la Force Publique, Paris, 1790, in 8vo, the last production which he acknowledged; 12. Journal d'un Voyage en Allemagne fait en 1773 par Guibert, Paris, 1803, in two vols. 8vo; 13. Œuvres Militaires de Guibert, published by his widow, Paris, 1803, in five volumes 8vo; 14. Voyages de Guibert dans diverses parties de la France et en Suisse, faits en 1775, 1778, 1784, et 1785, ouvrage posthume, Paris, 1806, in 8vo; 15. A volume of Eloges, including that of Claire-Francoise de l'Espinasse, Paris, 1806, in 8vo. But of all the works of Guibert, that by which he is best known is his Essay on Tactics, so often quoted and referred to under the head ARMY. Its extraordinary success may be attributed, partly to the enthusiasm of military glory which appears to have dictated it, and partly to the freedom of thought and expression for which it is distinguished; and although some of the projects which it recommends are now ascertained to be pregnant with danger, yet it is consulted and appreciated by all military men who know their profession; and even its errors conduce towards the instruction of those who are capable of estimating its merits. We learn from contemporary authority, that the preliminary discourse produced a great sensation, and gave an exaggerated idea of the author. This discourse, in which the young tactician assumed a *tranchant* and decisive tone towards the sovereigns of Europe, at the same time that he depreciated the government of his own country, was read with avidity by the women, cried up by the men of letters, circulated in the army, and at length known in all Europe. Amidst all its warmth, and, as some think, extravagance, it developes important truths, which had escaped ordinary observation, and suggests matter for reflection to those who are accustomed to weigh opinions before adopting them. We may add, that Voltaire, after having read the work, addressed to the author, through M. d'Argental, some beautiful verses, in which, amidst other flattering things, he says to Guibert,

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[1] See *Voyage à Cayenne,* par Louis-Ange Pitou; *Histoire des Plantes de la Guyane François;* and *Statistique Général et Particulière de la France et de ses Colonies.*

> Digne peut-être
> De commander déjà dans l'art dont il est maître.

In a word, of all the productions of Guibert, his Treatise on Tactics is that which will most certainly survive the generation to which it was more immediately addressed. It constantly affords aliment for thought, and may be considered as the first grand step towards the formation of a scientific and effective system of tactics. Much may also be gathered from his *Défense du Système de Guerre Moderne*, in which he attacks the *ordre profond* of Folard, and ably analyses some of the finest operations of Turenne, Luxembourg, and the king of Prussia, all of whom were opposed to the system promulgated by the celebrated commentator on Polybius. (A.)

GUICCIARDINI, FRANCISCO, a celebrated Italian historian, was born at Florence in 1482, being descended of a family which still subsists in that city. His ancestors had held the most distinguished offices in the Florentine republic. Simon Zanuccio Guicciardini was gonfalonier of justice in 1302; his grandfather, an able politician and a great warrior, beat the Genoese near Sarzano in 1412, and defeated the troops of Sixtus IV. in 1478; and Pietro, the father of the historian, acquired a great reputation by his talents for the conduct of public affairs. Francisco Guicciardini was originally intended for the bar, to which he was at length called; and so great was his success that, at the age of twenty-three, he became professor of jurisprudence, at a time when all the chairs in Italy were occupied by the ablest jurisconsults. Although he had not yet attained the age required by the law, he was appointed ambassador to Ferdinand the Catholic; and having succeeded in gaining the favour of that prince, he thus secured a powerful protector to the Florentine republic. Pope Leo X., a discriminating judge of real merit, called Guicciardini to his court, loaded him with honours, and named him governor of Modena and Reggio, at the same time conferring on him unlimited powers. In this capacity he also served under the pontificate of Adrian VI.; nor did his firmness, his beneficence, and his equity, fail to secure him the attachment of the people over whom he had been placed. But as Romagna was dreadfully distracted by the irreconcilable factions of the Guelphs and Ghibelins, Clement VII. on succeeding to Adrian VI. sent thither Guicciardini, who in a little time re-established tranquillity in that unhappy country, caused the most rigid justice to be enforced, founded useful establishments, opened new roads, and ultimately rendered himself the idol of all parties. Being afterwards appointed lieutenant-general to the Holy See, he acquired much glory by his defence of Parma, when besieged by the French; and after the death of John of Medicis, the Florentine republic chose him to succeed that famous captain in the command of the black bands, the *élite* of the Italian troops. But, as Clement VII. required a man of tried ability and courage, he obtained the consent of the Florentines to retain Guicciardini some time longer in his service. The city of Bologna was about to escape from the domination of Rome; the senate had raised the standard of revolt; the great family of the Pepoli openly aspired to the supreme power; the vindictive passions were indulged without restraint, and assassinations multiplied. Guicciardini, in the capacity of governor, presented himself in this city, whither his renown had preceded him. His severe deportment, his activity, his eloquence, tranquillised the people, disarmed the senate, and deprived the Pepoli of all hope of obtaining the object they had in view. By his talents, prudence, firmness, and justice, Bologna, which would otherwise have been lost for ever, was saved to the patrimony of St Peter. After this expedition, Guicciardini, notwithstanding the entreaties of Clement, returned to his own country, where he lived in retirement, being wholly occupied with the composition of his history, which he commenced about the end of 1534. But this did not prevent him from rendering the most important services to Florence. His counsels moderated the prodigality and ambition of Alexander of Medicis; and, at the suggestion of Naples, he effected an advantageous arrangement between this prince and Charles V. Alexander having been assassinated in 1536 by one of his near relatives, Lorenzino de' Medicis, Cardinal Cibo immediately assembled the council, when it appeared that all the other members were inclined for a republican government. But Guicciardini perceiving that by this means the country would become a prey to civil war, declared in favour of a monarchical government; and as his persuasive eloquence at length overcame the predilections of the council, Cosmo de' Medicis was proclaimed sovereign of Florence. From this moment, Guicciardini took no further concern in public affairs; and after having passed four years in study and retirement, he died in May 1540.

The memory of this able and excellent person is endeared to men of letters by his *History of Italy*, Florence, 1561, in folio, or two vols. in 8vo. The original edition, though much sought after, is incomplete; that of Venice, 1567, in 4to, is augmented by four books, viz. from seventeen to twenty inclusive; and that of Venice, 1738, in two vols. folio, has, besides, a life of the author by Manni, with a fragment containing some passages previously inedited. But the best and most complete edition is that of Friburg in Brisgau (Florence), 1775, 1776, in four vols. 4to, printed from an autograph manuscript in the Magliabecchi library, under the auspices and care of the canon Bonso Pio Bonsi, who has supplied the defects of former editions, and otherwise discharged his editorial duties with fidelity and talent. The *History of Italy* commences in 1490, and terminates in the month of October 1534. It consists of twenty books, sixteen of which are, in the opinion of the best critics, of superior merit; but the last four are little more than draughts of memoirs, death having prevented the author from bestowing on them all the care and attention which the subject required. The historian commences by giving an exposition of the tranquil condition of Italy before the breaking out of the troubles which desolated its finest provinces. He then proceeds to describe the bloody wars which the French carried on in that country, under three successive kings. By these the face of Italy was almost entirely changed; the popes aggrandised themselves by the ruin of several petty states; Naples and Milan, torn from their respective princes, recognised the domination of Charles V.; and Genoa, which had thrown itself into the arms of France, recovered its liberty under the protection of the same monarch, who, on the other hand, gave a sovereign to the republic of Florence. If, in this revolution, the greater part of the princes of Italy maintained themselves, they owed their preservation to their own weakness, and a timely submission to a conqueror, whom fortune seemed to lead on, by rapid strides, towards universal monarchy. Such, in a few words, is the grand spectacle presented by the *History of the Wars in Italy*, a production which has immortalised the name of Guicciardini. The hatred of vice, which breaks out in every page of his work, satisfies the reader as to the probity of the historian, who was, moreover, concerned in most of the events which he relates, and performed a brilliant part both in the cabinet and in the field. His style, sometimes nervous and sublime, sometimes lively and rapid, always noble, perspicuous, and appropriate to the subject, fixes the attention and hurries along the mind of the reader. His reflections, equally judicious and profound, show the wise republican, the able politician, the enlightened philosopher; as the friend of humanity and justice, he unsparingly attacks the abuses of the sovereign power, and vindicates that virtue which the great so often profane for the gratification of their interests and passions. He has left us faithful portraits of the celebrated men of his time; he has represented with equal genius and accuracy the force and manners of the nations which figure in his history; and he has made us acquainted with the real interests of the princes of his time, as well as with the origin of those jealousies which then divided the powers of Europe. Guicciardini has been reproached with the length of the harangues which he puts into the mouths of his characters; but these he has enriched with so much eloquence, with thoughts so new and profound, with images so just and striking, that they are always interesting, and never felt as impeding the progress of his narrative. He has also been accused of prejudice against the French; yet he never exaggerates their losses in battle, and Father Daniel, in his history, has merely copied the narrative of Guicciardini. If the latter, like several French authors, has traced an unfavourable portrait of Charles VIII., he has, on the other hand, done ample justice to the equity and the virtues of Louis XII., the valour and prudence of La Tremouille, and the brilliant qualities of Gaston de Foix and Francis I.; whilst, in speaking of the Italian and French militia, he always declares in favour of the latter. These, and other facts of a similar description, which might easily be produced or referred to, are sufficient to show that the charge of partiality is groundless, and that what has been mistaken for prejudice is nothing but the severity of truth. Guicciardini is also the author of *Advice and Counsel in matters of State*, Antwerp, 1527, in 8vo, translated into French, Paris, 1577, in 8vo. (A.)

GUICCIARDINI, *Louis*, nephew of the preceding, was born at Florence, in the year 1523. He held different employments under Alexander of Medicis and his successor Cosmo II.; then he travelled, and remained a long time at Antwerp, where he obtained the favour of the Duke of Alba; but having reflected on this general's system of government, in a work which he published (*Memoirs*), he was thrown into prison, whence he was only liberated through the intercession of the Grand Duke of Tuscany. The remainder of his life presents no event worthy of notice, and seems to have been chiefly passed in the composition of his works. These are, 1. Memorie, &c., or Memoirs of what passed in Savoy from 1530 to 1565, Antwerp, 1565, in 4to; 2. Raccolta dei Detti e Fatti notabili, 1581, in 8vo; 3. Descrizione, &c., or Description of the Low Countries, Antwerp, 1567, in fol.; 4. Ore di Recreazione, Florence, 1600, in 12mo. Having lived several years in retirement, Louis Guicciardini died in 1589. (A.)

GUIDES, in military language, are usually the country people in the neighbourhood of an encampment, who give the army intelligence concerning the country, the state of the roads, and the probable route of the enemy.

GUIDI, Alexander, an eminent Italian poet, born at Pavia in 1650. Having a desire to see Rome, he repaired to that city, where he attracted the notice of Queen Christina of Sweden, who retained him at her court; he also obtained a considerable benefice from Pope Innocent XI. and a pension from the Duke of Parma. Having done the state of Milan some good offices with Prince Eugene, he was enrolled amongst the nobles and decurions of that town, and died in the year 1712. Nature had been kinder to his intellect than to his exterior form; for his body was small and crooked, his head large, and he wanted the sight of his right eye. A collection of his works was published at Verona in 1726.

GUIDO Aretin. See Aretin.

Guido *Reni*, an illustrious Italian painter, born at Bologna in 1595. In his early years he was the disciple of Denis Calvert, a Flemish master of good reputation; but afterwards entered himself in the school of the Caracci. He first imitated Ludovico Caracci, but fixed at last on a peculiar style of his own, that secured him the applause of his own time and the admiration of posterity. He was much honoured, and lived in splendour; but an unhappy attachment to gaming ruined his circumstances, and the reflection of his imprudence brought on a languishing disorder, which put an end to his life in 1642. There are several designs of this great master in print, etched by himself.

GUIDON, a sort of flag or standard borne by the king's life-guard; being broad at one extremity, almost pointed at the other, and slit or divided into two parts. The guidon is the ensign or flag of a troop of horse-guards.

Guidon also denotes the officer who bears the guidon. The guidon is in the horse-guards what the ensign is in the foot. The guidon of a troop of horse takes place next below the cornet.

Guidons, *Guidones*, or *Schola Guidonum*, was a company of priests established by Charlemagne, at Rome, to conduct and guide pilgrims to Jerusalem. They were also to assist them in case they fell sick, and to perform the last offices to them if they died.

GUIGLIANO, a city of the province of Terra di Lavore, in the kingdom of Naples, containing 7956 inhabitants.

GUIGNAN, the most easterly of the Philippine Islands, situated about eighteen miles off the south-eastern extremity of the island of Samar.

GUIGNES, Joseph de, a learned orientalist, born at Pontoise on the 19th of October 1721, was, in 1736, placed under the celebrated Fourmont by his cousin M. le Vaillant, professor in the university. Being endowed with the happiest dispositions, and directed by an able master, he, in a short time, acquired a knowledge of Chinese, and of the different idioms of the East. When Fourmont presented to the king his Chinese Grammar, in the year 1742, the young De Guignes accompanied him, and was received in the most flattering manner by the monarch, who immediately conferred on him a pension. On the death of his master, which took place in December 1745, De Guignes succeeded him at the Royal Library in the office of secretary-interpreter of the eastern languages. The Memoir on the Origin of the Huns having given the learned world a foretaste of the talents and erudition of De Guignes, he was admitted a member of the Royal Society of London in 1752, and an associate of the Academy of Belles-Lettres the following year. About the same time he was also appointed royal censor, and attached to the *Journal des Savans*. These different favours were the just recompense of the important labours in which M. de Guignes was engaged. The first two volumes of his History of the Huns appeared in 1756; and in 1757 the chair of Syriac in the Royal College having become vacant by the death of Jault, De Guignes was appointed to succeed him. Upon this occasion he pronounced a Latin discourse, the principal object of which was to prove, what certainly needed little demonstration, that the kings of France were much more friendly to letters than the princes of Asia. In 1769 he became keeper of the antiquities in the Louvre, and, in 1773, pensionary of the Academy of Belles-Lettres; in 1774 he resigned the chair of Syriac, not choosing to consent to the re-union of the Royal College with the university; and, lastly, in 1785, he was named one of the committee appointed by the academy for the publication of Notices of Manuscripts. The Revolution did not deprive De Guignes of his pensions, for, notwithstanding his great labours, he had never demanded them; but it deprived him of his moderate allowance as pensionary of the academy, keeper of antiquities in the Louvre, and redacteur of the *Journal des Savans*. Faithful to his principles, and to the cultivation of letters, however, he made no remonstrance, declined accepting any favour, and consoled himself for the sufferings of his country, and the personal privations he experienced, by applying with greater assiduity to his favourite pursuits. These he continued, without intermission, until his death, which took place at Paris on the 19th of March 1800. De Guignes left a son, who had been consul at Canton, and who, on his return to France, published a relation of his voyage in three volumes 8vo, and an excellent Chinese Dictionary. The following is a list of the printed works of the father: 1. Abrégé de la Vie d'Etienne Fourmont, with a notice of his works, Paris, 1747, in 4to; 2. Mémoire Historique sur l'Origine des Huns et des Turcs, Paris, 1748, in 12mo; 3. Histoire Générale des Huns, des Turcs, des Mogols, et des autres Tartares occidentaux, avant et depuis J. C. jusqu' à present, preceded by an introduction containing historical and chronological tables of the princes who have reigned in Asia, Paris, 1756, 1758, in five vols. 4to; 4. Mémoire dans lequel on prouve que les Chinois sont une colonie Egyptienne, Paris, 1759, 1760, in 12mo; 5. The *Chou-king*, or sacred book of the Chinese, with a translation corrected from that of Father Gaubil, and most useful notes, Paris, 1770, in 4to; 6. An edition of the *Eloge de Monkden* and of the *Art Militaire des Chinois*, 1770, 1771; 7. Twenty-eight papers in the Memoirs of the Academy of Inscriptions. These papers or memoirs may be divided into three classes; the first of which has for its object to develope more fully various points which are only treated cursorily in the History of the Huns; the second includes the papers intended to establish his system of the Egyptian origin of the Chinese; and the third comprehends those of a miscellaneous character, such as the memoir on the commerce of the French in the Levant before the crusades, that on the Oriental Zodiac, and observations on the origin and antiquity of the Indians, as well as on the geography of their country. Besides the works mentioned above, De Guignes left several manuscripts, particularly, 1. Notices d'Ecrivains Arabes; 2. Mémoire sur le Commerce des Chinois avec les Russes; 3. Histoire de la Chine, translated from the Chinese Annals, and divided into three parts; 4. Mémoires Historiques et Géographiques sur l'Afrique, d'après les auteurs Arabes.

Such were the works which occupied the life of this scholar. Considered as a learned man, he may be said to have possessed vast knowledge, and to have employed it in the most useful manner. Although he cannot be called an elegant writer, his style is easy and clear; and even the paradoxes which he defended prove, by his ingenious approximations and original views, that he was endowed with a lively imagination and extraordinary sagacity. But he was still more estimable for the excellence of his character than the extent of his acquirements. Invariable in his principles, the enemy of all intrigue, and having no other ambition than that of extending the boundaries of knowledge, he never solicited pensions, places, or encomiums, and knew too well the real value of time to waste it in the pursuit of objects so inglorious. He was a sincere lover of truth, even when it seemed adverse to the system which he laboured so strenuously to maintain; and the rectitude of mind which he uniformly displayed, constitutes a prouder title of distinction than even his great talents and unrivalled attainments.

In his History of Huns, Turks, and Moguls (the first two volumes of which appeared in 1756, and the others in 1758), the first part of volume first, which contains the chronological tables, and may give an idea of the work, is divided into eight books, the last of which contains the series of Christian princes who, in consequence of the crusades, founded states in Syria. In the succeeding volumes, the principal object of De Guignes has been to trace the history of the Western Tartars; that of other nations being treated only in as far as it is related to or connected with the fortunes of the race whose annals he had undertaken to illustrate. Profoundly conversant with the Chinese, the Arabic, and the ancient idioms of the East; and thoroughly acquainted with the Greek and Latin historians, the chroniclers of the middle ages, and the annals of the northern nations; he was the first who undertook to reconcile the recitals of the occidentals with those of the Chinese, to explain the one in favour of the other, to establish the origin and trace the route of the barbarous tribes who, under the different names of Huns, Avares, or Turks, overthrew the Roman empire, ravaged France, Italy, Germany, and all the countries of the north, destroyed the empire of the Caliphs, and established themselves in Europe, Persia, Syria, and a great part of Western Asia; and, lastly, to illustrate the events which connect the history of the Huns with that of almost all other nations. If this work be examined with critical severity, it will be found that the author has been too negligent of style, that the facts have not been subjected to a rigorous investigation, and that the monotony of the recital is not interrupted by any reflections calculated to interest the reader. But the object of De Guignes was to collect facts rather than to digest them according to a rigorous chronology; and the disorder which, in this respect, reigns in his work, proceeds partly from the multitude of sources whence he derived his information, and partly from the vice of the oriental writers amongst whom the irregular method of computing dates renders it impossible to restore the precise chronology of events. On this ground the writers in the *Journal de Trevoux* attacked the History of the Huns. De Guignes replied to this criticism, in a letter inserted in the *Journal des Savans* for 1757, and also at the end of the fifth volume of his History. The journalists rejoined; and the dispute terminated by a note appended to the same volume, in which the author refers to the *Annales Chinoises*. The History of the Huns has been translated into German by Daenhert, who appears to have done ample justice to the original. (A.)

GUILD (from the Saxon *guildane*, to pay), signifies a fraternity or company, because every one was *gildare*, that is, to pay something towards the charge and support of the company. As to the original of these guilds or companies, it was a law amongst the Saxons, that every freeman of fourteen years of age should find sureties to keep the peace, or be committed. Upon this certain neighbours, consisting of ten families, entered into an association, and became bound for one another, either to produce him who committed an offence, or to make satisfaction to the injured party; and that they might the better do this, they raised a sum of money amongst themselves, which they put into a common stock, and when one of their pledges had committed an offence, and fled, then the other nine made satisfaction out of this stock, by payment of money, according to the offence. Because this association consisted of ten families, it was called a *decennary;* and hence arose other kinds of fraternities. But as to the precise time when these guilds had their origin in England, there is nothing certain to be found; since they were in use long before any formal license was granted to them for such meetings. It seems to have been about the close of the eleventh century, according to Anderson (*History of Commerce*, vol. i. p. 70), that merchant-guilds, or fraternities, which were afterwards styled corporations, came first into general use in many parts of Europe. Madox (*Firma Burgi*, chap. i. sect. 9) thinks they were hardly known to our Saxon progenitors, and that they might probably have been brought into England by the Normans, although they do not seem to have been very numerous in those days. The French and Normans might perhaps have borrowed them from the free cities of Italy, where trade and manufactures were much more early propagated, and where such communities appear to have been first in use. These guilds are now companies or associations, having laws and orders made by themselves, in virtue of authority from the prince to that effect.

GUILD, in the royal burghs of Scotland, is still used for a company of merchants, who are freemen of the burgh. Every royal burgh has a dean of guild, who is the next magistrate below the provost.

GUILD, *Gild*, or *Geld*, is also used amongst our ancient writers to signify a compensation or mulct, for a fault committed.

Guild-Hall, or *Gild-Hall*, the great court of judicature for the city of London.

GUILDFORD, a market-town of the county of Surrey, in the hundred of Woking, thirty miles from London. It is situated on the acclivity of a hill, at the foot of which the navigable river Wye runs. It is composed of three parishes, St Mary, St Nicholas, and Trinity, each of which has its respective church. One of the ancient monasteries is still in existence, but converted into dwelling-houses. The assizes for the county are held here in the summer, alternately with Croydon. It is an ancient corporation, returning two members to parliament, chosen by the householders. There is a well attended market on Saturdays. The population amounted in 1801 to 2634, in 1811 to 2974, in 1821 to 3161, and in 1831 to 3813.

GUILLIM, JOHN, of Welsh extraction, was born in Herefordshire about the year 1565. Having completed his education at Brazen-nose College, Oxford, he became a member of the College of Arms in London; and he was made rouge-croix pursuivant, in which post he died in 1621. He published, in 1610, a work entitled the *Display of Heraldry*, folio, which has gone through many editions. To the fifth, which appeared in 1679, was added a *Treatise of Honour Civil and Military*, by Captain John Logan.

GUILLOTINE, the name of an instrument for beheading persons condemned to death, so called after the person who suggested the employment of it, Joseph Ignace Guillotin, a physician of Paris. Elected a member of the states-general, Guillotin conducted himself with moderation in the National Assembly, occupying himself with projects of public utility, and, amongst these, with a plan for what he called the organization of medicine. But when the National had merged in the Constituent Assembly, and it had been decided that crimes were personal, inferring no forfeiture, Guillotin proposed to substitute decapitation instead of the ordinary punishments; founding upon this, that, in the opinion of the French, this species of death was not *infamant* for the family of the condemned. The proposition was adopted, and the author of it indicated an instrument which had been long known as calculated to inflict death without causing almost any pain to the sufferer. Many honourable men applauded the humane motives which had induced the philanthropic deputy to recommend the employment of such an instrument, and he appears to have merited this commendation. But, unhappily for Guillotin, some wags gave his name to the instrument, which he did not invent, but only recommended; and, more unhappily still, the machine became, in the hands of the monsters who during two years were masters of France, the instrument of the most horrible excesses; whilst Guillotin himself, imprisoned, and expecting to figure as a victim in the daily scenes of carnage which then took place, had deep cause to lament seeing his name attached to the devastating axe with which these cannibals had armed their executioners. After terminating his political career, Guillotin resumed his functions as physician, which he should never have quitted; and died in the year 1814. Of the machine to which his name is now for ever affixed, and which in Italian is called *mannaia*, an engraving will be found in the *Quæstiones Symbolicæ* of Bocchi, 1555, in 4to.

GUIMARAS, one of the Philippine Islands, about thirty miles in circumference, covered with trees, and producing a quantity of sarsaparilla. Long. 122. 30. E. Lat. 40. 45. N.

GUIMARAENS, a town of Portugal, on the small river Ave, in the province of Entre-Duero-e-Minho. It is distinguished by its manufactures of linens, from which they produce damask table-linen and napkins of very beautiful descriptions, and make the best of their sewing thread. It has also fabrics of swords and cutlery, which are reputed to be of steel unusually well tempered; a property attributed to the waters being well calculated to assist the process. This town was formerly the residence of the kings of Portugal. It now contains 1480 houses, and a population of 7400 souls.

GUINEA, the name assigned to a large tract of country on the west coast of Africa, commencing at Cape Mesurado, in 10° 45′ west longitude, and terminating with the river Lagos, in about 5° east longitude. Limits different from these are occasionally assigned to Guinea, but the above are those adopted by the best geographers. This immense territory has been divided into four portions, namely, the Grain Coast, the Ivory Coast, the Gold Coast, and the Slave Coast. We shall briefly describe the characteristic features of each of these divisions, without any allusion to the slave trade, which will be treated of in the article SLAVE TRADE.

The *Grain* or *Malaghetta Coast* extends from the Mesurado to Cape Palmas, a distance of about two hundred and fifty miles. This coast owes its name to a small parasitical plant, the fruit of which, resembling a fig, is found to contain aromatic grains of pepper. Upon its introduction into Europe, this spice received the dignified appellation of grains of paradise. When the finer species of India, however, became known, the production of Guinea fell into disrepute; and as the coast afforded no other article worth being exported, it has been less frequented than any other part of Guinea. It possesses two rivers, the Sestro and Sangwin, which are rather of considerable size. They are situated near the middle of the coast, and their banks are said to be fertile and populous. The Portuguese had formerly settlements in this part of Africa, which they do not now possess; but many of their posterity still reside there mixed with the natives.

The *Ivory Coast*, commencing at Cape Palmas, stretches as far as Cape Apollonia, a distance of about three hundred and fifty miles. This part of Africa is named from the quantities of ivory obtained there. The tusks are of good quality, and so large as sometimes to weigh two hundred pounds. Gold is also found here in considerable quantities; it is brought down from the countries behind the Gold Coast. There are no European settlements on this part of the shore, excepting an English fort at Apollonia, which perhaps more properly belongs to the Gold Coast. The Ivory Coast is populous and thickly set with villages, but it does not contain any town of much consideration. Navigation here is very dangerous, on account of a heavy surf which breaks continually upon a beach, flat, and destitute of any conspicuous land-mark.

The *Gold Coast* commences at Cape Apollonia, and extends to the Rio Volta, a distance of about two hundred and fifty miles. For a long period this coast was frequented by European traders, particularly English and Dutch, both to obtain the precious metal from which it derives its name, and to procure slaves as long as human beings were a marketable commodity. A forest of immense thickness, only partially cleared and cultivated, presents itself on the coast. Near the sea the soil is arenaceous, and, unfit for raising any important tropical product except cotton. Some miles inland, however, it becomes richer, and were it carefully cultivated, it might be made to produce sugar, and the other products of the West Indies. The gold, which forms the staple commodity, is brought down from mountainous districts situated far in the interior. The vegetable productions are chiefly maize, millet, some rice, yams, pulse, plantains, bananas, and other tropical fruits. A variety of excellent timber is produced, of which the palm-tree is most highly prized by the natives, as they distil from it their favourite beverage. The capital of the British settlements is at Cape Coast Castle, which is built upon a rock, and defended by a strong wall mounted with cannon. See COAST CASTLE, CAPE.

The country round has been cleared to some extent, and laid out in pleasure grounds by the British, to whose health, however, the climate is exceedingly unpropitious. Other British settlements lie to the east, but Fort James at Acra, together with Cape Coast, are now the only places where garrisons are maintained. The capital of the Dutch settlements is El-Mina, or the Castle, which was taken from the Portuguese, the founders of it, in 1637. It is situated in an open country, about fifteen miles west of Cape Coast. The fort is well built, on a high situation, and is regularly garrisoned. Besides this establishment, they have a number of others scattered along the coast; and the Danes also have two. For an account of the country which lies behind the Gold Coast, and the people who inhabit it, see ASHANTEE.

The *Slave Coast* commences at Rio Volta, and stretches as far as the river Lagos, a distance of about two hundred and thirty miles. It was so named because the slaves obtained here were of a docile and tractable temper. This country is traversed by two considerable rivers, called the Jakin and the Euphrates, which run parallel with each other to the sea, and preserve everywhere a convenient water communication. This part of the coast had been cleared of forests by the natives, and carefully cultivated. A luxuriant and almost perpetual vegetation sprung up under the busy hand of industry, and the country became crowded with a dense population. Amid this abundance the Whidans, such was the name of the people, having become luxurious and effeminate, were attacked by the warlike power of Dahomey, which subdued the people, and reduced their country almost to a desert. For an account of Dahomey, which predominates over both the coast and the interior, see the article DAHOMEY.

Whidah, now commonly called Griwhee, has been designated the port of Dahomey, from which a route of about an hundred miles reaches through Favies and Foro, to Abomey, the capital. The country around Griwhee is fertile and well cultivated, and is abundantly supplied with the necessaries of African life. The inhabitants have been estimated by Captain Adams at about 7000. Ardrah is a larger and more flourishing place. (See the article ARDRAH.) Beyond Lagos lies a large tract of country, of a peculiar character, which has been named Benin, after the principal state. See the article BENIN.

New GUINEA, or *Papua*. See AUSTRALASIA.

GUINEA, a gold coin, struck and current in Britain. The value or rate of guineas has varied. It was first struck on the footing of twenty shillings; from the scarcity of gold it afterwards advanced to twenty-one shillings and sixpence, but it subsequently sunk to twenty-one shillings. The pound weight troy of gold is cut into forty-four parts and a half, and each part makes a guinea. This coin took its denomination of *guinea*, because the gold of which the first was struck had been brought from that part of Africa called Guinea; and for the same reason it likewise bore the impression of an elephant.

GUIPUZCOA, one of those three provinces in the north-east part of Spain distinguished by the name of *Provincias Vascongadas*, and the easternmost of the three. It is bounded by France on the east, where the Bidasoa separates the two kingdoms; on the north it is on the sea-coast of the Bay of Biscay; its eastern boundary is the province of Biscay, and its southern the province of Avila. It contains by far the most dense population of any part of Spain, being fifty-two square leagues in extent, and containing 104,491 inhabitants. If the whole of Spain were as thickly peopled as this province is, instead of 10,350,000 souls, it would contain 30,150,000.

It is watered with various springs and rivulets, which fertilize the soil, and, forming the six rivers Deva, Urola, Oria, Urumea, Oyarzun, and Bidasoa, each of short course, enter the ocean. The agriculture of the province is by no means equal to the supply of its population; for though it yields wheat, maize, barley, for food, and some cattle, and apples, of which they make much cider, yet they draw supplies for their subsistence of wine from Navarre and Rioja, of oil from Castille and Andalusia, and of cattle from the adjoining provinces of France.

Although the province is deficient in agriculture, yet its extensive manufactures fully compensate for that deficiency. It is the Birmingham of Spain, in which every kind of ironmongery goods that the kingdom or the Atlantic provinces require is furnished. The machinery yet introduced to lessen labour is very limited, and the articles they produce are very rude, though excellent of their kind, in some measure owing to their iron being remarkably tenacious and elastic. The nails, of which great quantities of every size are made, are always preferred wherever they can be obtained.

The industry of the province is proverbial, and it is visible in the dwellings, the roads, and the farms, as well as in the countenances and dress of the inhabitants. This province is one of those which is exempt from the ordinary system of taxation that prevails in the rest of Spain; and, like the people of Biscay, all the natives lay claim to the prerogatives of nobility, and assert their equality to the highest families of the rest of Spain.

GUISBOROUGH. See GISBOROUGH.

GUISE, HENRY, of Lorrain, duke of Guise, eldest son of François of Lorrain, duke of Guise, memorable in the history of France as a gallant officer, but an imperious, turbulent, seditious subject, who placed himself at the head of an armed force, and called his rebel band *The League*. The plan was formed by the cardinal, his younger brother; and, under the pretext of defending the Roman Catholic religion, the king Henry III. and the freedom of the state, against the designs of the Huguenots or French Protestants, they carried on a civil war, massacred the Huguenots, and governed the king, who forbade his appearance at Paris; but Guise now became an open rebel, entered the city against the king's express order, and put to the sword all who opposed him. As the streets were barricaded to prevent his progress, this fatal day is called in the French history *the day of the barricades*. Masters of Paris, the policy of the Guises failed them; for they suffered the king to escape to Blois, though he was deserted in his palace at Paris by his very guards. At Blois, Henry convened an assembly of the states of France, and the Duke of Guise had the boldness to appear to a summons sent him for that purpose. A forced reconciliation took place between him and the king, by the advice of this assembly; but it being accidentally discovered that Guise had formed a design to dethrone the king, that weak monarch, instead of resolutely bringing him to justice, had him privately assassinated, on the 23d of December 1558, in the thirty-eighth year of his age. His brother the cardinal shared the same fate the next day.

GUITAR, GUITARRA, a musical instrument of the stringed kind, with five double rows of strings, of which those made of brass are in the middle, except it be for the burden, an octave lower than the fourth. This instrument was first used in Spain and by the Italians. In the former country it is still greatly in vogue. There are few of that nation who cannot play on the guitar; and with this instrument they serenade their mistresses at night. In Madrid, and other cities in Spain, it is common to meet in the streets young men equipped with a guitar and a dark lanthorn, who, taking their stations under the windows, sing, and accompany their voices with this instrument; and there is scarcely an artificer or day-labourer in any of the cities or principal towns who does not entertain himself with his guitar.

GUJERAT, a town of Hindustan, in the province of Lahore, in the Seik territories, 60 miles north-north-west from the city of Lahore. Long. 73. 25. E. Lat. 32. 35. N.

GUJERAT, GAJRAT, or GUZERAT, a very large province of Hindustan, situated principally between the twenty-first and twenty-fourth degrees of north latitude. It has been computed to be 320 miles long by about 180 broad. On the north it is bounded by the province of Ajmeer, on the south by the sea and the province of Aurungabad, to the east it has Malwah and Khandesh, and to the west portions of Moultan, Cutch, and the sea. The south-western quarter of this province is enclosed on the south-west and north-east by the Gulfs of Cutch and Cambay, and has the form of a peninsula. A considerable portion of the province, particularly towards the eastern frontier, is hilly, and much covered with jungle. On the north-western boundary, along the bank of the river Puddar or Bunass, the country in some parts produces good pasture; in other parts it is either an arid plain, or a low salt swamp, which, where it is dried up, is barren and unproductive, from the saline nature of the soil and the water. The interior is hilly and rocky, but with spots exhibiting strong powers of vegetation where water is accessible. These are extremely fertile, especially in sugar and tobacco, and, besides, yield all sorts of grain, oats excepted; also cotton, tobacco, indigo, gum, and sugar. The country, notwithstanding its smoothness to the eye, is in many parts intersected by ravines, and much broken by the heavy rains; and some of these chasms contain during the season of the rains a large volume of water, not to be crossed without the assistance of rafts or boats; and accordingly the natives, in these cases, establish temporary ferries. The climate is reckoned one of the worst in India, being intensely hot during the greater part of the year, with a heavy thickness in the atmosphere, which is extremely oppressive. A hot wind blows fiercely all the day; and when it ceases at night, it is followed by a still more close and oppressive calm. "I had certainly," says Bishop Heber, "no conception that anywhere in India the month of March could offer such a furnace-like climate." "It is," he adds, "in the same latitude with Calcutta, and seems to be what Bengal would be without the glorious Ganges."[1] During the hot and dry months, the surface of the country appears mostly sand or dust, and in the rainy season a thick mire. In the north-western parts, along the banks of the river Puddar, where there is good pasturage, and in various other parts of the province, they breed excellent horses and camels; and the cattle are superior to those of any other part of India. Some of their bullocks, which are in general white, with large bumps, are sixteen hands high, and will trot in a carriage as fast, and perform as long a journey, as good horses. This province is traversed by several large rivers, namely, the Puddar, the Nerbuddah, Tuptee, Mahy, Mehindry, and Sabermatty, which, being navigable from the sea to a considerable distance up the country, afford great facilities for commerce. But there are many large tracts which experience a great scarcity of water; and the inhabitants are forced to dig wells, which are in many parts from eighty to a hundred feet deep. In some particular portions of this province not a stone is to be met with, whilst in some others nothing else is to be seen.

In so extensive a province, never completely subdued by any of its numerous invaders, a great diversity of population may be expected. The population of Gujerat is accordingly very strangely diversified by numerous sects and castes, under the various designations of Grassias, Catties, Coolies, Bheels, Mewassies, Charons, Bhatts, Dheras, and others. In some parts of the province the Grassias form a numerous class of landholders, and in others they merely possess a sort of feudal authority over certain portions of land and villages. The origin of their rights is a controverted point of Hindu history, which has never been very satisfactorily explained. The common account of their title to the land is, that they were robbers and plunderers, who inhabited the hills and jungles, and by their incursions the country was so much infested, that after the decease of the Emperor Akbar in 1605, the nabobs of Surat ceded to them certain lands in each village in lieu of all demands. But it is asserted that, encouraged by this success, they still continued their depredations; and the Zemindars, in order to purchase peace, agreed to the payment, on certain lands, of what is called *toda*, or ready money; and the lands which are liable to this payment have been continually increasing, owing to the anarchy which so long prevailed in Gujerat. The proprietors of these claims never allow them to die out; and it is seldom that they prosecute them in person, but, having retired to some secluded residence, they rally round them a band of desperate adventurers, to whom they farm out the Grassia claim, and depute them to levy it. Hence the country, prior to the war of 1817, and before it was brought under the dominion of the British, was a prey to the greatest disorders; it was ravaged by predatory hordes, who acquired new rights, and in this manner it was plundered, and the rent of the land misappropriated. These claims have been involved in such complication and obscurity, that the British officers have found it impossible to reduce them to any accurate standard of law or justice. On the rugged margins of all rivers in Gujerat, many of these Grassias reside in a kind of independence; and also all over the Gujerat peninsula, usually denominated Cattywar by the natives. Their numbers are recruited by criminals from the plains, who fly to their haunts for refuge, and are supposed to amount to one half of the population north of the Mahy river. In 1814, an attempt was made by the Bombay government to extinguish the Grassia claims by a payment from the public treasury, and thus to prevent the crimes and disorders which they occasioned.

Of all the disorderly hordes which infest this country, the most bloody and ferocious are the Coolies. The most barbarous are those in the vicinity of the Runn, the salt morass which bounds the province on the west, and communicates with the Gulf of Cutch. These are taught to despise every approach to civilization; they are of the most filthy habits, and consider it a mark of effeminacy to wear clean clothes; and the priests and other persons of note exceed the laity in dirtiness. They consider cleanliness as indicative of cowardice. That class of men named Bhatts, or Bharotts, abound more in Gujerat than in any other province of India. They cultivate the land; but the greater part of them are recorders of births and deaths, and beggars or itinerant bards, and very frequently traders. They often stand forward as security for the public revenue, and guarantee observance of agreements and rewards. They always possess, however, an intimate knowledge of the person for whom they become security, of his character and resources; and when they find that they have been deceived, and are pressed for money for which they have become security, such is their proud and obstinate character, that they sometimes sacrifice their own lives, or some aged female or child of the family, in the presence of the person for whom they have broken their word. They form, in the rude state of society which prevails in India, a sort of middle-men between the contributors and the government, every Grassia, Coolie, and Bheel, having his Bhatt, a class who are rewarded by a small per-centage on the amount of the revenues for which they have become surety, and for the security which they afford against the importunity of the inferior agents of government, their persons being regarded as sacred, and their influence over the persons of the natives very great. They were chiefly employed under the Mahratta princes, between whom and the landholders they stood as middle-men, being bound to the government for the revenue, and acting as a security to the landholders against the oppressions of the government. Under the British rule this agency was entirely discontinued in 1817, being found inefficient as an instrument of control for the unruly tribes of the country. The Charons are a sect of Hindus, allied in manners and customs to the Bhatts. They are often possessed of large droves of cattle for carriage, by means of which they carry on a distant inland traffic in grain and other articles. They also often hire themselves out as protectors of travellers in the wildest parts of the country; and so faithful are they to their charge, that when a band of predatory horse appears, these persons take an oath to die by their own hands, in case those whom they have engaged to protect are plundered; and this threat is always found effectual to restrain those superstitious thieves, who hold the Charons in great veneration. There is in Gujerat, as in other parts of Hindustan Proper, a race of people called Ungreas, whose profession is that of money-carriers, which they contrive to conceal in their quilted clothes. Although they are miserably poor, they may be trusted with large sums of money to carry many miles off, merely on the responsibility of the superior, who is frequently richer than the other. They are of all castes, and in general athletic and well armed; and they are of such singular habits, that in performing distant journeys they form themselves into parties, and fight with desperation to defend a property for which their only recompense is a mere subsistence.

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[1] Heber, vol. iii. p. 10.

The Bheels are generally described as the original inhabitants of the country, who have been driven to their present fastnesses and their miserable way of life by the invaders of their country, whether Mahommedans or Hindus. They have been in the north parts of India treated with extreme severity by the British.[1] But, by the influence of Sir John Malcolm, and his mild and enlightened policy, they have been reclaimed in the south from their barbarous habits, and formed into regiments, subject to such discipline as was suited to their barbarous habits. They also received grants of land, and freedom from taxes for a number of years; and they were in this manner trained to industrious habits.

The Dheras of this province are of a very degraded caste, and their employment is to carry filth of every description out of the roads and villages. They are miserably poor; they scrape bare the bones of every animal which dies within their limits, and share out the flesh, which they cook in various ways, and feed upon. They are obliged to serve travellers as carriers of their baggage to the village nearest their own. In the course of their business they are always committing petty thefts, and are much given to intoxication.

The Vaneeya, or the merchants and traffickers, form a numerous class in Gujerat. Many of them travel to remote parts of India, where they remain from one to ten years, after which they return to their wives and children. Many also finally settle in the towns of foreign countries, where their descendants continue to speak and write the Gujerattee tongue. The Jains are also a more numerous class here than in any of the contiguous provinces, and possess many handsome temples adorned with well-wrought images. Besides its native hordes or castes, Gujerat, along with Bombay, contains nearly all the Parsees, or fire-worshippers, to be found in the continent of India, the feeble remains of the once numerous sect of the Magi. In all the larger towns are to be found that remarkable race of men named the Boras, who, though Mahommedans in religion, are Jews in features, manners, and genius. They form a community amongst themselves, and are everywhere noted for their address in bargaining, minute thrift, and constant attention to lucre. The washermen are also considered as a degraded and cruel class, on account of the numerous deaths which they involuntarily occasion to the animalcula in the process of washing.

The province of Gujerat flourished chiefly during the era of the Mogul government, and even during the most convulsed periods it carried on a much more extensive trade than ever it has done since. The principal trade is with Bombay, and the chief exports are cotton, piece goods, and grain. The imports are chiefly sugar, raw silk, pepper, cocoa nuts, cochineal, and woollens. The inhabitants are industrious, and the Surat manufactures have been long famed over India for their quality and cheapness. The principal towns in this province are Surat, Ahmedabad, Broach, Cambay, Gogo, Bhownuggur, Chumpaneer, and Junaghur. Gujerat contains populous districts, but in other parts the country is extremely desolate. Surat and the neighbouring country is thickly planted with inhabitants, and the north-western districts are equally naked and destitute of people. The country has been so much exposed to the depredations of thieves and banditti from the jungles and mountains, that, for the sake of security, the great body of the people live, not in sequestered houses, but in villages; and these villages are frequently visited by travelling companies, who exhibit puppet-shows and histrionical representations. They are also occasionally frequented by musicians, dancing girls, singing men and women, wrestlers, expert jugglers, dancing bears, goats, and monkeys. In the remote and savage districts of the country, where there are no villages, fortifications are numerous; but in all the parts to which the British influence extends, they are fast crumbling into decay. In many parts the people are of savage and cruel manners; and amongst the tribe of Jahrejahs the practice of female infanticide prevails, and the united exertions of all the British officers and statesmen have been employed to prevent it. There is another crime peculiar to this province, known in the British courts of justice by the name of *jhansa*, which is the writing of threatening letters, the destroying of gardens or plantations, and the burning of stacks, in order to extort money, or to enforce a compliance with any other unjust demand. These offences were not formerly confined to the Grassias, but were resorted to in village feuds, even by the heads of villages. But since the regular administration of justice by the British, such disorderly practices have become less frequent. There is a class of persons, the Mahy Kaunta Coolies, who are so named from their residence on the Mahy river, who are thieves by profession, and also very ingenious, active, and courageous. They lurk on the highways, and intercept families and individuals proceeding to distant pilgrimages and religious fairs. They frequently visit Surat and other large cities in pursuit of their illicit occupation, though, from the increasing vigilance of the British police, their depredations are now more frequently checked. But, beyond the precincts of the British authority, in the northern and western quarters, and the centre of the Gujerat peninsula, the number of societies of armed and sanguinary thieves is scarcely credible; and it is rather surprising that even the thinly scattered population of the country should keep its ground amid the many excesses and outrages which are committed.

There are many remarkable wells and watering places in Gujerat. One near Baroda is said to have cost nine lacks of rupees. There is another at Vadwa, in the vicinity of Cambay, which, from the inscription, appears to have been erected in 1482.

The province of Gujerat was first invaded about A. D. 1025, by Mahmood of Ghizni, who subverted the throne of its native prince, named Jamund, and plundered his capital. After the establishment of the Delhi sovereignty, Gujerat was subject for many years to the Patan conquerors. In the fifteenth century it came under the dominion of a dynasty of Rajpoot princes, converted to the Mahommedan religion, who removed the seat of government to Ahmedabad; and under their rule it flourished greatly as a maritime and commercial state. This race of princes was overthrown by the Emperor Akbar in 1572; and after the death of Aurungzebe in 1707, hordes of Mahratta depredators overran the province, which in 1724 was finally separated from the Mogul empire.

Until 1818 the Mahratta Peshwa and the Guicowar possessed large tracts of country, but at present only the last remains, the authority and dominions of the other having devolved to the British. The establishment of the British dominions in this country experienced very serious obstructions from the intermixture of their territories with those of the Peshwa and the Guicowar; also from the nabob of Cambay, and the unsettled tributaries of Cattywar and Mahy Kaunta; from the number of half-subdued Grassias and Mewassies; and still more from the predatory habits which a long course of disorder had superinduced among a large proportion of the people, especially beyond the Mahy river. But by the wise and conciliating policy of the local functionaries, all these difficulties have been surmounted, and tranquillity has gradually arisen from the confusion which at first overspread the country.

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[1] Heber, vol. ii. p. 496.

The north-western frontier of the British dominions in this quarter is now formed by the great salt-water lake or morass of the Runn, to the north of which is a sandy desert. This desert tract, between the frontier of Jesselmere, about lat. 26, and the Runn, is divided between the ameers of Sinde and the Joudpoor rajah, whose respective limits might be indicated by a line drawn from Nuggur, in Parkur, to Jesselmere. The Sinde territory, however, would cross the line near its southern extremity, Bankasir; and as the whole of Parkur belongs to Sinde, the frontier is still contested; the Joudpoor rajah claiming Amercote, and having actually levied contributions as far as Sansur and Chaucra. Parkur is partially cultivated, but the remainder is a desert of high sand hills, with scattered spots of verdure; and the villages marked in the maps as towns only contain a number of huts.

GUJUNDERGUR, a town of Hindustan, in the province of Bejapoor, capital of a district of the same name, which is situated principally between the 15th and 16th degrees of north latitude. It is sixty miles east by north from Darwar. Long. 75. 56. E. Lat. 15. 45. N.

GULDENSTAEDT, JOHN ANTHONY, physician and naturalist, was born at Riga on the 26th of April 1745, received the rudiments of his education in that town, and in 1763 was admitted into the medical college of Berlin. He completed his studies at Frankfort-upon-the-Oder, and in 1767 took the degree of doctor of physic in that university. On account of his knowledge of foreign languages, and the progress he had made in natural history, he was considered as a fit person to engage in the expeditions which were planned by the imperial academy of St Petersburg. Being invited to that capital, he in 1768 proceeded thither, and was created adjunct of the academy, and in 1770 member of that society, and professor of natural history. In June 1768 he set out upon his travels, and was absent seven years. From Moscow, where he continued till March 1769, he passed to Voronetz, Tzaritzin, Astrakan, and Kislar, a fortress upon the western shore of the Caspian, and close to the confines of Persia. In 1770 he examined the districts watered by the rivers Terek, Sunsha, and Alksai, in the eastern extremity of Caucasus; and in the course of the ensuing year penetrated into Ossetia, in the highest part of the same mountain, where he collected vocabularies of the languages spoken in those regions, made inquiries into the history of the people, and discovered amongst them some traces of Christianity. Having visited Cabarda and the northern chain of the Caucasus, he proceeded to Georgia, and was admitted to an audience of Prince Heraclius, who had encamped about ten miles from Tiflis. Having passed the winter in examining the country adjacent to that place, he in spring followed the prince to the province of Kaketia, and explored the southern districts inhabited by the Turcoman Tartars in the company of a Georgian noble, whom he had cured of a dangerous disorder. In July he passed into Imeritia, a country which lies between the Caspian and the Black Sea, and is bounded on the east by Georgia, on the north by Ossetia, on the west by Mingrelia, and on the north by the Turkish dominions. He penetrated into the middle chain of the Caucasus, visited the confines of Mingrelia, Middle Georgia, and Eastern and Lower Imeritia; and, after escaping many imminent dangers from the banditti of those parts, fortunately returned on the 18th of November to Kislar, where he passed the winter, collecting various information concerning the neighbouring Tartar tribes of the Caucasus, and particularly the Lesgees. In the following summer he proceeded to Cabarda Major; continued his course to Mount Beshton, the highest point of the first ridge of the Caucasus; inspected the mines of Madshar, and then directed his course to Tcherkask upon the Don. From this place he made expeditions to Azof and Taganrog, then along the new limits to the Dnieper, and terminated this year's route at Krementshuk, in the government of New Russia. In the ensuing spring he was proceeding to Crim Tartary; but having received an order of recall, he returned through the Ukraine to Moscow and St Petersburg, where he arrived in the month of March 1775. Upon his return he was employed in arranging his papers; but before he had time to prepare them for the press, he was seized with a malignant fever, which carried him to the grave in March 1781. Guldenstaedt is the author of, 1. Several Memoirs in Latin, relative to natural history and botany, and containing descriptions of unknown animals and vegetables which he had observed in the course of his travels; 2. Different Memoirs on the history, geography, statistics, and commerce of various parts of Russia; 3. Travels in Russia and in the Mountains of Caucasus, St Petersburg, 1787, 1791, in two vols. 4to, with maps, plans, and figures; 4. Memoir on the products of Russia, calculated to maintain the balance of Commerce always favourable, 1777, in 4to. The labours of Guldenstaedt, as a scientific traveller, have proved very useful to the learned who have written on the Caucasus; and all of them mention his name with commendation. Pallas was the editor of his narrative; but he did not arrange the materials in very regular order, and, besides, intrusted the correction of the press to incompetent hands, the consequence of which has been numerous errors in the orthography of proper names, and even in that of the German words, whilst entire phrases have been omitted. The second volume, which Guldenstaedt had himself prepared for the press, has been printed in a manner less faulty. But the first is the most interesting, because it contains the description of the Caucasus; a region which may almost be regarded as the birthplace and nursery of modern nations.

GULE of AUGUST, the day of St Peter *ad vincula*, which is celebrated on the first of August. It is called the *gule of August*, from the Latin *gula*, a throat, because one Quirinus, a tribune, having a daughter with a disease in her throat, went to Pope Alexander, the sixth in succession from St Peter, and desired of him to see the chains with which St Peter was bound under Nero. His request was granted; and the young woman, having kissed the fetters, was cured of her disease; whereupon the pope instituted this feast in honour of St Peter, and the day was on this occasion called indifferently either the day of St Peter *ad vincula*, from the fetters which wrought the miracle; or the *gule of August*, from that part of the virgin on which the miracle was wrought.

GULES, in *Heraldry*, a corruption of the French word *gueles*, which in this science signifies *red*, and is represented in engraving by perpendicular lines. See HERALDRY.

GULF, or GULPH, a broad and capacious bay comprehended between two promontories, and sometimes taking the name of *sea* when it is very extensive, but particularly when it only communicates with the sea by means of a strait. The word comes from the French *golfe*, and that again from the Italian *golfo*, which has the same signification. Some deduce these terms from the Greek κολπος, which Guishart again derives from the Hebrew גאב, *gob*. Du Cange derives them from the barbarous Latin *gulfum* or *gulfus*, which signifies the same thing.

GULGUNDAH, a town of Hindustan, in the Northern Circars, district of Vizagapatam, seventy miles west by south from Vizagapatam. Long. 82. 20. E. Lat. 17. 35. N.

GUM (*Gummi*) is a concrete vegetable juice, of no particular smell or taste, but which becomes viscous and tenacious when moistened with water; totally dissolves in water into a liquid, more or less glutinous in proportion to the quantity of the gum; is not affected by vinous spirits or oils; burns in the fire to a black coal, without melting or catching flame; and suffers no dissipation in the heat of boiling water. The true gums are gum-arabic, gum-tragacanth, gum-senegal, the gum of cherry and plum trees, and such like. All else have more or less of resin in them.

GUM, among gardeners, a kind of gangrene incident to fruit trees of the stone kind, arising from a corruption of the sap, which, from its viscidity, not being able to make its way through the fibres of the tree, is, by the protrusion of other juice, made to extravasate and ooze out upon the bark.

GUMMIPOLLAM, a town of Hindustan, in the district of Gurrumcondah, a hundred and fifty miles west by north from Madras. Long. 78. 19. E. Lat. 13. 46. N.

GUMBINNEN, a government or circle in the province of East Prussia, a part of which was taken from Lithuania. It extends over 6512 square miles, and contains nineteen cities, thirteen market-towns, ninety-four parishes, and 2954 hamlets, with 46,882 dwellings. The inhabitants in 1817 amounted to 36,480, of whom 6370 were Catholics, and the rest Protestants. The chief place is the city of the same name, situated on the river Pissa. It is not more than a hundred years old, and is well built, but with no fortifications. It contained, in 1817, 488 houses, and 6057 inhabitants, including the military. Long. 22. 30. E. Lat. 54. 31. N.

GUMS, in *Anatomy*, the hard fleshy substance in either jaw, through which the teeth spring from the jaw-bone.

GUN. The word gun includes most of the species of fire-arms; pistols and mortars being almost the only ones excepted from this denomination. They are divided into great and small guns; the former including what we commonly call cannon, ordnance, or artillery; the latter muskets, carabines, musketoons, blunderbusses, fowling-pieces, and the like. Great guns were those first used. They were originally made of iron bars soldered together, and fortified with strong iron hoops; some of which are still to be seen. Others were made of thin sheets of iron rolled up together and hooped; and on emergencies they were made of leather, with plates of iron or copper. These pieces were made in a rude and imperfect manner, like the first essays of many new inventions. Stone balls were thrown out of them, and a small quantity of powder was used, on account of the weakness of their construction. These pieces had no ornaments, were placed on their carriages by rings, and were of a cylindrical form. When or by whom guns were first made is uncertain. At the siege of Claudia Jessa, now called *Chioggia*, in 1366, the Venetians used cannon, which were brought thither by two Germans, with some powder and leaden balls; and they had likewise recourse to the same engines in their wars with the Genoese in 1379. Edward III. made use of cannon at the battle of Cressy in 1346, and at the siege of Calais in 1347. Cannon were employed by the Turks at the siege of Constantinople in 1394, and in that of 1452; these guns threw a ball of 100 lbs., but they generally burst at the first, second, or third discharge. Louis XII. had a cannon of the same size cast at Tours, which threw a ball from the Bastille to Charenton.

Formerly cannon were dignified with uncommon names. In 1503 Louis XII. had twelve brass cannon, of an extraordinary size, called after the twelve peers of France. The Spaniards and Portuguese named them after their saints. At present cannon take their names from the weight of the ball they discharge. Thus a piece which discharges a ball of twenty-four pounds is called a *twenty-four pounder*.

Mortars are supposed to have been fully as ancient as cannon. They were employed in the wars of Italy to throw balls of red-hot iron, stones, and the like, long before the invention of shells. The latter are believed to be of German invention, and the use of them in war was taught by accident. A citizen of Venlo, at a certain festival celebrated in honour of the Duke of Cleves, threw a number of shells, one of which fell on a house and set fire to it, by which misfortune the greater part of the town was reduced to ashes. The first account of shells used for military purposes is in 1435, when Naples was besieged by Charles VIII. History informs us with more certainty that shells were thrown out of mortars at the siege of Wachtendonk in Guelderland, in 1588. Malter, an English engineer, first taught the French the art of throwing shells, which they practised at the siege of Motte in 1634. The method of throwing red-hot balls out of mortars was first put in practice at the siege of Stralsund in 1675, by the elector of Brandenburg; though some say in 1653, at the siege of Bremen.

Muskets were first used at the siege of Rhege in the year 1521. The Spaniards were the first who armed part of their foot with these weapons. At first they were very heavy, and could not be used without a rest. They had matchlocks, and did execution at a great distance. On their march the soldiers carried only the rest and ammunition, and had boys to bear their muskets after them. They were very slow in loading, not only by reason of the unwieldiness of their pieces, and because they carried the powder and ball separate, but from the time it took to prepare and adjust the match. But a lighter matchlock-musket afterwards came into use; and the musketeers carried their ammunition in bandeliers, to which were hung several little cases of wood covered with leather, each containing a charge of powder. The balls were carried loose in a pouch, and a priming-horn was suspended by the side. The muskets with rests were used as late as the beginning of the civil wars in the time of Charles I. The lighter kind succeeded them, and continued till the beginning of last century, when they were also disused, and the troops throughout Europe armed with firelocks.

GUNDARA, a town of Hindustan, in the province of Gujerat, the capital of a district of the same name, tributary to the Mahrattas. Long. 73. 34. E. Lat. 22. 53. N.

GUNDEZAMA RIVER, a small river which, after a short course, falls into the Bay of Bengal at Montapilly, and forms the boundary between the Carnatic and the Guntoor Circar.

GUNDUCK, a town of Hindustan, in the province of Bejapoor, in a district of the same name, forty-seven miles east from Darwar. Long. 75. 42. E. Lat. 15. 27. N. It is also the name of a river, the source of which is said to be situated to the northward of Mooktenath, in the direction of Moostang, a place of note in Upper Thibet or Bhoot, twelve days' journey from Beeni Sheher, and not far from Kaybeeni. At this latter place the breadth of the river is not above thirty yards. Four days' journey north is Mooktenath, near which the Gunduck is called Salgrami; and here it is that are found a curious species of stones, held sacred by the inhabitants. They are mostly round, and perforated in one or more places with worms, which the Hindus, in their degraded superstition, believe to have been done by Vishnu in the form of that reptile; and the stones are prized in proportion to the number of perforations or spiral curves in each. These stones are called Salgrams. A few grains of gold are occasionally separated from the sand of the Gunduck.

GUNDGOLE, a town of Hindustan, in the Northern Circars, and district of Ellore, forty-eight miles north by east from Masulipatam. Long. 16. 20. E. Lat. 16. 49. N.

GUNGAPATAM, a town of Hindustan, in the Carnatic, a hundred and eight miles north from Madras. Long. 79. 13. E. Lat. 14. 27. N.

GUNDWANA, a large province of Hindustan, in the Deccan, extending from the 18th to the 25th degree of north latitude. On the north it is bounded by the provinces of Allahabad and Bahar; on the south by Berar, Hyderabad, and Orissa; on the east by Bahar and Orissa; and on the west by Allahabad, Malwah, Khandesh, Berar, and Hyderabad. It is estimated to be four hundred miles in length, by two hundred and eighty in average breadth. Gundwana, in its most extensive sense, includes all that part of India within the above-mentioned boundaries, which remained unconquered by the Mohammedans up to the reign of Aurungzebe. But Gundwana proper is limited to four districts, named Gurrah-Mundela, Choteesgur, Nagpore, and Chandah, and it stretches south along the east side of the Wurda and Godavery, to within a hundred miles of the mouth of the latter. The greater part of this province is a mountainous, unhealthy, and ill-watered country, covered with jungle, and thinly inhabited; and to its poverty and other bad qualities its independence may be ascribed. A continued chain of moderately elevated hills extends from the southern frontier of Bengal almost to the Godavery, and by these the eastern was formerly separated from the western portion of the Nagpore dominions. This province contains the sources of the Nerbudda and the Soane, and is bounded by the Wurda and Godavery; but a want of water is still the general defect, the streams by which it is intersected, namely, the Mahanuddy, Caroon, Hatsoo, and Silair, being inconsiderable, and not navigable within its limits. The Goands, or the hill tribes, who took refuge in the mountains and fastnesses from the invaders of the country, are the original inhabitants of the country, and still retain all their primeval habits of barbarism. The country which they inhabit is a mere wilderness, its inhabitants scarcely rising above the level of beasts. Their habits are loose and disorderly, and they frequently descend from the mountains which they inhabit to plunder the plains below, from which they were originally driven. In the course of the last century they have acquired an increasing appetite for salt and sugar, and the desire to procure these articles has operated as a stimulus to their industry, and tended more than any other circumstance to promote civilization amongst them. These Goands are Hindus of the Brahminical sect; but they retain many of their impure customs, and abstain from no flesh except that of the ox, cow, and bull. The more fertile tracts of Gundwana were subdued at an early period by the Bhoonsla Mahrattas, who claimed as paramount over the whole. The inhabitants were rendered nominally tributary; but it was found impossible to collect any revenue from them without a detachment, so that in fact the collection of the revenue was rather like a plundering expedition, the cost of which always exceeded the profit. During the war against the Pindarees in 1818, when the British troops invaded the territories of Appa Saheb, the rajah of Nagpore, their operations were greatly facilitated by the insurrection of the hill tribes, who occupied the passes into the Nagpore territories. For a long series of years it was the policy of the rajah of this territory, a descendant of Sevajee, to interfere as little as possible with the neighbouring powers. At length, in 1803, Ragojee Bhoonsla was induced, in an evil hour for himself, to depart from this system of neutrality, and to join Scindia in a confederacy against the British. He was soon reduced, however, by the defeats which the confederates sustained at Assye and Argaun, to sue for peace, as the price of which he ceded a large portion of his dominions to the conquerors, namely, the province of Cuttuck, including the pergunnah and port of Balasore. After the death of this rajah, whose sole object seemed to be to amass treasure, and who, for this purpose, laid the country under heavy contributions, and even joined with the Pindaree plunderers, the throne, contested by various competitors, was at last secured by Appa Saheb, his nephew, who, in the war against the Pindarees, joined the coalition against the British power, and was involved in ruin along with his other allies. A treaty of peace was concluded with him, which he violated; and he was finally deposed in 1818, and the grandson of the late rajah put in his stead. His dominions were at the same time placed under the superintendence of the British.

GUN-MAKING.

Of the word gun there is no satisfactory etymology. Some have derived it from the French word *mangon* (omitting the first syllable), which was the name of a warlike instrument used before the invention of the gun now employed; and the use would seem to justify the derivation, for it was employed in discharging arrows and other missiles, before the invention of gunpowder. Others derive it from *gyn*, an engine employed for similar purposes. Selden says, "the word gun was in use in England for an engine to cast a thing from a man, long before there was any gunpowder found out." The instrument called a gun, used for war or sport, has, in the progress of time, and the changes it has undergone, received various names. We find it called harquebuss, haque-but or hagbut, hand-gun, matchlock, musket, firelock, carabine, fowling-piece, besides several other denominations.

History.

Fire-arms, under one or other of the above-mentioned names, were introduced into this country about the year 1471; and we find them used at the different sieges which were carried on in Europe about the year 1521. In the time of Henry VIII., and his successor Elizabeth, the size and shape of fire-arms were regulated by act of parliament. With respect to the mode of firing the guns then in use, this was done either with a match, or by means of a lock which revolved upon a wheel; in the one case, the priming was fired by means of a burning match, and in the other, by means of sparks generated by the revolution of a notched wheel of steel, placed right above the pan containing the priming. Specimens of these guns are to be seen in the cabinets of the curious, or in the national armories. The firing of guns by means of flints is comparatively a modern invention. The balls at first were not, as in modern times, made up along with the powder, but were carried in a separate purse or bag, and the powder by itself in a horn or flask. To ensure certainty of firing, a finer kind of powder was used for priming than for the ordinary charge of the gun, and this priming-powder was carried by itself in what was called a touch-box. Most of the guns, when first used as warlike instruments, were so heavy that they could not be held out and fired from the shoulder, as in modern times. The soldier, therefore, was provided with a rest, which he stuck into the ground, and upon which he laid his gun, and took a deliberate and steady aim. The rests were shod with iron, to preserve them from decay, and that they might the more easily penetrate the ground; and were of different lengths, according to the height of the man using them. The addition of the bayonet to the gun was not made earlier than 1671, being first used by the French about that time. It derives its name of bayonet from Bayonne, a town in the south of France, where that instrument was first made. Few practical arts have made more rapid advancement than that of gun-making. The competition amongst the gun-makers has been very great, and they have arrived at a degree of perfection which it is almost impossible to surpass. Almost every great town in England, Scotland, and Ireland, as well as on the Continent, has large establishments for carrying on this beautiful and ingenious branch of manufacture. Judging of the perfection of the art by the expense of the article, we would think that gun-making had reached the very acmé of perfection. It was no uncommon thing to pay fifty, sixty, seventy, or eighty guineas for the best London-made gun. The Continent has even gone before us in this respect. When Napoleon was in the plenitude of his grandeur, he established a gun manufactory at Versailles; and we are informed that pistols were there made at ten thousand livres, L.400 sterling, each, and guns at fifty thousand livres, L.2000 sterling. Of these, the first consul often made presents to foreign princes or general officers. The Marquis of Rockingham presented Colonel Thornton with a fowling-piece which cost L.400; and Messrs Robert and John Wheeler, gun-makers, Birmingham, presented George IV. with a gun of the most exquisite workmanship, which cost 300 guineas.

Of the gun barrel.

The principal part of a gun, whether we consider the safety or the execution, is the barrel. Spain long maintained its superiority over the other nations of Europe for gun barrels. This arose from the supposed excellence of the iron made use of in that country in the manufacture of gun barrels, which were almost exclusively forged from the old shoes of the horses and mules, and stub nails gathered from the highways of that country. Not satisfied with the superior toughness which the old shoes and stubs thus acquired, the Spanish gun-makers, it is said, often reduced, by laborious plyings on the anvil, a mass of iron weighing from forty to fifty pounds, to the weight of an ordinary fowling-piece. From the great excellence of these barrels, many of them were counterfeited by artists of other countries, and the public, thus deceived by fictitious names, were charged exorbitant prices. Some of these Spanish barrels used to sell at very high prices, bringing from L.40 to L.50 each. Even the modern barrels made at Madrid are still much esteemed, and bring high prices. Making every allowance for the prejudice in favour of distant times and places, there can be little doubt of the excellence of the Spanish barrels, when got from the first makers, and bearing the highest price. But however excellent the Spanish barrels may have been, and still are, it is perhaps not too much to say, that they are now rivalled by those of British manufacture. The best British barrels, like the Spanish, are made of iron that has been much worn, and thus toughened by the loss of its fiery particles. Old horse stub nails constitute the best iron for the formation of gun barrels; and accordingly there are people who collect the stubs, and even gather them from the highways, and sell them at a high price to the barrel forgers. Hardly any thing can be imagined better than our best stub-nail twisted barrel.

Damascus barrels.

Next in excellence to the stub-nail twisted barrel, is the Damascus barrel. It is called Damascus from its resemblance to the beautiful arms made of Damascus steel, and to be met with in Syria, Persia, Hindustan, and other countries of the East. The Damascus barrels, when of the first quality, finished with care, and browned in the best manner, are the most beautiful of all barrels; but although more beautiful, they are much inferior in strength and safety to the twisted stub-barrels. The Damascus barrels are composed of iron and steel in certain proportions, laid crossways or zig-zag, and heated and hammered together the whole length of the barrel. This is easily perceptible when the browning is either taken off by art or worn off by use, and thus the size, position, and variety of the pieces of metal composing the barrel made to appear. According to the opinion of the best judges, the object sought for in the Damascus is beauty; but though beauty is gained, strength is sacrificed. Not but that a Damascus barrel, when of the first quality, may be perfectly safe, but *superiority* of safety is on the side of the twisted stub-barrel.

Other barrels.

The two other kinds of barrels in ordinary use are the stub-iron barrels mentioned, and those made of the common iron, though of the best quality. Soldiers' muskets are made of this last, and also the plainest guns, that they may be sold at the lowest prices. Barrels have been formed of other materials, such as old scythes, wire, needles, some with the outer coat of iron, and a lining of steel, and others with layers of iron and steel alternately; but it is needless to do more than mention these, as they seem to have been tried merely as matter of experiment, and to have utterly failed. (See Daniel's *Rural Sports*, p. 479.)

Mode of making gun barrels.

Having said thus much of the materials of which gun barrels are made, we must now say a few words of the mode of making them. Having fixed in the first place on the size of the gun, and ascertained as near as may be the width of the bore, and the length and thickness of the barrel, the next thing the forger of the barrel does, is to take a portion of the metal of which he is to make the barrel, and to form it into the shape of a thin flexible bar, something like a cooper's hoop; this bar or hoop must not be all of the same thickness, but that part of it which is to be towards and form the muzzle of the piece, must be thinner than that which is intended to form the breech. An instrument called a mandril is then chosen, according to the size of the intended bore of the gun. The flexible bar or hoop is then heated so as to make it ply easily, and turned round the mandril, much in the same way as a ribbon of leather is turned round the handle of a whip. The edges of the hoop of iron overlap one another a little, so that, when welded, all their joinings may be compact and solid, and no slackness appear where the lips of the bar or hoop touch one another. When the metal has acquired its proper heat, and the weldings are properly executed, the places where the bars overlapped one another are quite imperceptible, and the barrel appears as made out of one piece, and finished at one heat. The mode of making the twisted barrel does not differ materially from that of the common gun now described. The welding of both is the same, the hammering the same, the horizontal stroke called the *jumping* is the same, and they are both wrought on a mandril in the same manner. They differ in this, however, that in the common gun the hoops are broad, overlapping one another considerably, having their edges welded down upon one another, and when finished have the appearance of one continuous piece of plain iron. The bars of the stub-twisted barrel, on the other hand, do not in general exceed half an inch in breadth, and their edges do not overlap, but are just laid close together, and when thus welded, the barrel receives horizontal strokes on the anvil, which make their joints swell up or protuberate, and are then hammered down, and thus made to form a compact and solid union. When the bars are very fine and small, it is called a wire-twist.

Gun-Making.

Boring of arrels.

The instrument with which barrels are bored is called a bit, introduced into the barrel, and turned round so as to cut or grind off all its inequalities, and render the inside a smooth and perfect cylinder. Of course, the size of the bore is regulated by the diameter of that portion of the bit which grinds the barrel. The bit is worked either by water, by steam, or by the hand. To finish the inside of a barrel perfectly, bits of various sizes are used, the last or finishing one doing little more than merely polishing the bore, so that when it receives the last touch of the finishing bit, it appears as bright and smooth as a mirror of polished steel, or the finest glass. We are now speaking of the finest barrels, as plain or common guns are not bored with such care, nor receive so high a polish.

Exterior f the arrel.

The inside of the barrel being finished, the next thing to be done is to polish its exterior. This is done in the first place by the grindstone, and next by the file. The most approved method, however, of smoothing the exterior of a barrel, is by turning it on a lathe, which secures mathematical accuracy, and adds greatly both to its beauty and its strength.

Proving of arrels.

Formerly deplorable accidents were continually happening from barrels being sent abroad imperfectly made, of faulty materials, and which never had been subjected to any proper proof. These evils have now in some measure been remedied by act of parliament. By this act every barrel must be tried by a certain quantity of powder and weight of shot, according to the size of the piece; which proof if it stand, it is stamped accordingly with certain marks and letters, bearing that it has stood the ordeal, and been declared sound and safe accordingly. To counterfeit the government mark or letter, or to expose to sale any gun-barrel without its having been subjected to the government proof, subjects the offending party to certain penalties. Some of the best gun-makers, after the *powder*, subject their barrels to a *water* proof, which is more searching, and brings out the flaws or imperfections of the barrel even more decisively than the powder proof established by government.

Notwithstanding the act of parliament obtained in the year 1813, by the company of London gun-makers, for establishing a proof-house in London, and another at Birmingham, deplorable accidents are still happening by the bursting of gun-barrels. Various methods are practised to evade the effect of this act, arising from the temptations to elude its sanctions, the difficulty of bringing delinquents to justice, and the smallness of the penalty incurred. It therefore often happens, in direct violation of the act, that gun-barrels are made of the most faulty materials, and sent abroad to the public stamped with the proof-house mark, that never underwent the ordeal of any proof whatever. The best gun-makers are so much aware of this, that they do not trust the barrels whose sufficiency is verified merely by the legal stamp, but subject them in their own premises to the severest test, both by powder and water proof. Complete security can be had by no other means. In verification of this, take the following quotation: "The forging of the proof-marks of the London and Birmingham proof-houses is very common; and the forging is executed with such skill, and the imitation so exact, that the proof-masters are unable to swear to the forging of their own marks. The penalty is so trifling, and the trouble and difficulty of conviction so great, that those guilty of the forgery are rarely brought to punishment. There are persons in Birmingham that would make you up a gun for nothing but the price of the proof as profit." See an admirable essay on the gun, by Mr William Greener, gun-maker, Newcastle, in which, by a series of admirably conducted experiments, and the most conclusive arguments, he appears to have completely established the danger of trusting to the mode of trial adopted by the proof-houses of London and Birmingham, and laid down rules, which, if universally adopted, would go far to prevent the melancholy catastrophes frequently arising from the bursting of gun-barrels. We recommend this essay, in all the departments of practical gun-making, as one of the best that has fallen in our way, and well worthy the attention of every one who wishes solid information on the beautiful and interesting art of gun-making. We subjoin a scale of proof, as established by act of parliament, obtained in 1813 by the company of gun-makers in London, and amended in 1815, and which is still in force.

Proof Scale.

No. of Balls to the pound avoird.	Weight of Powder for proof.		No. of Balls to the pound.	Weight of Powder for proof.		No. of Balls to the pound.	Weight of Powder for proof.		No. of Balls to the pound.	Weight of Powder for proof.		No. of Balls to the pound.	Weight of Powder for proof.	
	oz.	drs.		oz.	drs.		oz.	drs.		oz.	drs.		oz.	drs.
No. 1	11	0	No. 11	1	0	No. 21	0	10	No. 31	0	7½	No. 41	0	6
2	5	5	12	1	0	22	0	9	32	0	7½	42	0	6
3	3	8	13	0	15	23	0	9	33	0	7	43	0	6
4	2	11	14	0	14	24	0	8½	34	0	7	44	0	6
5	2	2	15	0	14	25	0	8½	35	0	7	45	0	5½
6	1	12	16	0	13½	26	0	8½	36	0	7	46	0	5½
7	1	8	17	0	13½	27	0	8½	37	0	7	47	0	5½
8	1	6	18	0	12½	28	0	8½	38	0	6½	48	0	5½
9	1	2	19	0	11	29	0	7½	39	0	6½	49	0	5½
10	1	1	20	0	10	30	0	7½	40	0	6½	50	0	5½

The powder used is the best round granulated government powder.

Rifle.

Rifles differ from other guns in their internal construction, and a little in their exterior appearance, although they are composed of the same materials, and are forged in a similar way. After the barrel intended for a rifle is bored nearly to a perfect cylinder, the next thing is to draw in it parallel grooves of a certain depth, running the whole length of the barrel. The grooves in the rifle are not formed all at once, but successively, one after another, till the whole is finished. The grooves are then all polished out in the most careful manner, and rendered of equal depth and fineness. The grooves of some rifles have a slight twist something like a screw, which gives the ball a rotatory motion when it escapes from the muzzle, supposed favourable to its straightforward horizontal flight. A variety of opinion has prevailed as to the depth or shallowness of the grooves in a rifle, some maintaining that they should be pretty deep, and others that they should be very shallow. Robins in his learned and scientific treatise on fire-arms, pleads for the latter; and his reasons appear very satisfactory.

"'Tis sufficiently obvious," says he, "that whatever tends to diminish the friction of rifles, renders them more complete; and consequently, the less the rifles are indented, provided they are sufficiently so to keep the bullet from turning round in the barrel, the better they are." To secure accuracy of flight, he continues, "it is necessary that the sweeps of the rifles should be exactly parallel to each other; for then, after the bullet is put in motion, it will slide out of the barrel without any shake, and with a much smaller friction, than if the threads of the rifles had not the same degree of incurvation. Foreigners are so exact in this, that they try their pieces by pouring melted lead into the barrel; and letting it cool, they thus procure a leaden cylinder of perhaps two or three diameters in length, exactly fitted; if this, being gently pushed by the rammer, will pass from one end of the barrel to the other without any sensible strain, they pronounce the rifle regularly finished; but if it anywhere sticks or moves hard, the piece is esteemed defective."

Breeching of barrels.

There are three kinds of breeching; namely, what is called the common plug breeching, the chamber plug or mortar breeching, see Plate CCLXXIII. fig. 1, and the patent breeching. The first used to be put to the plainest kind of fire-arms, as soldiers' muskets, blunderbusses, and the common plain guns used for ordinary purposes. The second kind of breeching is a slight improvement and alteration on the first, which consists in opening the motion-hole running at right angles through both the male and the female screws, and meeting a small antechamber, which comes from the middle of the main chamber, and thus ignites the charge, not, like the common plug, laterally, but from behind and in the centre. The next is the patent breeching, see fig 3, which, indeed, after all that has been said about it, is but a slight alteration on the one last mentioned, and differs from it almost in nothing, except, perhaps, in superior neatness, in having the screws not affected by the touch-holes, in bringing it nearer the *ante*, and thus securing more rapid ignition in the *main* chamber. However, for a fine gun, the patent breeching ought certainly to be preferred, as much handsomer, and altogether in better keeping with a highly finished fowling-piece.

Shooting of barrels.

The shooting of barrels depends upon three things; their boring, their length, and their weight.

In boring their barrels, the most approved makers in general observe the following rules: A little tightness for a few inches at the breech end; then a perfect cylinder; and then ease the bore a few inches at the mouth. The tightness at the breech end, the cylinder in the middle, and the widening at the mouth of the barrel, must be in proportion to its length. For a *percussion* gun a perfect cylinder the whole length of the barrel, except a few inches of ease at the mouth, is adopted by most of the makers as the best. The next thing affecting the shooting of a gun is the length of the barrels. Here opinions vary, one maintaining that fowling-pieces of twenty-eight or even twenty-four inches in length in the barrels will shoot as well as those of thirty, forty, and forty-five inches long. Robins, who instituted a set of experiments to settle this point, says, that he found this to be the case; and the conclusion he drew from his experiments was, that the sportsman might please himself as to the length of his barrels, varying from twenty-eight up to forty inches; but that either below or above this the barrels began to fall off. The writer of this article suspects there must have been something faulty and imperfect in Mr Robins' experiments; for after the most careful consideration of the subject, he is satisfied that short barrels are inferior to the long, both in the closeness and the strength with which they throw their shot; the only advantage they have is in snap shooting, but in ordinary sport they are not to be compared to the long barrel. For a barrel of ordinary calibre, its length should not be less than thirty-two inches. In support of this opinion we might refer to the authority of the late Joe Manton of London, no incompetent judge in this matter; and for the verification of the soundness of the opinion in favour of long barrels, we refer to Colonel Hawker, who, after a course of seemingly accurately-conducted experiments, has triumphantly established the superiority of long over short barrels. As to the weight of barrels, it is not common sense that light should do equal execution with heavy barrels. Besides the danger attending the use of light barrels, from their violent vibration when fired, they never can send the shot so strongly and so steadily as those of more metal; and from the necessity of giving them less both of powder and shot, it is evident, even to demonstration, that they never can be so deadly. A double gun, to be safe and to do good execution, should not be below seven pounds or seven pounds and a half, or even eight pounds, if the sportsman does not grudge to carry it.

Gun-locks.

Whatever may be said of the Spanish or other continental barrels as rivalling the British, no one will dispute the superiority of our locks. It is allowed by all competent judges, that the beauty and excellence of our finest locks are quite unrivalled. The ancient gun-lock was a very simple and clumsy contrivance. We gave a short description of them in the first part of this article. Here it is necessary only to name them. These were the matchlock, the wheel-lock, and the snaplance. The last was a great improvement on the two others, and indeed is the foundation of our present flint-lock, with such alterations and improvements as the genius of modern times has suggested. Any description of the present flint-lock is unnecessary, as it is known to every one.

Percussion-locks.

Forsyth's lock, fig. 2, differs from the ordinary percussion-lock in a few particulars. It has a magazine, *a*, for containing the percussion powder; and this magazine revolves round a roller, *b*, the end of which is screwed into the breech of the barrel. A small hole is opened in the roller, through which the priming powder passes. This hole communicates with a channel which leads to the chamber of the gun. Right above the little hole in the roller, is the pan for containing the priming. The magazine is provided with a steel punch, *c*, the under end of which is right above the pan, ready to ignite the priming when struck on the upper end by the cock *d* in firing the gun. When the under end of the punch is struck down into the pan, it is raised up again to its former position by a spiral spring. Every time the gun is fired, the magazine is turned round so far as to drop a priming of percussion powder into the pan. It is then turned back again, and the steel punch is found in the position ready to fire the gun when the trigger is drawn.

The merit of inventing this lock, see fig. 2, and the application of percussion powder as a substitute for flint in the discharge of fire-arms, belongs exclusively to the Reverend Mr Forsyth, minister of Belhelvie, a parish in Aberdeenshire. Mr Forsyth's invention is a very ingenious one, and his principle, though no doubt very much altered and improved in its application, has already almost completely supplanted the use of the flint gun. Notwithstanding the great superiority of the percussion over the flint gun, it had to struggle for many years with the most violent prejudices; but the principle being sound, it has now gained a most complete triumph, so much so, that there is not perhaps at this moment a high-priced flint fowling-piece making, either in Great Britain or on the Continent; so complete a revolution in fire-arms has the percussion principle achieved. Although now and then an old sportsman may be met with whose prejudices are too obstinate to be subdued, and who may still hold out, yet even these are gradually falling into the opposite opinion; so that the percussion gun may now be considered as nearly universal. This is certainly a great triumph to the principle first thought of and applied by Mr Forsyth; but had the application of this principle not been simplified by subsequent alterations and improvements, it is impossible that the percussion gun would ever have gained so sure and universal a triumph. Accordingly, till the invention of the copper cap, the percussion advanced very slowly. This arose from two causes, the expense of Mr Forsyth's locks, and the complication of their structure. Although Mr Forsyth's locks are the same internally (we are speaking of his original patent locks), yet externally they differ materially both in appearance and complication from the ordinary lock; and these circumstances increased both their expense and their liability to derangement. This will be obvious from the inspection of the lock, which will give a far better idea of it than any description. To the inventor of the copper cap, then, whoever he was, for there is a dispute about it, must be attributed the rapid and extraordinary spread of the percussion gun. The copper cap, indeed, is so simple, and so easy in its application, both to new guns and those already in existence, that we do not think it will ever be generally superseded. A great variety of contrivances have been fallen upon as substitutes for the copper cap, but it still keeps its ground, and is likely to do so against all competition.

The superiority of the percussion, and the preference given it by the public, over the flint gun, we conceive, consists in the following circumstances: Its handsome appearance, the comfort in the use of it, the certainty and the rapidity of its discharge, its near approach to a water proof, and the facility with which it at all times obeys the eye of the sportsman. Looking at all these advantages of the detonating gun, we think it a great acquisition to sportsmen, and not likely soon to be supplanted by any other.

Ordinary percussion-ock. This lock internally is the same as the flint-lock, but externally is a little different both in construction and appearance. See fig. 4. We think it much handsomer than the flint-lock, as it gets entirely clear of three projecting and unseemly encumbrances, the hammer, the hammer spring, and the pan; nothing appears externally on the lock-plate but the cock or striker, which gives the blow to the copper cap when the gun is fired, and which is hollow or concave, provided also with a small ring of projecting metal, called a shield or fence, running round the cock at the bottom of the concave head, to defend the eye from the splinters of the copper cap, and the small stream of fire that issues upwards from the hole in the nipple when the gun is discharged. Serious accidents happened at first from the use of detonators, by not adopting such precautions. At first the heads of the cocks or strikers of copper-cap guns were not made hollow or concave, and without any shield or fence round them to protect the eye, but were made plain or smooth, like the head of an ordinary carpenter's hammer: the consequence was, that when the copper cap flew into pieces when struck, the eye of the sportsman was frequently injured, and sometimes totally destroyed, by such accidents. The next peculiarity of the ordinary detonating lock is the pivot or nipple, and is that part of it which supplies the place of the pan, hammer, and hammer spring of the flint-lock. It is screwed into the patent breech, and is perforated by a small hole upon which the copper cap is put. It is made two ways, either plain or with small circular rings running round it, intended to prevent the cap from falling or being rubbed off. If properly made, the small rings round it are unnecessary.

As Barthold Schwartz, a clerical person, a native of Germany, is considered as the inventor of gunpowder in Europe, and as the Reverend Mr Forsyth, minister of Belhelvie, Aberdeenshire, is the inventor of the detonating gun, so it also happens that the Reverend Dr Somerville, minister of the parish of Currie, Edinburghshire, is the inventor of the safety-gun.

Mechanism of Dr Somerville's safety. This is effected by means of a stop, slide, or catch, situate under the trigger-plate A. It is pulled forward into a nick in the trigger by means of a spring B on the front of the guard, worked by means of a key C, which presses upon the spring when the gun is discharged. The second method of safety is accomplished by means of a small bit of moveable iron A, of a circular form, rising through a small opening B in the lock-plate C, which prevents the cock from reaching the nipple, as represented in fig. 4, until it is drawn back within the lock-plate when the gun is fired. Fig. 7 is method second discharged. The third method is accomplished by means of a small bit of iron like a little flap or wing A, folded down in front of the breast of the cock B when the gun is put in the position of safety, and which flap or wing is again raised when the gun is to be fired. This little wing turns on the front of the lock-plate by means of a hinge C. Both these methods are worked by means of a slide or lever, and key, similar to what is described in method first. Fig. 9 is method third discharged.

Danger of ordinary gun without safety. There is no man who knows any thing about fire-arms but must be satisfied of the danger attending the use of the ordinary gun. The many advices given about caution by every writer on field-sports; the reiterated paragraphs of newspapers on this subject; the earnest and solicitous admonitions of parents, relations, guardians, and friends; the anxiety felt at the departure, and the joy at the return, of the young sportsman unscathed; the distressing and tragical tales of death and mutilation told in almost every newspaper, announce but too emphatically that the danger is neither imaginary, nor the mischief attending the use of fire-arms of rare occurrence. But if fears about their use, and the admonitions prompted by such fears, could remove the danger, it would be well; experience, however, proves that such admonitions are often in vain. The fact is, shooting is an amusement of that kind which, especially with young sportsmen, so suspends attention, absorbs thought, lays reason and reflection so completely asleep, and excites such ardent and headlong feelings, as to leave no room for any thing but the occupation of the moment and to talk of preventing entirely accidents from fire-arms by admonition is perfectly hopeless, as it is calling upon young men to exercise thought and caution where thought and caution, we do not say are impossible, but frequently so difficult as to render them very nearly so. It is not without reason, then, that writers have cautioned sportsmen to be careful in the use of fire-arms, and that parents have felt anxiety about their sons when engaged in field-sports with weapons in their hands so precarious in their use, and so fatal in their effects. Too frequently the sprightly and spirited youth, in pursuit of pleasure, finds death. Advice may be given, and caution may be exerted at all times, but still there will be ample room for the employment of means more easy in their application, and more certain in their effects, than either the one or the other. These means are completely furnished by Dr Somerville's safety-gun.

Principle of the safety. Dr Somerville, a few years ago, published an essay on his safety-gun, and what follows is little more than an abridgment of it. The difficulty, he informs us, was to get a proper principle; but this gained, every thing was gained. Now a proper principle must accomplish four points: 1st, It must allow the right hand to carry the gun in the natural position, without touching or coming in contact, so as to disturb or undo the spring or safety apparatus; 2dly, the safety must work mechanically; 3dly, there must be no loss of time in working it; and, lastly, the gun must always be locked except when levelled by the eye and pressed to the shoulder; in other words, it must be locked in its approach to the shoulder, and locked in its descent from it. These four points Dr Somerville has completely gained. This will be obvious from the following mode of applying his principle. Morally speaking, accidental discharge with this gun is completely out of the question, at least the probability is so small, that perhaps philosophy could not calculate when this gun would be discharged in any other way than by design. To fire this gun, two specific points must be touched at one specific time. If accidental pressure shall touch the key which works the safety, no evil happens, because the trigger is untouched; and if it touch the trigger, no evil happens, because it is locked. The pressure must be against the trigger and on the key at the same instant of time, otherwise the lock will not work. If the trigger is touched the twinkling of an eye before the key, or the key before the trigger, no evil can ensue; for unless touched at the same moment, they mutually counteract and support one another, and thus prevent the gun going off. Accident may touch the key and the trigger of this gun as well as any other; but then accident cannot touch both key and trigger at the same instant. Design only can touch two specific points at one specific time. If accident do touch the key and trigger, it must be in succession; but successive touching will not fire the gun. It must be simultaneous to do it; but this supposes thought, and thought supposes design. A short statement of some of the advantages of this gun will conclude our article.

Advantages of this gun.

The first advantage, then, which this gun has over the one in common use, is the *preservation of human life.* This is the first and great object of the present contrivance; and in this point of view it was first thought of by the inventor. The other advantages which it possesses are all subordinate to this, and come in merely as subsidiary to the main design. The second advantage of this gun over the ordinary fowling-piece, is *superior dispatch.* This is evident at first sight, as this invention enables the sportsman to go with his gun full cocked, and thus, when game rises unexpectedly, saves all the time lost, as well as distraction of thought occasioned, by cocking the ordinary gun; and consequently he has only to present and discharge his piece, which he is enabled to do before the gun in ordinary use can be cocked and brought to the shoulder. So sensible are sportsmen of the advantage of having their fowling-pieces full cocked, that many of them go with them thus prepared, though at the risk both of their own and their friends' lives. Colonel Hawker, in his instructions to young sportsmen, when speaking of the danger arising from fire-arms in the field, even when the sportsman goes up to his game with the ordinary gun on half cock, says, "Suppose an eager young man, who is unaccustomed to shooting, walks up to his dog with his gun half cocked; the moment the birds rise, he is in such a state of agitation, that in attempting to draw back the cock of his gun, with a trembling hand, he lets it slip before the scear has caught the tumbler. Off goes the gun, and the best fortune that can be expected is the happy escape of a favourite dog, or the life of his fellow shooter." From this statement we argue thus: If such is the danger with the ordinary gun carried on half, what must be the danger when carried on full cock? The fact is, with the ordinary gun there is great danger both ways. The present invention, however, removes danger from every way of carrying the gun, as it is always completely locked till it is raised and pressed to the shoulder, and levelled by the eye of the sportsman.

The third advantage of this gun over others is, the ease and tranquillity of mind which it necessarily imparts, not only to the sportsman himself, but to his friends, parents, and relations at home, from the perfect security which it affords him. No man of ordinary feeling can be perfectly at ease, when surrounded by his friends, with a loaded gun in his hand, leaping walls, crossing ditches, brushing through thickets, underwood, and hedges, whilst all the time the life of his friends is within the reach of a mortal weapon, and the danger of that weapon guarded against only by the fallaciousness of memory, and the risk increased tenfold by the eagerness of pursuit, and the suspension of thought necessarily occasioned by a species of amusement which, more than any other, lays caution asleep, and occasions that flutter and hurry of spirits from which such fatal accidents generally spring. It is certainly no very pleasant thing, in the present state of fowling-pieces, to walk all day with two tubes opposite one's heart, which any neglect or incautiousness on the part of one's self or friend might render fatal in a moment. What may be called, then, the moral advantage arising from a sense of safety and the removal of anxiety, is not the least advantage in the use of this gun. A man, to be sure, with the ordinary fowling-piece does not always shoot himself or friend; but there is always a *possibility* of doing both, and the accumulated uneasiness and anxiety arising from the very *possibility*, is no small deduction from the full enjoyment of his amusement. The hair that suspends the sword over his head does not always snap, to be sure, but there is always a *chance* of its doing so. The present safety removes all such anxiety, and prevents all such chances; for it is completely locked, except when levelled at the object, and in the very act of pulling the trigger; for, the moment it ceases to be levelled at the game, the returning action of the safety-spring locks in the gun, not only without the consent, but even contrary to the will, of the sportsman, and thus protects both himself and friends. It must not be supposed from this that the trigger must be drawn the moment the safety-spring is pressed; all that is necessary is, that when the gun is levelled and pressed to the shoulder, which, as a matter of course, undoes the safety-spring, and allows the locks to work, the right hand shall then draw the trigger, at whatever time the sportsman thinks he has covered his game, or feels inclined to fire, so that he may keep the safety apparatus undone, or worked, any length of time he pleases, before he draws the trigger.

A fourth advantage is, that one of the modes of shooting with this gun saves the left hand in case of the barrel bursting, by forcing the sportsman to place his left hand on the front of the guard. Colonel Hawker, in his *Instructions to Young Sportsmen*, and Daniel, in his *Rural Sports*, both most competent judges, recommend this mode of holding the gun. Daniel's words are, "Always hold the gun with the left hand close to the guard, and not forward on the barrel to grasp it near the entrance of the ramrod, notwithstanding it has been so strenuously recommended; all the requisite steadiness in taking aim, and even of motion, in traversing the flight of a bird, can be obtained by thus holding the heaviest pieces; and in the case of a barrel's bursting, the certainty of having a hand or arm shattered by grasping the barrel, is reduced to the chance of escaping the effects of such an accident by placing the hand close to the guard beneath it."

The fifth advantage of this gun which we mention is, that it completely avoids the necessity of perpetually cocking and uncocking, a very fertile source of danger attending the use of the ordinary gun in the field. With the ordinary gun, the moment the dogs point, or seem to point, both locks are cocked; and if there happen to be no game, or it rise beyond reach, the gun must be uncocked again; so that with the ordinary gun the sportsman during the whole day is perpetually cocking and uncocking his gun. To his friend in company with him, who sees him perpetually thumbing his locks, and hears them clicking all day, it is a source not only of great annoyance, but also of great danger. Accidents often happen from this cause.

The sixth advantage of this gun is, against the danger incurred from the breaking of the point of the scear. This is a very common source of danger, from which the sportsman cannot protect himself or friends, for he is not aware of it. The danger from this cause happens in the following manner: When the sportsman is in search of game with his gun on half cock, up springs the game, and the gun is instantly levelled without being cocked; the trigger remains immoveable; a violent pull is then given; the scear is strained, probably cracked; ignorant that the scear has been injured by the violent pull, the sportsman proceeds in search of his game as usual. The scear may break the next hour, the next day, or the next week; but at whatever time it gives way, the sportsman and his friends are all this time in danger, without having the least idea they are so. This is a very common source of mischief, against which the safety is a complete protection; for although any part or every part of the inside of the lock were to give way, the cock or striker cannot reach the nipple to fire the gun till the safety-spring is drawn back.

Another common source of danger with the ordinary gun is, that sportsmen often go with the cock or striker resting on the nipple; the consequence of which is, that any thing drawing back the striker by accident, a certain distance, and then losing its hold, off goes the gun. Against accidents of this kind the safety is a complete protection, as the striker cannot be pulled back but by the *design* of the person using the gun.

The last advantage of this gun we mention, is the security it gives to loaded guns, when lying in houses, or exposed to the curiosity of thoughtless or ignorant persons. Many a life has been lost by guns having been presented and fired off in a wanton and incautious manner. Such accidents cannot happen with the present gun; for, to render it perfectly safe, it is only necessary to stop the action of the safety-spring, which is done by a very simple contrivance, and restored again to action by the same simple means.

Looking at all these advantages of Dr Somerville's safety-gun, we anticipate that in a short time no gun will be considered complete without having a safety attached to it.

We shall conclude this article by the insertion of a few tables abridged from a work published in Birmingham, by the authority of the Proof Company, illustrating the different proportions of the British and French muskets. The serjeants of the British light-infantry regiments carry a small musket or fusil of the following dimensions:—

Length of the barrel, in inches	37
Diameter of the bore, in inches	·65
Weight of the firelock with bayonet, in pounds avoirdupois	9

Several regiments of British cavalry are armed with rifle guns of the following dimensions:—

Length of the barrel, in inches	30
Diameter of the bore, in inches	·623
Weight of the ball for service, in ounces	·761
Weight of the piece with sword, in pounds avoirdupois	10·75

The carbine and pistol borne by the regiments of heavy cavalry are of the following dimensions:—

CARBINE.

Length of the barrel, in inches	28
Diameter of the bore	·645
Diameter of the ball, for service	·623
Weight of the ball for service, in ounces	·8
Weight of the piece with the bayonet, in pounds,	8·25

PISTOL.

Length of the barrel, in inches	9
Diameter of the bore	·645
Diameter of the ball	·623
Weight of the ball	·8
Weight of the pistol	3·2

The carbine carried by the regiments of light cavalry is in length only sixteen inches, and in weight six pounds. The pistol is in length, diameter, and weight, the same as that used by the heavy cavalry. The greater liability of the ramrod to shake out of the shorter carbine has led to the adoption of an invention of Lord Anglesey's, by which the rod is connected to the piece by a swivel. The same invention is also applied to the pistol.

The barrel of the French musket is longer than that of the British, and the bayonet is shorter, though not so much so as to make the barrel and bayonet of the British musket equal in length to that of the barrel and bayonet of the French. The following are the proportions:—

FRENCH MUSKET.

Length of the barrel, in inches	44·72	
Length of the bayonet, in inches	15·	
		59·72

BRITISH MUSKET.

Length of the barrel, in inches	39	
Length of the bayonet, in inches	16	
		55
Difference of length in favour of the French musket		4·72 inches.

In the comparison just drawn between the respective lengths of the British and the French muskets, that of the British is of the India pattern musket, which was used by our forces during the late war; the musket now carried by our infantry is longer, the barrel being forty-two inches and the bayonet seventeen inches, being very nearly equal in length to the French musket.

The locks of the French muskets have brass pans, and they are altogether heavier, and have a more clumsy appearance, than the British. The calibre of the barrel is likewise narrower than that of our muskets. This will be more distinctly seen by the following statement of the dimensions of the French musket, and of the new pattern musket now carried by the British forces.

FRENCH MUSKET.

Length of the barrel, in inches	44·72
Diameter of the bore	·69
Diameter of the ball for service	·65
Weight of the ball for service, in ounces avoirdupois	·958
Weight of the firelock with bayonet, in pounds avoirdupois	10·98
Length of the barrel and bayonet, in inches	59·72

NEW LAND PATTERN BRITISH MUSKET.

Length of the barrel, in inches	42
Diameter of the bore	·75
Diameter of the ball for service	·676
Weight of the ball for service, in ounces avoirdupois	1·06
Weight of the firelock with bayonet, in pounds avoirdupois	12·25
Length of the barrel and bayonet, in inches	59

GUNNERY,

Definition. Is the art of determining the motions or ranges of projectiles discharged from cannon, mortars, howitzers, and other kinds of artillery.

I.—THEORY OF GUNNERY.

Theory. The use of fire-arms had been long known before any theory concerning them was attempted. The first author who wrote professedly on the flight of cannon-shot was Tartalea. In 1537 he published a book, at Venice, entitled *Nova Scientia;* and afterwards another, printed at the same place in 1546, in which he treats of these motions. His discoveries were but few, on account of the imperfect state of mechanical knowledge at that time. He determined, however, that the greatest range of cannon was with an elevation of forty-five degrees; and he likewise ascertained, contrary to the opinion of practitioners, that no part of the track described by a bullet is a right line, although the curvature is in some cases so small that it is not attended to. He compared it to the surface of the sea, which, though it appears to be a plane, is yet undoubtedly incurvated round the centre of the earth. He also assumes to himself the invention of the gunner's quadrant, and often makes shrewd guesses as to the results of untried methods. But as he had not opportunities of observing practice, and founded his opinions solely on speculation, he was condemned by most of the succeeding writers, though often without any sufficient reason. The philosophers of those times also intermeddled in the questions which hence arose; and many disputes on motion occurred, especially in Italy, where they continued till the time of Galileo, and probably gave rise to his celebrated Dialogues on Motion. These were published in the year 1638; but in the interval, and before Galileo's doctrine was thoroughly established, many theories of the motion of military projectiles, and many tables of their comparative ranges at different elevations, were published; all of them egregiously fallacious, and utterly irreconcilable with the motions of these bodies. Many of the ancients indeed indulged in speculations concerning the difference between natural, violent, and mixed motions; but when they did so, scarcely two of them could agree in their theories.

It is strange, however, that, during all these contests, so few of those who were intrusted with the charge of artillery thought it worth while to bring these theories to the test of experiment. Mr Robins informs us, in the preface to his New Principles of Gunnery, that he had met with no more than four authors who had treated on this subject. The first of these is Collado, who has given the ranges of a falconet carrying a three-pound shot to each point of the gunner's quadrant. But, from his numbers, it is manifest that the piece was not charged with its customary allotment of gunpowder. The results of his trials were, that the point-blank shot, or that in which the path of the ball did not sensibly deviate from a right line, extended 268 paces. At an elevation of one point (or 7½° of the gunner's quadrant), the range was 594 paces; at an elevation of two points, 794 paces; at three points, 954 paces; at four, 1010; at five, 1040; and at six, 1053 paces. At the seventh point, the range fell between those of the third and fourth; at the eighth point it fell between the ranges of the second and third; at the ninth point, it fell between the ranges of the first and second; at the tenth point, it fell between the point-blank distance and that of the first point; and at the eleventh point, it fell very near the piece. The paces spoken of by this author are common steps.

The year after Collado's treatise, another appeared on the same subject, by one Bourne, an Englishman. His elevations were not regulated by the points of the gunner's quadrant, but by degrees; and he ascertained the proportions between the ranges at different elevations and the extent of point-blank shot. According to him, if the extent of the point-blank shot be represented by 1, the range at 5° elevation will be $2\frac{2}{9}$, at 10° it will be $3\frac{1}{3}$, at 15° it will be $4\frac{1}{3}$, at 20° it will be $4\frac{5}{6}$, and the greatest random will be $5\frac{1}{2}$. This last, he tells us, happens in a calm day, when the piece is elevated to 42°; but according to the strength of the wind, and as it favours or opposes the flight of the shot, it may be from 45° to 36°. He has not informed us with what piece he made his trials, though from his proportions it seems to have been a small one. This however ought to have been attended to, as the relation between the extent of different ranges varies extremely according to the velocity and density of the bullet.

After him, Eldred and Anderson, both Englishmen, published treatises on this subject. The first published his treatise in 1646, and gave the actual ranges of different pieces of artillery at small elevations, all under ten degrees. His principles were not rigorously true, though not liable to very considerable errors; yet, in consequence of their deviation from the truth, he found it impossible to make some of his experiments agree with his principles.

In 1638, Galileo printed his Dialogues on Motion. In these he pointed out the general laws observed by nature in the production and composition of motion, and was the first who described the action and effects of gravity on falling bodies. On these principles he determined, that the flight of a cannon-shot, or any other projectile, would be in the curve of a parabola, except in as far as it was diverted from that track by the resistance of the air. He has also proposed the means of examining the inequalities which thence arise, and of discovering what sensible effects that resistance would produce in the motion of a bullet at a given distance from the piece.

Though Galileo had thus shown, that, independently of the resistance of the air, all projectiles would, in their flight, describe the curve of a parabola; yet those who came after him seem never to have imagined that it was necessary to consider how far the operations of gunnery were affected by this resistance. The subsequent writers indeed boldly asserted, without making the experiment, that no considerable variation could arise from the resistance of the air in the flight of shells or cannon-shot. In this persuasion they supported themselves chiefly by considering the extreme rarity of the air, compared with those dense and ponderous bodies; and at last it became an almost generally established maxim, that the flight of these bodies was nearly in the curve of a parabola.

In 1674, Mr Anderson above mentioned published his treatise on the nature and effects of the gun; in which he proceeds on the principles of Galileo, and strenuously asserts that the flight of bullets is in the curve of a parabola; undertaking to answer all objections which could be brought to the contrary. The same thing was also undertaken by Mr Blondel, in a treatise published at Paris in 1683, where, after long discussion, the author concludes that the variations from the resistance of the air are so slight as scarcely to merit notice. The same subject is treated of in the Philosophical Transactions (No. 216, p.

68) by Dr Halley; and he also, swayed by the great disproportion between the density of the air and that of iron or lead, thinks it reasonable to believe that the resistance of the air to large metal shot is scarcely discernible; although in small and light shot he owns that it must be accounted for.

But though this hypothesis went on smoothly in speculation, yet Anderson, who made a great number of trials, found it impossible to support it without some new modification. For though it does not appear that he ever examined the comparative ranges of either cannon or musket shot when fired with their usual velocities, yet his experiments on the ranges of shells thrown with small velocities, in comparison of those above mentioned, convinced him that their whole track was not parabolical. But instead of drawing the proper inferences from this, and concluding that the resistance of the air was of considerable efficacy, he framed a new hypothesis, which was, that the shell or bullet, at its first discharge, flew to a certain distance in a right line, from the end of which line only it began to describe a parabola. And this right line, which he calls the line of the impulse of the fire, he supposes to be the same in all elevations. Thus, by assigning a proper length to this line of impulse, it was always in his power to reconcile any two shots made at different angles, let them differ as widely as we may please to suppose. But this he could not have done with three shots; nor indeed does he ever tell us the result of his experiments when three ranges were tried at one time.

When Sir Isaac Newton's *Principia* was published, he particularly considered the resistance of the air to projectiles which moved with small velocities; but as he never had an opportunity of making experiments on those which move with such prodigious swiftness as shots and shells, he did not imagine that a difference in velocity could make such differences in the resistance as are now found to take place. Sir Isaac found, that, in small velocities, the resistance was increased in the duplicate proportion of the swiftness with which the body moved; that is, a body moving with twice the velocity of another of equal magnitude, would meet with four times as much resistance as the first; with thrice the velocity it would meet with nine times the resistance; and so on. This principle itself is now found to be defective with regard to military projectiles; though, if it had been properly attended to, the resistance of the air might have been reckoned much more considerable than was commonly imagined. So far, however, were those who treated this subject scientifically from giving a proper allowance for the resistance of the atmosphere, that their theories differed most egregiously from the truth. Huygens alone seems to have attended to this principle. In the year 1690, he published a Treatise on Gravity, in which he gave an account of some experiments tending to prove that the track of all projectiles moving with very swift motions was widely different from that of a parabola. All the rest of the learned acquiesced in the justness of Galileo's doctrine, and erroneous calculations concerning the ranges of cannon were accordingly given. Nor was any notice taken of these errors till the year 1716. At that time Ressons, a French officer of artillery, distinguished by the number of sieges at which he had served, by his high military rank, and by his abilities in his profession, presented a memoir to the Royal Academy, importing, that, "although it was agreed that theory joined with practice did constitute the perfection of every art, yet experience had taught him, that theory was of very little service in the use of mortars; that the works of Blondel had justly enough described the several parabolic lines, according to the different degrees of the elevation of the piece; but that practice had convinced him there was no known theory for the effect of gunpowder; for having endeavoured, with the greatest precision, to point a mortar agreeably to these calculations, he had never been able to establish any solid foundation upon them."

From the history of the academy, it does not appear that the sentiments of Ressons were at any time controverted, or any reason offered for the failure of the theory of projectiles when applied to use. Nothing further, however, was done till the time of Benjamin Robins, who, in 1742, published a work entitled New Principles of Gunnery, in which he has treated particularly, not only of the resistance of the atmosphere, but almost every thing else relating to the flight of military projectiles, and indeed advanced the theory of gunnery much nearer perfection than ever it had before attained.

The first thing considered by Mr Robins, and which is indeed the foundation of all other particulars relative to gunnery, is the explosive force of gunpowder. This he determined to be owing to an elastic fluid similar to our atmosphere, having its elastic force greatly increased by the heat. "If a red-hot iron," says he, "be included in a receiver, and the receiver be exhausted, and gunpowder be then let fall on the iron, the powder will take fire, and the mercurial gage will suddenly descend upon the explosion; and though it immediately ascends again, it will never rise to the height it first stood at, but will continue depressed by a space proportioned to the quantity of powder which was let fall on the iron. The same production likewise takes place when gunpowder is fired in the air: for if a small quantity of powder is placed in the upper part of a glass tube, the lower part of which is immersed in water, and the fluid be made to rise so near the top that only a small portion of air is left in that part where the gunpowder is placed; if in this situation the communication of the upper part of the tube with the external air is closed, and the gunpowder fired, which may be easily done by means of a burning-glass, the water will in this experiment descend on the explosion, as the quicksilver did in the last; and will always continue depressed below the place at which it stood before the explosion. The quantity of this depression will be greater if the quantity of powder be increased, or the diameter of the tube be diminished.

"When any considerable quantity of gunpowder is fired in an exhausted receiver, by being let fall on a red-hot iron, the mercurial gage instantly descends upon the explosion, and as suddenly ascends again. After a few vibrations, none of which except the first are of any great extent, it seemingly fixes at a point lower than where it stood before the explosion. But even when the gage has acquired this point of apparent rest, it still continues rising for a considerable time, although by such imperceptible degrees that it can only be discovered by comparing its place at distant intervals: however, it will not always continue to ascend, but will rise slower and slower, till at last it will be absolutely fixed at a point lower than where the mercury stood before the explosion. The same circumstances nearly happen when powder is fired in the upper part of an unexhausted tube, whose lower part is immersed in water.

"That the elasticity or pressure of the fluid produced by the firing of gunpowder is, *cæteris paribus*, directly as its density, may be proved from hence, that if in the same receiver a double quantity of powder be let fall, the mercury will subside twice as much as in the firing of a single quantity. Also the descents of the mercury, when equal quantities of powder are fired in different receivers, are reciprocally as the capacities of those receivers, and consequently as the density of produced fluid in each. But as, in the usual method of trying this experiment, the quantities of powder are so very small that it is difficult to ascertain these proportions with the requisite degree of exactness, I took a large receiver containing about 520 inches, and letting fall at once on the red-hot iron one dram, or the sixteenth part of an ounce avoirdupois, of powder, the receiver being first nearly exhausted; the mercury, after the explosion, was subsided two inches exactly, and all the powder had taken fire. Then heating the iron a second time, and exhausting the receiver as before, two drams were let down at once, which sunk the mercury three inches and three quarters; and a small part of the powder had fallen beside the iron, which (the bottom of the receiver being wet) did not fire, and the quantity which thus escaped did appear to be nearly sufficient, had it fallen on the iron, to have sunk the mercury a quarter of an inch more; in which case the two descents, viz. two inches and four inches, would have been accurately in the proportion of the respective quantities of powder; from which proportion, as it was, they very little varied.

"As different kinds of gunpowder produce different quantities of this fluid, in proportion to their different degrees of goodness, before any definite determination of this kind can take place, it is necessary to ascertain the particular species of powder that is proposed to be used. (Here Mr Robins determines in all his experiments to make use of government powder, as consisting of a certain and invariable proportion of materials, and therefore preferable to such kinds as are made according to the fancy of private persons).

"This being settled, we must further premise these two principles: 1. That the elasticity of this fluid increases by heat and diminishes by cold, in the same manner as that of the air: 2. That the density of this fluid, and consequently its weight, is the same with the weight of an equal bulk of air, having the same elasticity and the same temperature. Now, from the last experiment it appears, that $\frac{1}{16}$th of an ounce avoirdupois, or about 27 grains troy, of powder, sunk the gage, on its explosion, two inches; and the mercury in the barometer standing at near 30 inches, $\frac{15}{16}$ths of an ounce avoirdupois, or 410 grains troy, would have filled the receiver with a fluid whose elasticity would have been equal to the whole pressure of the atmosphere, or the same with the elasticity of the air we breathe; and the contents of the receiver being about 520 cubic inches, it follows, that $\frac{15}{16}$ths of an ounce of powder will produce 520 cubic inches of a fluid possessing the same degree of elasticity with the common air; whence an ounce of powder will produce near 575 cubic inches of such a fluid.

"But in order to ascertain the density of this fluid, we must consider what part of its elasticity, at the time of this determination, was owing to the heat it received from the included hot iron and the warm receiver. Now the general heat of the receiver being manifestly less than that of boiling water, which is known to increase the elasticity of the air to somewhat more than $\frac{1}{4}$th of its augmented quantity, I collect from hence and other circumstances, that the augmentation of elasticity from this cause was about $\frac{1}{5}$th of the whole; that is, if the fluid arising from the explosion had been reduced to the temperature of the external air, the descent of the mercurial gage, instead of two inches, would have been only $1\frac{1}{5}$th inch; whence 575, reduced in the proportion of five to four, becomes 460; and this last number represents the cubic inches of an elastic fluid equal in density and elasticity with common air, which are produced from the explosion of one ounce avoirdupois of gunpowder; the weight of which quantity of fluid, according to the usual estimation of the weight of air, is 131 grains; whence the weight of this fluid is $\frac{133}{437}$ or $\frac{3}{10}$ths nearly of the weight of the generating powder. The ratio of the bulk of gunpowder to the bulk of this fluid may be determined from considering that 17 drams avoirdupois of powder fill two cubic inches, if the powder be well shaken together: therefore, augmenting the number last found in the proportion of 16 to 17, the resulting term, $488\frac{3}{4}$, is the number of cubic inches of an elastic fluid, equal in density with the air produced from two cubic inches of powder: whence the ratio of the respective bulk of the powder, and of the fluid produced from it, is in round numbers as 1 to 244." This calculation was afterwards confirmed by experiments.

"If this fluid, instead of expanding when the powder was fired, had been confined in the same space which the powder filled before the explosion, then it would have had, in that confined state, a degree of elasticity 244 times greater than that of common air; and this independent of the great augmentation which this elasticity would receive from the action of the fire in that instant.

"Hence, then, we are certain, that any quantity of powder, fired in a confined space, which it adequately fills, exerts, at the instant of its explosion, against the sides of the vessel containing it, and the bodies it impels before it, a force at least 244 times greater than the elasticity of common air, or, which is the same thing, than the pressure of the atmosphere; and this without considering the great addition which this force will receive from the violent degree of heat with which it is affected at that time.

"To determine how far the elasticity of air is augmented when heated to the extremest degree of red-hot iron, I took a piece of a musket-barrel about six inches in length, and ordered one end to be closed up entirely; but the other end was drawn out conically, and finished in an aperture of about $\frac{1}{8}$th of an inch in diameter. The tube thus fitted was heated to the extremity of a red heat in a smith's forge, and was then immersed with its aperture downwards in a bucket of water, and kept there till it was cool, after which it was taken out carefully, and the water which had entered it in cooling was exactly weighed. The heat given to the tube at each time was the beginning of what workmen call a *white heat;* and to prevent the rushing in of the aqueous vapour at the immersion, which would otherwise drive out great part of the air, and render the experiment fallacious, I had an iron wire filed tapering so as to fit the aperture of the tube, and with this I always stopped it up before it was taken from the fire, letting the wire remain in till the whole was cool, when, removing it, the due quantity of water would enter. The weight of the water thus taken in at three different trials was 610 grains, 595 grains, and 600 grains, respectively. The content of the whole cavity of the tube was 796 grains of water, whence the spaces remaining unfilled in these three experiments were 186, 201, and 196 grains respectively. These spaces undoubtedly contained all the air which, when the tube was red hot, extended through its whole concavity; consequently the elasticity of the air, when heated to the extreme heat of red-hot iron, was to the elasticity of the same air, when reduced to the temperature of the ambient atmosphere, as the whole capacity of the tube to the respective spaces taken up by the cooled air; that is, as 796 to 186, 201, 196; or, taking the medium of these three trials, as 796 to $194\frac{1}{3}$.

"As air and this fluid appear to be equally affected by heat and cold, and consequently have their elasticities equally augmented by the addition of equal degrees of heat to each; if we suppose the heat with which the flame of fired powder is endowed to be the same with that of the extreme heat of red-hot iron, then the elasticity of the generated fluid will be greater at the time of the explosion than afterwards, when it is reduced to the temperature of the ambient air, in the ratio of 796 to $194\frac{1}{3}$ nearly. It being allowed then (which surely is very reasonable) that the flame of gunpowder is not less hot than red-hot iron, and the elasticity of the air, and consequently of the fluid, generated by the explosion, being augmented in the extremity of this heat in the ratio of $194\frac{1}{3}$ to 796, it follows, that if 244 be augmented in this ratio, the resulting number, which is $999\frac{1}{3}$, will determine how many times the elasticity of the flame of fired powder exceeds the elasticity of common air, supposing it to be confined in the same space which the powder filled before it was fired. Hence then the absolute quantity of the pressure exerted by gunpowder at the moment of its explosion may be assigned; for, since the fluid then generated has an elasticity of 999$\frac{1}{3}$, or in round numbers 1000 times greater than that of the atmosphere, and since common air by its elasticity exerts a pressure on any given surface equal to the weight of the incumbent atmosphere with which it is in equilibrio, the pressure exerted by fired powder before it dilated itself is 1000 times greater than the pressure of the atmosphere; and consequently the quantity of this force, on a surface of an inch square, amounts to above six tons weight, which force, however, diminishes as the fluid dilates itself.

"But though we here supposed that the heat of gunpowder, when fired in any considerable quantity, is the same with iron heated to the extremity of red heat, or to the beginning of a white heat, yet it cannot be doubted but that the fire produced in the explosion is somewhat varied (like all other fires) by a greater or less quantity of fuel; and it may be presumed that, according to the quantity of powder fired together, the flame may have all the different degrees, from a languid red heat, to that sufficient for the vitrification of metals. But as the quantity of powder requisite for the production of this last-mentioned heat is certainly greater than what is ever fired together for any military purpose, we cannot be far from our scope if we suppose the heat of such quantities as are usually fired to be nearly the same with that of red-hot iron, allowing a gradual augmentation to this heat in larger quantities, and diminishing it when the quantities are very small."

Having thus determined the force of the gunpowder, Mr Robins next proceeds to determine the velocity with which the ball is discharged. The solution of this problem depends on the two following principles: 1. That the action of the powder on the bullet ceases as soon as the bullet is got out of the piece: 2. That all the powder of the charge is fired and converted into elastic fluid before the bullet is sensibly removed from its place.

"The first of these," says Mr Robins, "will appear manifest when it is considered how suddenly the flame will extend itself on every side, by its own elasticity, when it is once got out of the mouth of the piece; for by this means its force will then be dissipated, and the bullet no longer sensibly affected by it.

"The second principle is indeed less obvious, being contrary to the general opinion of almost all writers on this subject. It might, however, be sufficient for the proof of this position, to observe the prodigious compression of the flame in the chamber of the piece. Those who attend to this circumstance, and to the easy passage of the flame through the intervals of the grains, may soon satisfy themselves that no one grain contained in that chamber can continue for any time uninflamed, when thus surrounded and pressed by such an active fire. However, not to rely on mere speculation in a matter of so much consequence, I considered that if part only of the powder is fired, and that successively; then, by laying a greater weight before the charge (suppose two or three bullets instead of one), a greater quantity of powder would necessarily be fired, since a heavier weight would be a longer time in passing through the barrel. Whence it should follow that two or three bullets would be impelled by a much greater force than one only. But the contrary to this appears by experiment; for, firing one, two, and three bullets laid contiguous to each other with the same charge respectively, I have found that their velocities were not much different from the reciprocal of their subduplicate quantities of matter; that is, if a given charge would communicate to one bullet a velocity of 1700 feet in a second, the same charge would communicate to two bullets a velocity of from 1250 to 1300 feet in a second, and to three bullets a velocity of from 1050 to 1110 feet in the same time. From hence it appears, that whether a piece is loaded with a greater or less weight of bullet, the action is nearly the same; since all mathematicians know, that if bodies containing different quantities of matter are successively impelled through the same space by the same power acting with a determined force at each point of that space, then the velocities given to these different bodies will be reciprocally in the subduplicate ratio of their quantities of matter. The excess of the velocities of the two and three bullets above what they ought to have been by this rule (which are that of 1200 and 980 feet in a second) undoubtedly arises from the flame, which, escaping by the side of the first bullet, acts on the surface of the second and third.

"Now this excess has in many experiments been imperceptible, and the velocities have been reciprocally in the subduplicate ratios of the number of bullets, to sufficient exactness; and where this error has been greater, it has never arisen to an eighth part of the whole; but if the common opinion was true, that a small part only of the powder fires at first, and other parts of it successively as the bullet passes through the barrel, and that a considerable part of it is often blown out of the piece without firing at all; then the velocity which three bullets received from the explosion ought to have been much greater than we have found it to be. But the truth of the second postulate more fully appears from those experiments, by which it is shown that the velocities of bullets may be ascertained to the same exactness when they are acted on through a barrel of four inches in length only, as when they are discharged from one of four feet.

"With respect to the grains of powder which are often blown out unfired, and which are always urged as a proof of the gradual firing of the charge, I believe Diego Uffano, a person of great experience in the art of gunnery, has given the true reason for this accident; which is, that some small part of the charge is often not rammed up with the rest, but is left in the piece before the wad, and is by this means expelled by the blast of air before the fire can reach it. I must add, that in the charging of cannon and small arms, especially after the first time, this is scarcely to be avoided by any method I have yet seen practised. Perhaps, too, there may be some few grains in the best powder of such an heterogeneous composition as to be less susceptible of firing; which, I think, I have myself observed; and these, though they are surrounded by the flame, may be driven out unfired.

"These postulates being allowed to be just, let AB (Plate CCLXXIV. fig. 12) represent the axis of any piece of artillery, A the breech, and B the muzzle; DC the diameter of its bore, and DEGC a part of its cavity filled with powder. Suppose the ball that is to be impelled to lie with its hinder surface at the line GE; then the pressure exerted at the explosion on the circle of which GE is the diameter, or, which is the same thing, the pressure exerted in the direction FB on the surface of the ball, is easily known from the known dimensions of that circle. Draw any line FH perpendicular to FB, and AI parallel to FH; and through the point H, to the asymptotes IA and AB, describe the hyperbola KHNQ; then, if FH represents the force impelling the ball at the point F, the force impelling the ball at any other point, as at M, will be represented by the line MN, the ordinate to the hyperbola at that point. For when the fluid impelling the body along has dilated itself to M, its density will be then to its original density in the space DEGC reciprocally as the spaces through which it is extended; that is, as FA to MA, or as MN to FH; but it has been shown that the impelling force or elasticity of this fluid is directly as its density, therefore, if FH represents the force at the point F, MN will represent the like force at the point M.

" Since the absolute quantity of the force impelling the ball at the point F is known, and the weight of the ball is also known, the proportion between the force with which the ball is impelled and its own gravity is known. In this proportion take FH to FL, and draw LP parallel to FB; then, MN the ordinate to the hyperbola in any point will be to its part MR, cut off by the line LP, as the impelling force of the powder in that point M to the gravity of the ball; and consequently the line LP will determine a line proportional to the uniform force of gravity in every point; whilst the hyperbola HNQ determines in like manner such ordinates as are proportional to the impelling force of the powder in every point; whence, by the 39th Prop. of lib. 1 of Sir Isaac Newton's *Principia*, the areas FLPB and FHQB are in the duplicate proportion of the velocities which the ball would acquire when acted upon by its own gravity through the space FB, and when impelled through the same space by the force of the powder. But since the ratio of AF to AB and the ratio of FH to FL are known, the ratio of the area FLPB to the area FHQB is known; and thence its subduplicate. And since the line FB is given in magnitude, the velocity which a heavy body would acquire when impelled through this line by its own gravity is known; being no other than the velocity it would acquire by falling through a space equal to that line: find then another velocity to which this last-mentioned velocity bears the given ratio of the subduplicate of the area FLPB to the area FHQB; and this velocity thus found is the velocity the ball will acquire when impelled through the space FB by the action of the inflamed powder.

" Now, to give an example of this: Let us suppose AB, the length of the cylinder, to be 45 inches; its diameter DC, or rather the diameter of the ball, to be $\frac{3}{4}$ths of an inch; and AF, the extent of the powder, to be $2\frac{1}{8}$th inches; to determine the velocity which will be communicated to a leaden bullet by the explosion, supposing the bullet to be laid at first with its surface contiguous to the powder.

" By the theory we have laid down, it appears, that at the first instant of the explosion the flame will exert, on the bullet lying close to it, a force 1000 times greater than the pressure of the atmosphere. The medium pressure of the atmosphere is reckoned equal to a column of water 33 feet in height; whence, lead being to water as 11,345 to 1, this pressure will be equal to that of a column of lead 34,9 inches in height. Multiplying this by 1000, therefore, a column of lead 34,900 inches (upwards of half a mile) in height, would produce a pressure on the bullet equal to what is exerted by the powder in the first instant of the explosion; and the leaden ball being $\frac{3}{4}$ths of an inch in diameter, and consequently equal to a cylinder of lead of the same base half an inch in height, the pressure at first acting on it will be equal to 34,900 × 2, or 69,800 times its weight; whence FL to FH is as 1 to 69,800; and FB to FA as $45 - 2\frac{5}{8}$, or $42\frac{3}{8}$ to $2\frac{5}{8}$, that is, as 339 to 21; whence the rectangle FLPB is to the rectangle AFHS as 339 to 21 × 69,800, that is, as 1 to 4324. And from the known application of the logarithms to the mensuration of the hyperbolic spaces, it follows that the rectangle AFHS is to the area FHQB as 43,429, &c. is to the tabular logarithm of $\frac{AB}{AF}$; that is, of $\frac{360}{21}$, which is 1,2340579: whence the ratio of the rectangle FLPB to the hyperbolic area FHQB is compounded of the ratios of 1 to 4324— and of ,43429, &c. to 1,2340579; which together make up the ratio of 1 to 12,263, the subduplicate of which is the ratio of 1 to 110,7; and in this ratio is the velocity which the bullet would acquire by gravity in falling through a space equal to FB, to the velocity the bullet will acquire from the action of the powder impelling it through FB. But the space FB being $42\frac{3}{8}$ inches, the velocity a heavy body will acquire in falling through such a space is known to be what would carry it nearly at the rate of 15·07 feet in a second; whence the velocity to which this has the ratio of 1 to 110,7 is a velocity which would carry the ball at the rate of 1668 feet in one second. And this is the velocity which, according to the theory, the bullet in the present circumstances would acquire from the action of the powder during the time of its dilatation.

" Now this velocity being once computed for one case, is easily applied to any other; for if the cavity DEGC left behind the bullet be only in part filled with powder, then the line HF, and consequently the area FHQB, will be diminished in the proportion of the whole cavity to the part filled. If the diameter of the bore be varied, the lengths AB and AF remaining the same, then the quantity of powder and the surface of the bullet which it acts on will be varied in the duplicate proportion of the diameter, but the weight of the bullet will vary in the triplicate proportion of the diameter; wherefore the line FH, which is directly as the absolute impelling force of the powder, and reciprocally as the gravity of the bullet, will change in the reciprocal proportion of the diameter of the bullet. If AF, the height of the cavity left behind the bullet, be increased or diminished, the rectangle of the hyperbola, and consequently the area corresponding to ordinates in any given ratio, will be increased or diminished in the same proportion. From all which it follows, that the area FHQB, which is in the duplicate proportion of the velocity of the impelled body, will be directly as the logarithm $\frac{AB}{AF}$ (where AB represents the length of the barrel, and AF the length of the cavity left behind the bullet); also directly as the part of that cavity filled with powder, and inversely as the diameter of the bore, or rather of the bullet; likewise directly as AF, the height of the cavity left behind the bullet. Consequently the velocity being computed as above, for a bullet of a determined diameter, placed in a piece of a given length, and impelled by a given quantity of powder, occupying a given cavity behind that bullet; it follows, that by means of these ratios, the velocity of any other bullet may be thence deduced; the necessary circumstances of its position, quantity of powder, &c. being given. Where note, that in the instance of this supposition, we have supposed the diameter of the ball to be $\frac{3}{4}$ths of an inch; whence the diameter of the bore will be something more, and the quantity of powder contained in the space DEGC will amount exactly to twelve pennyweights, a small wad of tow included.

" In order to compare the velocities communicated to bullets by the explosion, with the velocities resulting from the theory by computation, it is necessary that the actual velocities with which bullets move should be discovered. The only methods hitherto practised for this purpose, have been either by observing the time of the flight of a shot through a given space, or by measuring the range of a shot at a given elevation; and thence computing, on the parabolic hypothesis, what degree of velocity would produce this range. The first method labours under this insurmountable difficulty, that the velocities of these bodies are often so swift, and consequently the time observed is so short, that an imperceptible error in that time may occasion an error in the velocity thus found of 2, 3, 4, 5, or 600 feet, in a second. The other method is so fallacious, by reason of the resistance of the atmosphere (to which inequality the first is also liable), that the velocities thus assigned may not perhaps be the tenth part of the actual velocities sought.

" The simplest method of determining this velocity is by means of the instrument represented fig. 13, where ABCD represents the body of the machine composed of the three poles B, C, D, spreading at bottom, and joining together at the top A; being the same with what is vulgarly used in lifting and weighing very heavy bodies, and is called by workmen the triangles. On two of these poles, towards their tops, are screwed on the sockets R S; and on these sockets the pendulum EFGHIK is hung by means of its cross-piece EF, which becomes its axis of suspension, and on which it must be made to vibrate with great freedom. The body of this pendulum is made of iron, having a broad part at bottom, and its lower part is covered with a thick piece of wood GKIH, which is fastened to the iron by screws. Something lower than the bottom of the pendulum there is a brace OP, joining the two poles from which the pendulum is suspended; and to this brace there is fastened a contrivance MNU, made with two edges of steel, bearing on each other in the line UN, something in the manner of a drawing-pen; the strength with which these edges press on each other being diminished or increased at pleasure by means of a screw Z going through the upper piece. There is fastened to the bottom of the pendulum a narrow ribbon LN, which passes between these steel edges, and which afterwards, by means of an opening cut in the lower piece of steel, hangs loosely down, as at W.

" With this apparatus, if the weight of the pendulum be known, and likewise the respective distances of its centre of gravity, and of its centre of oscillation from its axis of suspension, it will thence be known what motion will be communicated to this pendulum by the percussion of a body of a known weight moving with a known degree of celerity, and striking it in a given point; that is, if the pendulum be supposed at rest before the percussion, it will be known what vibration it ought to make in consequence of such a determined blow; and, on the contrary, if the pendulum, being at rest, is struck by a body of a known weight, and the vibration which the pendulum makes after the blow is known, the velocity of the striking body may from thence be determined.

" Hence, then, if a bullet of a known weight strikes the pendulum, and the vibration which the pendulum makes in consequence of the stroke be ascertained, the velocity with which the ball moved is thence to be known.

" Now the extent of the vibration made by the pendulum after the blow, may be measured to great accuracy by the ribbon LN. For let the pressure of the edges UN on the ribbon be so regulated by the screw Z, that the motion of the ribbon between them may be free and easy, though with some minute resistance; then, settling the pendulum at rest, let the part LN between the pendulum and the edges be drawn strait, but not strained, and fix a pin in that part of the ribbon which is then contiguous to the edges: let now a ball impinge on the pendulum; then the pendulum swinging back will draw out the ribbon to the just extent of its vibration, which will consequently be determined by the interval on the ribbon between the edges UN and the place of the pin.

" The weight of the whole pendulum, wood and all, was 56 pounds 3 ounces; its centre of gravity was 52 inches distant from its axis of suspension, and 200 of its small swings were performed in the time of 253 seconds: whence its centre of oscillation (determined from hence) in 62$\frac{2}{3}$d inches distant from that axis. The centre of the piece of wood GKIH is distant from the same axis 66 inches.

" In the compound ratio of 66 to 62$\frac{2}{3}$d, and 66 to 52, take the quantity of matter of the pendulum to a fourth quantity, which will be 42 lb. $\frac{1}{2}$ oz. Now geometers well know, that if the blow be struck on the centre of the piece of wood GKIH, the pendulum will resist to the stroke in the same manner as if this last quantity of matter only (42 lb. $\frac{1}{2}$ oz.) was concentrated in that point, and the rest of the pendulum was taken away: whence, supposing the weight of the bullet impinging in that point to be the $\frac{1}{12}$th of a pound, or the $\frac{1}{505}$th of this quantity of matter nearly, the velocity of the point of oscillation after the stroke will, by the laws observed in the congress of such bodies as rebound not from each other, be the $\frac{1}{505}$th of the velocity the bullet moved with before the stroke; whence the velocity of this point of oscillation after the stroke being ascertained, that multiplied by 505 will give the velocity with which the ball impinged.

" But the velocity of the point of oscillation after the stroke is easily deduced from the chord of the arch, through which it ascends by the blow; for it is a well-known proposition, that all pendulous bodies ascend to the same height by their vibratory motion as they would do if they were projected directly upwards from their lowest point, with the same velocity they have in that point; wherefore, if the versed sine of the ascending arch be found (which is easily determined from the chord and radius being given), this versed sine is the perpendicular height to which a body projected upwards with the velocity of the point of oscillation would arise; and consequently what that velocity is, can be easily computed by the common theory of falling bodies.

" For instance, the chord of the arch, described by the ascent of the pendulum after the stroke measured on the ribbon, has been sometimes 17$\frac{1}{4}$th inches; the distance of the ribbon from the axis of suspension is 71$\frac{1}{8}$th inches; whence reducing 17$\frac{1}{4}$th in the ratio of 71$\frac{1}{8}$th to 66, the resulting number, which is nearly 16 inches, will be the chord of the arch through which the centre of the board GKIH ascended after the stroke; now the versed sine of the arch, whose chord is 16 inches, and its radius 66, is 1·93939; and the velocity which would carry a body to this height, or, which is the same thing, the velocity which a body would acquire by descending through this space, is nearly that of 3$\frac{1}{4}$th feet in 1″.

" To determine then the velocity with which the bullet impinged on the centre of the wood, when the chord of the arch described by the ascent of the pendulum, in consequence of the blow, was 17$\frac{1}{4}$th inches measured on the ribbon, no more is necessary than to multiply 3$\frac{1}{4}$th by 505, and the resulting number, 1641, will be the feet which the bullet would describe in 1″, if it moved with the velocity it had at the moment of its percussion: for the velocity of the point of the pendulum on which the bullet struck, we have just now determined to be that of 3$\frac{1}{4}$th feet in 1″; and we have before shown, that this is the $\frac{1}{505}$th of the velocity of the bullet. If then a bullet weighing $\frac{1}{12}$th of a pound strikes the pendulum in the centre of the wood GKIH, and the ribbon be drawn out 17$\frac{1}{4}$th inches by the blow, the velocity of the bullet is that of 1641 feet in 1″. And since the length the ribbon is drawn is always nearly the chord of the arch described by the ascent (it being placed so as to differ insensibly from those chords which most frequently occur), and these chords are known to be in the proportion of the velocities of the pendulum acquired from the stroke; it follows that the proportion between the lengths of ribbon drawn out at different times will be the same with that of the velocities of the impinging bullets; and consequently, by the proportion of these lengths of ribbon to 17$\frac{1}{4}$th, the proportion of the velocity with which the bullets impinge, to the known velocity of 1641 feet in 1″, will be determined.

" Hence then is shown in general how the velocities of bullets of all kinds may be found out by means of this instrument; but that those who may be disposed to try these experiments may not have unforeseen difficulties to struggle with, we shall here subjoin a few observations, which

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it will be necessary for them to attend to, both to secure success to their trials and safety to their persons.

"And, first, that they may not conceive the piece of wood GKIH to be an unnecessary part of the machine, we must inform them, that if a bullet impelled by a full charge of powder should strike directly on the iron, the bullet would be beaten into shivers by the stroke, and these shivers would rebound back with such violence as to bury themselves in any wood they chanced to light on, as I have found by hazardous experience; and, besides the danger, the pendulum will not in this instance ascertain the velocity of the bullet, because the velocity with which the parts of it rebound is unknown.

"The weight of the pendulum and the thickness of the wood must be in some measure proportioned to the size of the bullets which are used. A pendulum of the weight here described will do very well for all bullets under three or four ounces, if the thickness of the board be increased to seven or eight inches for the heaviest bullets; beech is the toughest and properest wood for this purpose.

"It is hazardous standing on the side of the pendulum, unless the board be so thick that the greatest part of the bullet's force is lost before it comes at the iron; for if it strikes the iron with violence, the shivers of lead which cannot return back through the wood, will force themselves out between the wood and iron, and will fly to a considerable distance.

"As there is no effectual way of fastening the wood to the iron but by screws, the heads of which must come through the board, the bullets will sometimes light on those screws, from whence the shivers will disperse themselves on every side.

"When in these experiments so small a quantity of powder is used, as will not give to the bullet a velocity of more than 400 or 500 feet in 1″, the bullet will not stick in the wood, but will rebound from it entire, and (if the wood be of a very hard texture) with a very considerable velocity. Indeed I have never examined any of the bullets which have thus rebounded, but I have found them indented by the bodies they have struck against in their rebound.

"To avoid then these dangers, to the braving of which in philosophical researches no honour is annexed, it will be convenient to fix whatsoever barrel is used on a strong heavy carriage, and to fire it with a little slow match. Let the barrel too be very well fortified in all its length; for no barrel (I speak of musket barrels) forged with the usual dimensions will bear many of the experiments without bursting. The barrel I have most relied on, and which I procured to be made on purpose, is nearly as thick at the muzzle as at the breech; that is, it has in each place nearly the diameter of its bore in thickness of metal.

"The powder used in these experiments should be exactly weighed; and that no part of it be scattered in the barrel, the piece must be charged with a ladle, in the same manner as is practised with cannon; the wad should be of tow, of the same weight each time, and no more than is just necessary to confine the powder in its proper place; the length of the cavity left behind the ball should be determined each time with exactness; for the increasing or diminishing that space will vary the velocity of the shot, although the bullet and quantity of powder be not changed. The distance of the mouth of the piece from the pendulum ought to be such, that the impulse of the flame may not act on the pendulum; this will be prevented in a common barrel charged with half an ounce of powder, if it be at the distance of 16 or 18 feet: in larger charges the impulse is sensible farther off; I have found it to extend to above 25 feet; however, between 25 and 18 feet is the distance I have usually chosen."

With this instrument, or others similar to it, Mr Robins made a great number of experiments on barrels of different lengths, and with different charges of powder. He has given us the results of sixty-one of these; and having compared the actual velocities with the computed ones, his theory appears to have come as near the truth as could well be expected. In seven of the experiments there was a perfect coincidence; the charges of powder being 6 to 12 pennyweights, the barrels 45, 24·312, and 7·06 inches in length. The diameter of the first (marked A) was $\frac{3}{4}$ths of an inch; of the second (B) was the same; and of D, 83 of inch. In the first of these experiments, another barrel (C) was used, whose length was 12·375 inches, and the diameter of its bore $\frac{3}{4}$th inch. In fourteen more of the experiments, the difference between the length of the chord of the pendulum's arch shown by the theory and the actual experiment was $\frac{1}{10}$th of an inch over or under. This showed an error in the theory, varying, according to the different lengths of the chord, from $\frac{1}{171}$th to $\frac{1}{47}$th of the whole; the charges of powder were the same as in the last. In sixteen other experiments the error was $\frac{2}{10}$ths of an inch, varying from $\frac{1}{85}$th to $\frac{1}{15}$th of the whole; the charges of powder were 6, 8, 9, or 12 pennyweights. In seven other experiments the error was $\frac{3}{10}$ths of an inch, varying from $\frac{1}{62}$d to $\frac{1}{23}$d of the whole; the charges of powder 6 or 12 pennyweights. In eight experiments the difference was $\frac{4}{10}$ths of an inch, indicating an error of from $\frac{1}{42}$d to $\frac{1}{23}$d of the whole; the charges being 6, 9, 12, and 24 pennyweights of powder. In three experiments the error was $\frac{5}{10}$ths, varying from $\frac{1}{38}$th to $\frac{1}{12}$th of the whole; the charges 8 and 12 pennyweights of powder. In two experiments the error was $\frac{6}{10}$ths, in one case amounting to something less than $\frac{1}{32}$d, in the other to $\frac{1}{22}$d of the whole; the charges 12 and 36 pennyweights of powder. By one experiment the error was seven, and by another eight, tenths; the first amounting to $\frac{1}{10}$th nearly, the latter to almost $\frac{1}{9}$th of the whole; the charges of powder 6 or 12 pennyweights. The last error, however, Mr Robins ascribes to the wind. The two remaining experiments varied from theory by 1·3 inches, somewhat more than $\frac{1}{9}$th of the whole; the charges of powder were 12 pennyweights in each; and Mr Robins ascribes the error to the dampness of the powder. In another case he ascribes an error of $\frac{6}{10}$ths to the blast of the powder on the pendulum.

Theory.

From these experiments Mr Robins deduces the following conclusions. "The variety of these experiments, and the accuracy with which they correspond to the theory, leave us no room to doubt of its certainty. This theory, as here established, supposes that, in the firing of gunpowder, about $\frac{3}{10}$ths of its substance is converted by the sudden inflammation into a permanently elastic fluid, whose elasticity, in proportion to its heat and density, is the same with that of common air in the like circumstances: it farther supposes, that all the force exerted by gunpowder in its most violent operations, is no more than the action of the elasticity of the fluid thus generated; and these principles enable us to determine the velocities of bullets impelled from fire-arms of all kinds, and are fully sufficient for all purposes where the force of gunpowder is to be estimated.

"From this theory many deductions may be made of the greatest consequence to the practical part of gunnery. From hence the thickness of a piece, which will enable it to confine, without bursting, any given charge of powder, is easily determined, since the effort of the powder is known. From hence appears the inconclusiveness of what some modern authors have advanced, relating to the advantages of particular forms of chambers for mortars and cannon; for all their laboured speculations on this head are evidently founded on very erroneous opinions about the action of fired powder. From this theory too we are taught the necessity of leaving the same space behind the bullet, when we would, by the same quantity of powder, communicate to it an equal degree of velocity; since, on the principles already laid down, it follows, that the same powder has a greater or less degree of elasticity, according to the different spaces it occupies. The method which I have always practised for this purpose has been by marking the rammer; and this is a maxim which ought not to be dispensed with when cannon are fired at an elevation, particularly in those called by the French *batteries à ricochet.*

" From the continued action of the powder, and its manner of expanding described in this theory, and the length and weight of the piece, one of the most essential circumstances in the well directing of artillery may be easily ascertained. All practitioners are agreed, that no shot can be depended on, unless the piece be placed on a solid platform; for if the platform shakes with the first impulse of the powder, it is impossible but the piece must also shake, which will alter its direction, and render the shot uncertain. To prevent this accident, the platform is usually made extremely firm to a considerable depth backwards; so that the piece is not only well supported in the beginning of its motion, but likewise through a great part of its recoil. However, it is sufficiently obvious, that when the bullet is separated from the piece, it can be no longer affected by the trembling of the piece or platform; and, by a very easy computation, it will be found that the bullet will be out of the piece before the latter hath recoiled half an inch; whence, if the platform be sufficiently solid at the beginning of the recoil, the remaining part of it may be much slighter; and hence a more compendious method of constructing platforms may be found out.

" From this theory also it appears how greatly these authors have been mistaken, who have attributed the force of gunpowder, or at least a considerable part of it, to the action of the air contained either in the powder or between the intervals of the grains; for they have supposed that air to exist in its natural elastic state, and to receive all its addition of force from the heat of the explosion. But from what hath been already delivered concerning the increase of the air's elasticity by heat, we may conclude that the heat of the explosion cannot augment this elasticity to five times its common quantity; consequently the force arising from this cause only cannot amount to more than the 200th part of the real force exerted on the occasion.

" If the whole substance of the powder was converted into an elastic fluid at the instant of the explosion, then, from the known elasticity of this fluid assigned by our theory, and its known density, we could easily determine the velocity with which it would begin to expand, and could thence trace out its future augmentations in its progress through the barrel: but as we have shown that the elastic fluid, in which the activity of the gunpowder consists, is only $\frac{3}{10}$ths of the substance of the powder, the remaining $\frac{7}{10}$ths will, in the explosion, be mixed with the elastic part, and will by its weight retard the activity of the explosion; and yet they will not be so completely united as to move with one common motion; but the unelastic part will be less accelerated than the rest, and some will not even be carried out of the barrel, as appears by the considerable quantity of unctuous matter which adheres to the inside of all fire-arms after they have been used. These inequalities in the expansive motion of the flame oblige us to recur to experiments for its accurate determination.

" The experiments made use of for this purpose were of two kinds. The first was made by charging the barrel A with 12 pennyweights of powder, and a small wad of tow only; and then placing its mouth 19 inches from the centre of the pendulum. On firing it in this situation, the impulse of the flame made it ascend through an arch whose chord was 13·7 inches; whence, if the whole substance of the powder was supposed to strike against the pendulum, and each part to strike with the same velocity, that common velocity must have been at the rate of about 2650 feet in a second. But as some part of the velocity of the flame was lost in passing through 19 inches of air, I made the remaining experiments in a manner not liable to this inconvenience.

" I fixed the barrel A on the pendulum, so that its axis might be both horizontal and also perpendicular to the plane HK; or, which is the same thing, that it might be in the plane of the pendulum's vibration: the height of the axis of the piece above the centre of the pendulum was six inches, and the weight of the piece, and of the iron that fastened it, &c. was 12½ lbs. The barrel in this situation being charged with 12 pennyweights of powder, without either ball or wad, only put together with the rammer; on the discharge the pendulum ascended through an arch whose chord was 10 inches, or, reduced to an equivalent blow in the centre of the pendulum, supposing the barrel away, it would be 14·4 inches nearly. The same experiment being repeated, the chord of the ascending arch was 10·1 inches, which, reduced to the centre, is 14·6 inches.

" To determine what difference of velocity there was in the different parts of the vapour, I loaded the piece again with 12 pennyweights of powder, and rammed it down with a wad of tow weighing one pennyweight. Now, I conceived that this wad, being very light, would presently acquire that velocity with which the elastic part of the fluid would expand itself when uncompressed; and I accordingly found, that the chord of the ascending arch was by this means increased to 12 inches, or at the centre to 17·3; whence, as the medium of the other two experiments is 14·5, the pendulum ascended through an arch 2·8 inches longer, by the additional motion of one pennyweight of matter, moving with the velocity of the swiftest part of the vapour; and consequently the velocity with which this pennyweight of matter moved, was that of about 7000 feet in a second.

" It will perhaps be objected to this determination, that the augmentation of the arch through which the pendulum vibrated in this case was not all of it owing to the quantity of motion given to the wad, but part of it was produced by the confinement of the powder, and the greater quantity thereby fired. But if it were true that a part only of the powder fired when there was no wad, it would not happen that in firing different quantities of powder without a wad, the chord would increase and decrease nearly in the ratio of these quantities; which yet I have found it to do: for with nine pennyweights that chord was 7·3 inches, which with 12 pennyweights, we have seen, was only 10 and 10·1 inches; and even with three pennyweights the chord was two inches; deficient from this proportion by ·5 only, for which defect two other valid reasons are to be assigned.

" And there is still a more convincing proof that all the powder is fired, although no wad be placed before the charge, which is, that the part of the recoil arising from the expansion of powder alone is found to be no greater when it impels a leaden bullet before it, than when the same quantity is fired without any wad to confine it. We have seen that the chord of the arch through which the pendulum rose from the expansive force of the powder alone is 10, or 10·1; and the chord of that arch, when the piece was charged in the customary manner with a bullet and wad, I found to be, the first time 22¼, and the second 22⅞, or, at a medium, 22·56. Now the impulse of the ball and wad, if they were supposed to strike the pendulum in the same place in which the barrel was suspended, with the velocity they had acquired at the mouth of the piece, would drive it through an arch whose chord would be about 12·3; as is known from the weight of the pendulum, the weight and position of the barrel, and the velocity of the bullet determined by our former experiments; whence, subtracting this number 12·3 from 22·56, the remainder, 10·26, is nearly the chord of the arch which the pendulum would have ascended through from the expansion of the powder alone with a bullet laid before it. And this number, 10·26, differs but little from 10·1, which we have above found to be the chord of the ascending arch, when the same quantity of powder expanded itself freely without either bullet or wad before it.

"Again, that this velocity of 7000 feet in a second is not much beyond what the most active part of the flame acquires in expanding, is evinced from hence, that in some experiments a ball has been found to be discharged with a velocity of 2400 feet in a second; and yet it appeared not that the action of the powder was at all diminished on account of this immense celerity: consequently the degree of swiftness with which, in this instance, the powder followed the ball without losing any part of its pressure, must have been much short of what the powder alone would have expanded with had not the ball been there.

"From these determinations may be deduced the force of petards, since their action depends entirely on the impulse of the flame; and it appears that a quantity of powder properly disposed in such a machine, may produce as violent an effort as a bullet of twice its weight, moving with a velocity of 1400 or 1500 feet in a second.

"In many of the experiments already recited, the ball was not laid immediately contiguous to the powder, but at a small distance, amounting, at the utmost, only to an inch and a half. In these cases the theory agreed very well with the experiments. But if a bullet is placed at a greater distance from the powder, suppose at 12, 18, or 24 inches, we cannot then apply to this ball the same principles which may be applied to those laid in contact, or nearly so, with the powder; for when the surface of the fired powder is not confined by a heavy body, the flame dilates itself with a velocity far exceeding that which it can communicate to a bullet by its continued pressure; consequently, as, at the distance of 12, 18, or 24 inches, the powder will have acquired a considerable degree of this velocity of expansion, the first motion of the ball will not be produced by the continued pressure of the powder, but by the actual percussion of the flame; and it will therefore begin to move with a quantity of motion proportioned to the quantity of this flame, and the velocities of its respective parts.

"From hence then it follows, that the velocity of the bullet, laid at a considerable distance before the charge, ought to be greater than what would be communicated to it by the pressure of the powder acting in the manner already mentioned; and this deduction from our theory we have confirmed by manifold experience, by which we have found, that a ball laid in the barrel A, with its hinder part 11¼ inches from its breech, and impelled by 12 pennyweights of powder, has acquired a velocity of about 1400 feet in a second; when, if it had been acted on by the pressure of the flame only, it would not have acquired a velocity of 1200 feet in a second. The same we have found to hold true in all other greater distances (and also in lesser, though not in the same degree), and in all quantities of powder; and we have likewise found, that these effects nearly correspond with what has been already laid down about the velocity of expansion and the elastic and unelastic parts of the flame.

"From hence too arises another consideration of great consequence in the practice of gunnery; which is, that no bullet should at any time be placed at a considerable distance from the charge, unless the piece is extremely well fortified; for a moderate charge of powder, when it has expanded itself through the vacant space, and reaches the ball, will, by the velocity each part has acquired, accumulate itself behind the ball, and thereby be condensed prodigiously; whence, if the barrel be not extremely firm in that part, it must, by means of this reinforced elasticity, infallibly burst. The truth of this reasoning I have experienced in an exceeding good Tower musket, forged of very tough iron; for, charging it with 12 pennyweights of powder, and placing the ball sixteen inches from the breech, on firing it, the part of the barrel just behind the bullet was swelled out to double its diameter, like a blown bladder, and two large pieces of two inches long were burst out of it.

"Having seen that the entire motion of a bullet laid at a considerable distance from the charge is acquired by two different methods in which the powder acts on it, the first being the percussion of the parts of the flame with the velocity they had respectively acquired by expanding, the second the continued pressure of the flame through the remaining part of the barrel, I endeavoured to separate these different actions, and to retain that only which arose from the continued pressure of the flame. For this purpose I no longer placed the powder at the breech, from whence it would have full scope for its expansion; but I scattered it as uniformly as I could through the whole cavity left behind the bullet; imagining that by this means the progressive velocity of the flame in each part would be prevented by the expansion of the neighbouring parts; and I found, that the ball being laid 11¼ inches from the breech, its velocity, instead of 1400 feet in a second, which it acquired in the last experiments, was now no more than 1100 feet in the second, which is 100 feet short of what, according to the theory, should arise from the continued pressure of the powder only.

"The reason of this deficiency was, doubtless, the intestine motion of the flame; for the accension of the powder thus distributed through so much larger a space than it could fill, must have produced many reverberations and pulsations of the flame; and from these internal agitations of the fluid, its pressure on the containing surface will (as is the case of all other fluids) be considerably diminished; and in order to avoid this irregularity, in all other experiments I took care to have the powder closely confined in as small a space as possible, even when the bullet lay at some distance from it.

"With regard to the resistance of the air, which so remarkably affects all military projectiles, it is necessary to premise, that the greatest part of authors have established it as a certain rule, that while the same body moves in the same medium, it is always resisted in the duplicate proportion of its velocity; that is, if the resisted body move in one part of its track with three times the velocity with which it moved in some other part, then its resistance to the greater velocity will be nine times the resistance to the lesser. If the velocity in one place be four times greater than in another, the resistance of the fluid will be sixteen times greater in the first than in the second, &c. This rule, however, though pretty near the truth when the velocities are confined within certain limits, is excessively erroneous when applied to military projectiles, where such resistances often occur as could scarcely be effected, on the commonly received principles, even by a treble augmentation of its density.

"By means of the machine already described, I nave it in my power to determine the velocity with which a ball moves in any part of its track, provided I can direct the piece in such a manner as to cause the bullet to impinge on the pendulum placed in that part; and therefore, charging a musket barrel three times successively with a leaden ball three fourths of an inch in diameter, and about half its weight of powder, and taking such precaution in weighing of the powder and placing it, that I was assured, by many previous trials, that the velocity of the ball could not differ by twenty feet in a second from its medium quantity, I fired it against the pendulum placed at 25, 75, and

125 feet distance from the mouth of the piece respectively; and I found that it impinged against the pendulum, in the first case, with a velocity of 1670 feet in a second; in the second case, with a velocity of 1550 feet in a second; and in the third case, with a velocity of 1425 feet in a second; so that, in passing through fifty feet of air, the bullet lost a velocity of 120 or 125 feet in a second; and the time of its passing through that space being about $\frac{1}{32}$d or $\frac{1}{30}$th of a second, the medium quantity of resistance must, in these instances, have been about 120 times the weight of the ball, which (as the ball was nearly $\frac{1}{12}$th of a pound) amounts to about 10 lbs. avoirdupois.

Now, if a computation be made according to the method laid down for compressed fluids in the 38th Proposition of Newton's *Principia*, supposing the weight of water to that of air as 850 to 1, it will be found that the resistance to a globe of three fourths of an inch diameter, moving with a velocity of about 1600 feet in a second, will not, on these principles, amount to any more than $4\frac{1}{6}$ lbs. avoirdupois; whence, as we know that the rules contained in that proposition are very accurate with regard to slow motions, we may hence conclude, that the resistance of the air in slow motions is less than that in swift motions, in the ratio of $4\frac{1}{6}$ to 10; a proportion between that of one to two and one to three.

"Again, I charged the same piece a number of times with equal quantities of powder, and balls of the same weight, taking all possible care to give to every shot an equal velocity; and firing three times against the pendulum placed only 25 feet from the mouth of the piece, the medium of the velocities with which the ball impinged was nearly that of 1690 feet in a second: then removing the piece 175 feet from the pendulum, I found, taking the medium of five shots, that the velocity with which the ball impinged at this distance was 1300 feet in a second; whence the ball, in passing through 150 feet of air, lost a velocity of about 390 feet in a second; and the resistance computed from these numbers comes out something more than in the preceding instance, it amounting here to between eleven and twelve pounds avoirdupois; whence, according to these experiments, the resisting power of the air to swift motions is greater than to slow ones, in a ratio which approaches nearer to that of three to one than in the preceding experiments.

"Having thus examined the resistance to a velocity of 1700 feet in a second, I next examined the resistance to smaller velocities; and for this purpose I charged the same barrel with balls of the same diameter, but with less powder, and placing the pendulum at 25 feet distance from the piece, I fired against it five times with an equal charge each time; the medium velocity with which the ball impinged was that of 1180 feet in a second: then, removing the pendulum to the distance of 250 feet, the medium velocity of five shots, made at this distance, was that of 950 feet in a second: whence the ball, in passing through 225 feet of air, lost a velocity of 230 feet in a second; and as it passed through that interval in about three fourteenths of a second, the resistance to the middle velocity will come out to be near $33\frac{1}{2}$ times the gravity of the ball, or two pounds ten ounces avoirdupois. Now, the resistance to the same velocity, according to the laws observed in slower motions, amounts to seven elevenths of the same quantity; whence, in a velocity of 1065 feet in a second, the resisting power of the air is augmented in no greater a proportion than that of seven to eleven; whereas we have seen in the former experiments, that to still greater degrees of velocity the augmentation approached very near the ratio of one to three.

"But farther, I fired three shot, of the same size and weight with those already mentioned, over a large piece of water; so that their dropping into the water being very discernible, both the distance and time of their flight might be accurately ascertained. Each shot was discharged with a velocity of 400 feet in a second; and I had satisfied myself, by many previous trials of the same charge with the pendulum, that I could rely on this velocity to ten feet in a second. The first shot flew 313 yards in four seconds and a quarter, the second flew 319 yards in four seconds, and the third 373 yards in five seconds and a half. According to the theory of resistance established for slow motions, the first shot ought to have spent no more than 3·2 seconds in its flight, the second 3·28, and the third four seconds; whence it is evident that every shot was retarded considerably more than it ought to have been had that theory taken place in its motion; consequently the resistance of the air is very sensibly increased, even in such a small velocity as that of 400 feet in a second.

"As no large shot are ever projected in practice with velocities exceeding that of 1700 feet in a second, it will be sufficient for the purposes of a practical gunner to determine the resistance to all lesser velocities, which may be thus exhibited. Let AB (fig. 14) be taken to AC, in the ratio of 1700 feet in a second to the given velocity to which the resisting power of the air is required. Continue the line AB to D, so that BD may be to AD as the resisting power of the air to slow motions is to its resisting power to a velocity of 1700 feet in a second; then shall CD be to AD as the resisting power of the air to slow motions is to its resisting power to the given velocity represented by AC.

"From the computations and experiments already mentioned, it plainly appears that a leaden ball of three fourths of an inch diameter, and weighing nearly $1\frac{1}{3}$ ounce avoirdupois, if it be fired from a barrel of forty-five inches in length, with half its weight of powder, will issue from that piece with a velocity which, if it were uniformly continued, would carry it near 1700 feet in a second. If, instead of the leaden ball, an iron one, of an equal diameter, was placed in the same situation in the same piece, and was impelled by an equal quantity of powder, the velocity of such an iron bullet would be greater than that of a leaden one in the subduplicate ratio of the specific gravities of lead and iron; and supposing that ratio to be as three to two, and computing on the principles already laid down, it will appear, that an iron bullet of 24 lbs. weight, shot from a piece of ten feet in length, with 16 lbs. of powder, will acquire from the explosion a velocity which, if uniformly continued, would carry it nearly 1650 feet in a second.

"This is the velocity which, according to our theory, a cannon ball of 24 lbs. weight is discharged with when it is impelled by a full charge of powder; but if, instead of a quantity of powder weighing two thirds of the ball, we suppose the charge to be only half the weight of it, then its velocity will on the same principles be no more than 1490 feet in a second. The same would be the velocities of every lesser bullet fired with the same proportions of powder, if the lengths of all pieces were constantly in the same ratio with the diameters of their bore; and although, according to the usual dimensions of the smaller pieces of artillery, this proportion does not always hold, yet the difference is not great enough to occasion a very great variation from the velocities here assigned, as will be obvious to any one who shall make a computation thereon. But in these determinations we suppose the windage to be no more than is just sufficient for putting down the bullet easily; whereas, in real service, either through negligence or unskilfulness, it often happens that the diameter of the bore so much exceeds the diameter of the bullet, that great part of the inflamed fluid escapes by its side; whence the velocity of the shot in this case may be considerably less than what we have assigned. However, this perhaps may be compensated by the greater heat which in all probability attends the firing of these large quantities of powder.

"From this great velocity of cannon-shot we may clear up the difficulty concerning the point-blank shot which occasioned the invention of Anderson's strange hypothesis. Here our author was deceived by his not knowing how greatly the primitive velocity of the heaviest shot is diminished in the course of its flight by the resistance of the air. Now, as a shot of 24 lbs. fired with two thirds of its weight of powder, will, at the distance of 500 yards from the piece, be separated from the line of its original direction by an angle of little more than half a degree, those who are acquainted with the inaccurate methods often used in the directing of cannon will easily allow, that so small an aberration may not be attended to by the generality of practitioners, and the path of the shot may consequently be deemed a straight line; especially as other causes of error will often intervene much greater than what arises from the incurvation of this line by gravity.

"We have now determined the velocity of the shot, both when fired with two thirds of its weight and with half its weight of powder respectively; and on this occasion I must remark, that, on the principles of our theory, the increasing the charge of powder will increase the velocity of the shot till the powder arrives at a certain quantity; after which, if the powder be increased, the velocity of the shot will diminish. The quantity producing the greatest velocity, and the proportion between that greatest velocity and the velocity communicated by greater and lesser charges, may be thus assigned. Let AB (fig. 14) represent the axis of the piece; draw AC perpendicular to it, and to the asymptotes AC and AB draw any hyperbola LF, and draw BF parallel to AC; find out now the point D, where the rectangle ADEG is equal to the hyperbolic area DEFB; then will AD represent that height of the charge which communicates the greatest velocity to the shot; whence AD being to AB as 1 to 2·71828, as appears from the table of logarithms, from the length of the line AD thus determined, and the diameter of the bore, the quantity of powder contained in this charge is easily known. If, instead of this charge, any other filling the cylinder to the height AI be used, draw IH parallel to AC, and through the point H to the same asymptotes AC and AB describe the hyperbola HK; then the greatest velocity will be to the velocity communicated by the charge AI, in the subduplicate proportion of the rectangle ADEG to the same rectangle diminished by the trilinear space KHE.

"It has been already shown, that the resistance of the air on the surface of a bullet of three fourths of an inch diameter, moving with a velocity of 1670 feet in a second, amounted to about ten pounds. It hath also been shown, that an iron bullet weighing twenty-four pounds, if fired with sixteen pounds of powder (which is usually esteemed its proper battering charge), acquires a velocity of about 1650 feet in a second, scarcely differing from the other; whence, as the surface of this last bullet is more than fifty-four times greater than the surface of a bullet of three fourths of an inch diameter, and their velocities are nearly the same, it follows, that the resistance on the larger bullet will amount to more than 540 pounds, which is near twenty-three times its own weight.

"The two last propositions are principally aimed against those theorists who have generally agreed in supposing the flight of shot and shells to be nearly in the curve of a parabola. The reason given by those authors for their opinion is the supposed inconsiderable resistance of the air; since, as it is agreed on all sides that the track of projectiles would be a perfect parabola if there was no resistance, it has from thence been too rashly concluded, that the interruption which the ponderous bodies of shells and bullets would receive from such a rare medium as air would be scarcely sensible, and consequently that their parabolic flight would be hereby scarcely affected.

"Now, the prodigious resistance of the air to a bullet of twenty-four pounds weight, such as we have here established it, sufficiently confutes this reasoning; for how erroneous must that hypothesis be, which neglects as inconsiderable a force amounting to more than twenty times the weight of the moving body?" We now proceed to state the postulates which contain the principles of the modern art of gunnery. They are as follow:

"1. If the resistance of the air be so small that the motion of a projected body is in the curve of a parabola, then the axis of that parabola will be perpendicular to the horizon, and consequently the part of the curve in which the body ascends will be equal and similar to that in which it descends.

"2. If the parabola in which the body moves be terminated on a horizontal plane, then the vertex of the parabola will be equally distant from its own extremities.

"3. Also the moving body will fall on that horizontal plane in the same angle, and with the same velocity with which it was first projected.

"4. If a body be projected in different angles but with the same velocity, then its greatest horizontal range will be when it is projected in an angle of 45° with the horizon.

"5. If the velocity with which the body is projected be known, then this greatest horizontal range may be thus found. Compute, according to the common theory of gravity, what space the projected body ought to fall through to acquire the velocity with which it is projected; then twice that space will be the greatest horizontal range, or the horizontal range when the body is projected in an angle of 45° with the horizon.

"6. The horizontal ranges of a body, when projected with the same velocity at different angles, will be between themselves as the sines of twice the angle in which the line of projection is inclined to the horizon.

"7. If a body is projected in the same angle with the horizon, but with different velocities, the horizontal ranges will be in the duplicate proportion of those velocities.

"These postulates, which contain the principles of the modern art of gunnery, are all of them false; for it has been already shown, that a musket-ball of three fourths of an inch in diameter, fired with half its weight of powder, from a piece 45 inches long, moves with a velocity of near 1700 feet in a second. Now, if this ball flew in the curve of a parabola, its horizontal range at 45° would be found by the fifth postulate to be about seventeen miles. But all the practical writers assure us that this range is really short of half a mile. Diego Uffano assigns to an arquebuss, four feet in length, and carrying a leaden ball of $1\frac{1}{2}$ oz. weight (which is very near our dimensions), a horizontal range of 797 common paces, when it is elevated between 40 and 50 degrees, and charged with a quantity of fine powder equal in weight to the ball. Mersennus also tells us, that he found the horizontal range of an arquebuss at 45° to be less than 400 fathoms, or 800 yards; whence, as either of these ranges is short of half an English mile, it follows, that a musket-shot, when fired with a reasonable charge of powder at the elevation of 45°, flies not one thirty-fourth part of the distance it ought to do if it moved in a parabola. Nor is this great contraction of the horizontal range to be wondered at, when it is considered that the resistance of this bullet when it first issues from the piece amounts to 120 times its gravity, as has been here experimentally demonstrated.

"To prevent objections, our next instance shall be in an iron bullet of 24 lbs. weight, which is the heaviest in common use for land-service. Such a bullet fired from a piece of the common dimensions, with its greatest allotment of powder, has a velocity of 1650 feet in a second, as already shown. Now, if the horizontal range of this shot at 45° be computed on the parabolic hypothesis by the fifth postulate, it will come out to be about sixteen miles, which is between five and six times its real quantity; for the practical writers all agree in making it less than three miles.

"But farther, it is not only when projectiles move with these very great velocities that their flight sensibly varies from the curve of a parabola; the same aberration often takes place in such as move slow enough to have their motion traced out by the eye; for there are few projectiles that can be thus examined, which do not visibly disagree with the first, second, and third postulates; obviously descending through a curve which is shorter and less inclined to the horizon than that in which they ascended. Also the highest point of their flight, or the vertex of the curve, is much nearer the place where they fall to the ground than to that from whence they were at first discharged.

"I have found too by experience, that the fifth, sixth, and seventh postulates are excessively erroneous when applied to the motions of bullets moving with small velocities. A leaden bullet three fourths of an inch in diameter, discharged with a velocity of about 400 feet in a second, and in an angle of 19° 5′ with the horizon, ranged on the horizontal plane no more than 448 yards; whereas its greatest horizontal range being found by the fifth postulate to be at least 1700 yards, the range at 19° 5′ ought by the sixth postulate to have been 1050 yards; whence, in this experiment, the range was not three sevenths of what it must have been had the commonly received theory been true."

From this and other experiments, it is clearly proved, that the track described by the flight even of the heaviest shot, is neither a parabola, nor even approaching to a parabola, except when they are projected with very small velocities. The nature of the curve really described by them will be explained under the head of Projectiles. But, as a specimen of the great complication of the subject, we shall here insert an account of a circumstance which frequently occurs in the discharge of shot.

"As gravity acts perpendicularly to the horizon, it is evident, that if no other power but gravity deflected a projected body from its course, its motion would be constantly performed in a plane perpendicular to the horizon, passing through the line of its original direction; but we have found, that the body in its motion often deviates from this plane, sometimes to the right hand and at other times to the left; and this in an incurvated line, which is convex towards that plane, so that the motion of a bullet is frequently in a line having a double curvature, it being bent towards the horizon by the force of gravity, and again bent out of its original direction to the right or left by some other force. In this case no part of the motion of the bullet is performed in the same plane, but its track will lie in the surface of a kind of cylinder, whose axis is perpendicular to the horizon.

"This proposition may be indisputably proved by the experience of every one in the least conversant with the practice of gunnery. The same piece which will carry its bullet within an inch of the intended mark at ten yards distance, cannot be relied on to ten inches in 100 yards, much less to thirty inches in 300 yards. Now this inequality can only arise from the track of the bullet being incurvated sidewise as well as downwards; for by this means the distance between that incurvated line and the line of direction will increase in a much greater ratio than that of the distance; these lines being coincident at the mouth of the piece, and afterwards separating in the manner of a curve and its tangent, if the mouth of the piece be considered as the point of contact. To put this matter out of all doubt, however, I took a barrel carrying a ball three fourths of an inch in diameter, and fixing it on a heavy carriage, I satisfied myself of the steadiness and truth of its direction, by firing at a board $1\frac{1}{7}$th foot square, which was placed at 180 feet distance; for I found that in sixteen successive shots I missed the mark but once. Now, the same barrel being fixed on the same carriage, and fired with a smaller quantity of powder, so that the shock on the discharge would be much less, and consequently the direction less changed, I found, that at 760 yards distance the ball flew sometimes 100 yards to the right of the line it was pointed on, and sometimes as much to the left. I found, too, that its direction in the perpendicular line was not less uncertain, it falling one time above 200 yards short of what it did at another; although, by the nicest examination of the piece after the discharge, it did not appear to have started in the least from the position it was placed in.

"The reality of this doubly curvated track being thus demonstrated, it may perhaps be asked, What can be the cause of a motion so different from what has been hitherto supposed? And to this I answer, that the deflection in question must be owing to some power acting obliquely to the progressive motion of the body; which power can be no other than the resistance of the air. If it be farther asked, how the resistance of the air can ever come to be oblique to the progressive motion of the body, I farther reply, that it may sometimes arise from inequalities in the resisted surface, but that its general cause is doubtless a whirling motion acquired by the bullet about its axis; for by this motion of rotation, combined with the progressive motion, each part of the bullet's surface will strike the air very differently from what it would do if there was no such whirl; and the obliquity of the action of the air arising from this cause will be greater, as the rotatory motion of the bullet is greater in proportion to its progressive one.

"This whirling motion undoubtedly arises from the friction of the bullet against the sides of the piece; and as the rotatory motion will in some part of its revolution conspire with the progressive one, and in another part be equally opposed to it, the resistance of the air on the fore part of the bullet will be hereby affected, and will be increased in that part where the whirling motion conspires with the progressive one, and diminished where it is opposed to it; and by this means the whole effort of the resistance, instead of being opposite to the direction of the body, will become oblique thereto, and will produce those effects already mentioned. If it was possible to predict the position of the axis round which the bullet should whirl, and if that axis was unchangeable during the whole flight of the bullet, then the aberration of the bullet by this oblique force would be in a given direction, and the incurvation produced thereby would regularly extend the same way from one end of its track to the other. For instance, if the axis of the whirl was perpendicular to the horizon, then the incurvation would be to the right or left. If that axis was horizontal, and perpendicular to the direction of the bullet, then the incurvation would be upwards or downwards. But as the first position of this axis is uncertain, and as it may perpetually shift in the course of the bullet's flight; the deviation of the bullet is not necessarily either in one certain direction, or tending to the same side in one part of its track more than it does in another, but more usually is continually changing the tendency of its deflection, as the axis round which it whirls must frequently shift its position to the progressive motion by many inevitable accidents.

"That a bullet generally acquires such a rotatory motion as here described, is, I think, demonstrable: however, to leave no room for doubt or dispute, I confirmed it, as well as some other parts of my theory, by the following experiments.

"I caused the machine to be made, represented fig. 15. BCDE is a brass barrel, moveable on its axis, and so adjusted by means of friction-wheels, not represented in the figure, as to have no friction worth attending to. The frame in which this barrel is fixed is so placed that its axis may be perpendicular to the horizon. The axis itself is continued above the upper plate of the frame, and has fastened on it a light hollow cone, AFG. From the lower part of this cone there is extended a long arm of wood, GH, which is very thin, and cut feather-edged. At its extremity there is a contrivance for fixing on the body whose resistance is to be investigated (as here the globe P); and to prevent the arm GH from swaying out of its horizontal position by the weight of the annexed body P, there is a brace, AH, of fine wire, fastened to the top of the cone which supports the end of the arm.

"Round the barrel BCDE there is wound a fine silk line, the turns of which appear in the figure; and after this line has taken a sufficient number of turns, it is conducted nearly in a horizontal direction to the pulley L, over which it is passed, and then a proper weight M is hung to its extremity. If this weight be left at liberty, it is obvious that it will descend by its own gravity, and will, by its descent, turn round the barrel BCDE, together with the arm GH, and the body P fastened to it. And whilst the resistance on the arm GH and on the body P is less than the weight M, that weight will accelerate its motion; and thereby the motion of GH and P will increase, and consequently their resistance will increase, till at last this resistance and the weight M become nearly equal to each other. The motion with which M descends, and with which P revolves, will not then sensibly differ from an equable one. Whence it is not difficult to conceive, that, by proper observations made with this machine, the resistance of the body P may be determined. The most natural method of proceeding in this investigation is as follows: Let the machine first have acquired its equable motion, which it will usually do in about five or six turns from the beginning; and then let it be observed, by counting a number of turns, what time is taken up by one revolution of the body P: then taking off the body P and the weight M, let it be examined what smaller weight will make the arm GH revolve in the same time as when P was fixed to it: this smaller weight being taken from M, the remainder is obviously equal in effort to the resistance of the revolving body P; and this remainder being reduced in the ratio of the length of the arm to the semidiameter of the barrel, will then become equal to the absolute quantity of the resistance. And as the time of one revolution is known, and consequently the velocity of the revolving body, there is hereby discovered the absolute quantity of the resistance to the given body P moving with a given degree of celerity.

"Here, to avoid all objections, I have generally chosen, when the body P was removed, to fix in its stead a thin piece of lead of the same weight, placed horizontally: so that the weight which was to turn round the arm GH, without the body P, did also carry round this piece of lead. But mathematicians will easily allow that there was no necessity for this precaution. The diameter of the barrel BCDE, and of the silk string wound round it, was 2·06 inches. The length of the arm GH, measured from the axis to the surface of the globe P, was 49·5 inches. The body P, the globe made use of, was of pasteboard; its surface very neatly coated with marbled paper. It was not much distant from the size of a 12-lb. shot, being in diameter 4·5 inches, so that the radius of the circle described by the centre of the globe was 51·75 inches. When this globe was fixed at the end of the arm, and a weight of half a pound was hung at the end of the string at M, it was examined how soon the motion of the descending weight M, and of the revolving body P, would become equable as to sense. With this view, three revolutions being suffered to elapse, it was found that the next 10 were performed in $27\frac{3}{4}''$, 20 in less than $55''$, and 80 in $82\frac{1}{2}''$; so that the first 10 were performed in $27\frac{3}{4}''$, the second in $27\frac{1}{4}''$, and the third in $27\frac{1}{2}''$.

"These experiments sufficiently evince, that even with half a pound, the smallest weight made use of, the motion of the machine was sufficiently equable after the first three revolutions.

"The globe above mentioned being now fixed at the end of the arm, there was hung on at M a weight of $3\frac{1}{4}$ lb.; and ten revolutions being suffered to elapse, the succeeding 20 were performed in $21\frac{1}{2}''$. Then the globe being taken off, and a thin plate of lead, equal to it in weight, placed in its room; it was found, that instead of $3\frac{1}{4}$ lb. a weight of one pound would make it revolve in less time than it did before, performing now 20 revolutions after 10 were elapsed in the space of $19''$.

"Hence then it follows, that from the $3\frac{1}{4}$ lb. first hung on, there is less than 1 lb. to be deducted for the resistance on the arm; and consequently the resistance on the globe itself is not less than the effort of $2\frac{1}{4}$ lb. in the situation M: and it appearing from the former measures, that the radius of the barrel is nearly $\frac{1}{50}$ of the radius of the circle described by the centre of the globe, it follows, that the absolute resistance of the globe, when it revolves 20 times in $21\frac{1}{2}''$ (about 25 feet in a second), is not less than the 50th part of two pounds and a quarter, or of 36 ounces; and this being considerably more than half an ounce, and the globe nearly the size of a 12-pound shot, it irrefragably confirms a proposition I had formerly laid down from theory, that the resistance of the air to a 12-lb. iron shot, moving with a velocity of 25 feet in a second, is not less than half an ounce.

"The rest of the experiments were made in order to confirm another proposition, namely, that the resistance of the air within certain limits is nearly in the duplicate proportion of the velocity of the resisted body. To investigate this point, there were successively hung on at M, weights in the proportion of the numbers 1, 4, 9, 16; and letting 10 revolutions first elapse, the following observations were made on the rest. With $\frac{1}{2}$ lb. the globe went 20 turns in $54\frac{1}{2}''$, with 2 lb. it went 20 turns in $27\frac{1}{4}''$, with $4\frac{1}{2}$ lb. it went 30 turns in $27\frac{1}{2}''$, and with 8 lb. it went 40 turns in $27\frac{1}{2}''$. Hence it appears, that to resistances proportioned to the numbers 1, 4, 9, 16, there correspond velocities of the resisted body in the proportion of the numbers 1, 2, 3, 4; which proves, with great nicety, the proposition above mentioned.

"With regard to the rotatory motion, the first experiment was to evince, that the whirling motion of a ball combining with its progressive motion would produce such an oblique resistance and deflective power as already mentioned. For this purpose a wooden ball of $4\frac{1}{2}$ inches diameter was suspended by a double string about eight or nine feet long. Now, by turning round the ball, and twisting the double string, the ball when left to itself would have a revolving motion given it from the untwisting of the string again. And if, when the string was twisted, the ball was drawn to a considerable distance from the perpendicular, and there let go, it would at first, before it had acquired its revolving motion, vibrate steadily enough in the same vertical plane in which it first began to move; but when, by the untwisting of the string, it had acquired a sufficient degree of its whirling motion, it constantly deflected to the right or left of its first track, and sometimes proceeded so far as to have its direction at right angles to that in which it beheory.

Theory.

gan its motion; and this deviation was not produced by the string itself, but appeared to be entirely owing to the resistance being greater on the one part of the leading surface of the globe than the other. For the deviation continued when the string was totally untwisted, and even during the time that the string, by the motion the globe had received, was twisting the contrary way. And it was always easy to predict, before the ball was let go, which way it would deflect, only by considering on which side the whirl would be combined with the progressive motion; for on that side always the deflective power acted, as the resistance was greater here than on the side where the whirl and progressive motion were opposed to one another."

Though Mr Robins considered this experiment as an incontestible proof of the truth of his theory, he undertook to give ocular demonstration of this deflection of musket-bullets even in the short space of one hundred yards.

"As all projectiles," says he, "in their flight are acted upon by the power of gravity, the deflection of a bullet from its primary direction supposes that deflection to be upwards or downwards in a vertical plane; because, in the vertical plane, the action of gravity is compounded and entangled with the deflective force. And for this reason my experiments have been principally directed to the examination of that deflection which carries the bullet to the right or left of that plane in which it began to move. For if it appears at any time that the bullet has shifted from that vertical plane in which the motion began, this will be an incontestible proof of what we have advanced. Now, by means of screens of exceeding thin paper, placed parallel to each other at proper distances, this deflection in question may be many ways investigated. For by firing bullets which shall traverse the screens, the flight of the bullet may be traced; and it may easily appear whether they do or do not keep invariably to one vertical plane. This examination may proceed on three different principles, which I shall here separately explain.

"For, first, an exactly vertical plane may be traced out upon all these screens, by which the deviation of any single bullet may be more readily investigated, only by measuring the horizontal distance of its trace from the vertical plane thus delineated; and by this means the absolute quantity of its aberration may be known. Or if the description of such a vertical plane should be esteemed a matter of difficulty and nicety, a second method may be followed, which is that of resting the piece in some fixed notch or socket, so that though the piece may have some little play to the right and left, yet all the lines in which the bullet can be directed shall intersect each other in the centre of that fixed socket: by this means, if two different shots are fired from the piece thus situated, the horizontal distances made by the two bullets on any two screens ought to be in the same proportion to each other as the respective distances of the screens from the socket in which the piece was laid. And if these horizontal distances differ from that proportion, then it is certain that one of the shots at least has deviated from a vertical plane, although the absolute quantity of that deviation cannot hence be assigned, because it cannot be known what part of it is to be imputed to one bullet, and what to the other.

"But if the constant and invariable position of the notch or socket in which the piece was placed be thought too hard an hypothesis in this very nice affair, the third method, and which is the simplest of all, requires no more than that two shot be fired through three screens without any regard to the position of the piece each time: for in this case, if the shots diverge from each other, and both keep to a vertical plane, then, if the horizontal distances of their traces on the first screen be taken from the like horizontal distances on the second and third, the two remainders will be in the same proportion with the distances of the second and third screen from the first. And if they are not in this proportion, then it will be certain that one of them at least has been deflected from the vertical plane; though here, as in the last case, the quantity of that deflection in each will not be known.

"All these three methods I have myself made use of at different times, and have ever found the success agreeable to my expectation. But the most eligible method seemed to be a compound of the two last. The apparatus was as follows. Two screens were set up in the larger walk in the Charter-house garden; the first of them at 250 feet distance from the wall, which was to serve for a third screen; and the second 200 feet from the same wall. At fifty feet before the first screen, or at 300 feet from the wall, there was placed a large block weighing about 200 lbs. weight, and having fixed into it an iron bar with a socket at its extremity, in which the piece was to be laid. The piece itself was of a common length, and bored for an ounce ball. It was each time loaded with a ball of 17 to the pound, so that the windage was extremely small, and with a quarter of an ounce of good powder. The screens were made of the thinnest tissue paper; and the resistance they gave to the bullet (and consequently their probability of deflecting it) was so small, that a bullet lighting one time near the extremity of one of the screens, left a fine thin fragment of it towards the edge entire, which was so very weak that it was difficult to handle it without breaking. These things thus prepared, five shots were made with the piece rested in the notch above mentioned; and the horizontal distances between the first shot, which was taken as a standard, and the four succeeding ones, both on the first and second screen, and on the wall, measured in inches, were as follows:

	First Screen.	Second Screen.	Wall.
1 to 2	1·75 R.	3·15 R.	16·7 R.
3	10 L.	15·6 L.	69·25 L.
4	1·25 L.	4·5 L.	15·0 L.
5	2·15 L.	5·1 L.	19·0 L.

"Here the letters R and L denote that the shot in question went either to the right or left of the first.

"If the position of the socket in which the piece was placed be supposed fixed, then the horizontal distances measured above on the first and second screen, and on the wall, ought to be in proportion to the distances of the first screen, the second screen, and the wall, from the socket. But by only looking over these numbers, it appears that none of them are in that proportion; the horizontal distance of the first and third, for instance, on the wall being above nine inches more than it should be by this analogy.

"If, without supposing the invariable position of the socket, we examine the comparative horizontal distances according to the third method described above, we shall in this case discover divarications still more extraordinary; for by the numbers set down it appears that the horizontal distances of the second and third shot on the two screens, and on the wall, are as under.

First Screen.	Second Screen.	Wall.
11·75	18·75	83·95

Here, if, according to the rule given above, the distance on the first screen be taken from the distances on the other two, the remainder will be 7 and 72·2; and these numbers, if each shot kept to a vertical plane, ought to be in the proportion of 1 to 5; that being the proportion of the distances of the second screen, and of the wall, from the first: but the last number 72·2 exceeds what it ought to be by this analogy by 37·2; so that between them there is a deviation from the vertical plane of above thirty-seven inches, and this too in a transit of little more than eighty yards.

" But farther, to show that these irregularities do not depend on any accidental circumstance of the balls fitting or not fitting the piece, there were five shots more made with the same quantity of powder as before, but with smaller bullets, which ran much looser in the piece. And the horizontal distances being measured in inches from the trace of the first bullet to each of the succeeding ones, the numbers were as under.

	First Screen.	Second Screen.	Wall.
1 to 2	15·6 R.	31·1 R.	94·0 R.
3	6·4 L.	12·75 L.	23·0 L.
4	4·7 R.	8·5 R.	15·5 R.
5	12·6 R.	24·0 R.	63·5 R.

Here, again, on the supposed fixed position of the piece, the horizontal distance on the wall between the first and third will be found above fifteen inches less than it should be if each kept to a vertical plane; and like irregularities, though smaller, occur in every other experiment. And if they are examined according to the third method set down above, and the horizontal distances of the third and fourth, for instance, are compared, those on the first and second screen, and on the wall, appear to be thus.

First Screen.	Second Screen.	Wall.
11·1	21·25	38·5

" And if the horizontal distance on the first screen be taken from the other two, the remainders will be 10·15 and 27·4; where the least of them, instead of being five times the first, as it ought to be, is 45·35 short of it; so that here is a deviation of forty-five inches.

" From all these experiments, the deflection in question seems to be incontestibly evinced. But to give some farther light to this subject, I took a barrel of the same bore with that hitherto used, and bent it at about three or four inches from its muzzle to the left, the bend making an angle of three or four degrees with the axis of the piece. This piece thus bent was fired with a loose ball, and the same quantity of powder hitherto used, the screens of the last experiment being still continued. It was natural to expect, that if this piece was pointed by the general direction of its axis, the ball would be canted to the left of that direction by the bend near its mouth. But as the bullet, in passing through that bent part, would, as I conceived, be forced to roll upon the right-hand side of the barrel, and thereby its left side would turn up against the air, and would increase the resistance on that side, I predicted to the company then present, that if the axis on which the bullet whirled did not shift its position after it was separated from the piece, then, notwithstanding the bend of the piece to the left, the bullet itself might be expected to incurvate towards the right; and this, upon trial, did most remarkably happen. For one of the bullets fired from this bent piece passed through the first screen about $1\frac{1}{2}$ inch distant from the trace of one of the shots fired from the straight piece in the last set of experiments. On the second screen, the traces of the same bullets were about three inches distant; the bullet from the crooked piece passing on both screens to the left of the other; but comparing the places of these bullets on the wall, it appeared that the bullet from the crooked piece, though it diverged from the track on the two screens, had now crossed that track, and was deflected considerably to the right of it; so that it was obvious, that though the bullet from the crooked piece might first be canted to the left, and had diverged from the track of the other bullet with which it was compared, yet by degrees it deviated again to the right, and a little beyond the second screen crossed that track from which it before diverged, and on the wall was deflected fourteen inches, as I remember, on the contrary side. And this experiment is not only the most convincing proof of the reality of this deflection here contended for; but is likewise the strongest confirmation that it is brought about in the very manner and by the very circumstances which we have all along described.

" I have now only to add, that as I suspected the consideration of the revolving motion of the bullet, compounded with its progressive one, might be considered as a subject of mathematical speculation, and that the reality of any deflecting force thence arising might perhaps be denied by some computists, upon the principles hitherto received of the action of fluids, I thought proper to annex a few experiments, with a view of evincing the strange deficiency of all theories of this sort hitherto established, and the unexpected and wonderful varieties which occur in these matters. The proposition which I advanced for this purpose being, that two equal surfaces meeting the air with the same degree of obliquity, may be so differently resisted, that though in one of them the resistance is less than that of a perpendicular surface meeting the same quantity of air, yet in another it shall be considerably greater.

" To make out this proposition, I made use of the machine already described; and having prepared a pasteboard pyramid, whose base was four inches square, and whose planes made angles of 45° with the plane of its base, and also a parallelogram four inches in breadth, and $5\frac{3}{8}$ in length, which was equal to the surface of the pyramid, the globe P was taken off from the machine, and the pyramid was first fixed on; and 2 lb. being hung at M, and the pyramid so fitted as to move with its vertex forwards, it performed twenty revolutions after the first ten were elapsed in 33″. Then the pyramid being turned so that its base, which was a plane of four inches square, went foremost, it now performed twenty revolutions with the same weight in $38\frac{1}{4}$″. After this, taking off the pyramid, and fixing on the parallelogram with its longer side perpendicular to the arm, and placing its surface in an angle of 45° with the horizon by a quadrant, the parallelogram, with the same weight, performed twenty revolutions in $43\frac{1}{2}$″.

" Now here this parallelogram and the surface of the pyramid are equal to each other, and each of them met the air in an angle of 45°; and yet one of them made twenty revolutions in 33″, whilst the other took up $43\frac{1}{2}$″. And at the same time it appears that a flat surface, such as the base of a pyramid, which meets the same quantity of air perpendicularly, makes twenty revolutions in $38\frac{1}{4}$″, which is the medium between the other two.

" But to give another and still more simple proof of this principle, there was taken a parallelogram four inches broad and $8\frac{1}{4}$th long. This being fixed at the end of the arm, with its long side perpendicular thereto, and being placed in an angle of 45° with the horizon, there was a weight hung on at M of $3\frac{1}{2}$ lb. with which the parallelogram made twenty revolutions in $40\frac{3}{4}$″. But after this, the position of the parallelogram was shifted, and it was placed with its shorter side perpendicular to the arm, though its surface was still inclined to an angle of 45° with the horizon; and now, instead of going slower, as might have been expected from the greater extent of part of its surface from the axis of the machine, it went round much faster; for in this last situation it made twenty revolutions in $35\frac{3}{4}$″, so that there were 5″ difference in the time of twenty revolutions; and this from no other change of circumstance than as the larger or shorter side of the oblique plane was perpendicular to the line of its direction."

In the seventy-third volume of the Philosophical Transactions, several experiments on this subject, but upon a larger scale, are related by Lovell Edgeworth, Esq. They confirm the truth of what Mr Robins advances, but nothing is said to explain the reason of it.

These are the principal experiments made by Mr Robins in confirmation of his theory, and which not only far exceed every thing that had been previously done, but point out the only method by which the art of gunnery may be still further improved. It must be observed, however, that in this art it is impossible we should ever arrive at absolute perfection; that is, it can never be expected that a gunner, by any method of calculation whatever, can be enabled to point his guns in such a manner that the shot shall hit the mark if placed any where within its range. Aberration which can by no means be either foreseen or prevented, will take place from a great number of different causes. A variation in the density of the atmosphere, in the dampness of the powder, or in the figure of the shot, will cause variations in the range of the bullet, which cannot by any means be reduced to rules, and consequently must render the event of each shot very precarious. The resistance of the atmosphere simply considered, without any of those anomalies arising from its density at different times, is a problem which, notwithstanding the labours of Mr Robins and others, has not been completely solved; and indeed if we consider the matter in a physical light, we shall find that without some other data than those which are yet obtained, an exact solution of it is impossible.

An objection has been made to the mathematical philosophy, to which in many cases it is most certainly liable, that it considers the *resistance* of matter more than its capacity of giving motion to other matter. Hence, if in any case matter acts both as a resisting and a moving power, and the mathematician overlooks its effort towards motion, founding his demonstrations only upon its property of resisting, these demonstrations will certainly be false. It is to an error of this kind that we are to attribute the great differences already noticed between the calculations of Sir Isaac Newton, with regard to the resisting force of fluids, and what actually takes place upon trial. These calculations were made upon the supposition that the fluid through which a body moved could do nothing else but resist it; yet it is certain that the air (the fluid with which we have to do at present) proves a source of *motion*, as well as resistance, to all bodies which move in it.

To understand this matter fully, let ABC (fig. 16) represent a crooked tube made of any solid matter, and *a*, *b*, two pistons which exactly fill the cavity. If the space between these pistons be full of air, it is plain they cannot come into contact with each other, on account of the elasticity of the included air, but will remain at some certain distance, as represented in the figure. If the piston *b* be drawn up, the air which presses in the direction C*b* acts as a resisting power, and the piston will not be drawn up with such ease as if the whole was *in vacuo*. But though the column of air pressing in the direction C*b* acts as a resisting power on the piston *b*, the column pressing in the direction A*a* will act as a moving power upon the piston *a*. It is therefore plain, that if *b* be moved upwards till it comes to the place marked *d*, the other will descend to that marked *c*. Now, if we suppose the piston *a* to be removed, it is plain that when *b* is pulled upwards to *d*, the air descending through the leg A*a*CB will press on the under side of the piston *b*, as strongly as it would have done upon the upper side of the piston *a*, had it been present. Therefore, though the air passing down through the leg CB resists the motion of the piston *b* when drawn upwards, the air pressing down through the leg AB forwards it as much; and accordingly the piston *b* may be drawn up or pushed down at pleasure, and with very little trouble. But if the orifice at A be stopped, so that the air can only exert its resisting power on the piston *b*, it will require a considerable degree of strength to move the piston from *b* to *d*.

If now we suppose the tube to be entirely removed (which indeed answers no other purpose than to render the action of the air more evident), it is plain that if the piston be moved either up or down, or in any other direction we can imagine, the air will press as much upon the back part of it as it resists it on the fore part; and consequently a ball moving through the air with any degree of velocity, ought to be as much accelerated by the action of the air behind, as it is retarded by the action of that before. Here then it is natural to ask, If the air accelerates a moving body as much as it retards it, how comes it to make any resistance at all? Yet certain it is that this fluid does resist, and that very considerably. To this it may be answered, that the air is always kept in some certain state or constitution by another power which rules all its motions, and it is this power undoubtedly which gives the resistance. It is not to our purpose at present to inquire what that power is, but we see that the air is often in very different states; one day, for instance, its parts are violently agitated by a storm, and another perhaps they are comparatively at rest in a calm. In the first case, nobody hesitates to own that the storm is occasioned by some cause or other, which violently resists any other power that would prevent the agitation of the air. In a calm the case is the same; for it would require the same exertion of power to excite a tempest in a calm day as to allay a tempest in a stormy one. Now it is evident that all projectiles, by their motion, agitate the atmosphere in an unnatural manner, and consequently are resisted by that power, whatever it is, which tends to restore the equilibrium, or bring back the atmosphere to its former state.

If no other power besides that above mentioned acted upon projectiles, it is probable that all resistance to their motion would be in the duplicate proportion of their velocities; and accordingly, as long as their velocity is small, we find that generally it is so. But when the velocity comes to be exceedingly great, other sources of resistance arise. One of these is a subtraction of part of the moving power, which, though not properly a *resistance*, or opposing another power to it, is an equivalent thereto. This subtraction arises from the following cause: The air, as we have already observed, presses upon the hinder part of the moving body by its gravity, as much as it resists the fore part of it by the same property. Nevertheless the velocity with which the air presses upon any body by means of its gravity is limited; and it is possible that a body may change its place with so great velocity that the air has not time to rush in upon the back part of it in order to assist its progressive motion. When this happens to be the case, there is in the first place a deficiency of the moving power equivalent to fifteen pounds on every square inch of surface, at the same time that there is a positive resistance of as much more on the fore part, owing to the gravity of the atmosphere, which must be overcome before the body can move forward.

This deficiency of moving power, and increase of resistance, do not only take place when the body moves with a very great degree of velocity, but in all motions whatsoever. It is not in all cases perceptible, because the velocity with which the body moves frequently bears but a very small proportion to the velocity with which the air presses in behind it. Thus, supposing the velocity with which the air rushes into a vacuum to be 1200 feet in a second, if a body moves with a velocity of 40 or 50 feet in a second, the force with which the air presses on the back part is but $\frac{1}{25}$th at the utmost less than that which resists on the fore part of it, which will not be perceptible; but if, as in the case of bullets, the velocity of the projectile comes to have a considerable proportion to the velocity wherewith the air rushes in behind it, then a very perceptible and otherwise unaccountable resistance is observed, as we have seen in the experiments already related by Mr Robins. Thus, if the air presses in with a velocity of 1200 feet in a second, and if the body changes its place with a velocity of 600 feet in the same time, there is a resistance of fifteen pounds on the fore part, and a pressure of only $7\frac{1}{2}$ on the back part. The resistance therefore not only overcomes the moving power of the air by $7\frac{1}{2}$ pounds, but there is a deficiency of other $7\frac{1}{2}$ pounds owing to the want of half the pressure of the atmosphere on the back part, and thus the whole loss of the moving power is equivalent to 15 pounds; and hence the exceeding great increase of resistance observed by Mr Robins beyond what it ought to be according to the common computations. The velocity with which the air rushes into a vacuum is therefore a desideratum in gunnery. Mr Robins supposes that it is the same with the velocity of sound; and that when a bullet moves with a velocity greater than that of 1200 feet in a second, it leaves a perfect vacuum behind it. Hence he accounts for the great increase of resistance to bullets moving with such velocities; but as he does not take notice of the loss of the air's moving power, the anomalies of all lesser velocities are inexplicable on his principles. Nay, he even tells us that Sir Isaac Newton's rule for computing resistances may be applied in all velocities less than 1100 or 1200 feet in a second, though this is expressly contradicted by his own experiments already mentioned.

Though for these reasons it is evident how great difficulties must occur in attempting to calculate the resistance of the air to military projectiles, we have not yet even discovered all the sources of resistance to these bodies when moving with immense velocities. Another power by which they are opposed, and which at last becomes greater than any of those hitherto mentioned, is the air's elasticity. This, however, will not begin to show itself in the way of resistance till the velocity of the moving body becomes considerably greater than that by which the air presses into a vacuum. Having therefore first ascertained this velocity, which we shall suppose to be 1200 feet in a second, it is plain that if a body moves with a velocity of 1800 feet in a second, it must compress the air before it; because the fluid has neither time to expand itself in order to fill the vacuum left behind the moving body, nor to rush in by its gravity. This compression it will resist by its elastic power, which thus becomes a new source of resistance, increasing, without any limit, in proportion to the velocity of the moving body. If now we suppose the moving body to set out with a velocity of 2400 feet in a second, it is plain that there is not only a vacuum left behind the body, but the air before it is compressed into half its natural space. The loss of motion in the projectile therefore is now very considerable. It first loses 15 pounds on every square inch of surface on account of the deficiency of the moving power of the air behind it, then it loses 15 pounds more on account of the resistance of the air before it; again, it loses 15 pounds on account of the elasticity of the compressed air; and, lastly, it loses another 15 pounds on account of the vacuum behind, which takes off the weight of the atmosphere, that would have been equivalent to one half of the elasticity of the air before it. The whole resistance therefore upon every square inch of surface moving with this velocity is 60 pounds, besides that which arises from the power tending to preserve the general state of the atmosphere, and which increases in the duplicate proportion of the velocity, as already mentioned. If the body is supposed to move with a velocity of 4800 feet in a second, the resistance from the elasticity of the air will then be quadrupled, or amount to 60 pounds on the square inch of surface, which, added to the other causes, will produce a resistance of 105 pounds upon the square inch; and thus the resistance from the elasticity of the air would go on continually increasing, till at last the motion of the projectile would be as effectually stopped as if it were fired against a wall. This obstacle therefore we are to consider as really *insuperable* by any art whatsoever, and therefore it is not advisable to use larger charges of powder than what will project the shot with a velocity of 1200 feet in a second. To this velocity the elasticity of the air will not make great resistance, if indeed it makes any at all; for though Mr Robins has conjectured that air rushes into a vacuum with the velocity of sound, or between 1100 and 1200 feet in a second, yet we have no decisive proof of the truth of this supposition. At this velocity, indeed, according to Mr Robins, a very sudden increase of resistance takes place; but this is denied by Mr Glenie, in his *History of Gunnery* (p. 48, 50), who supposes that the resistance proceeds gradually; and indeed it seems to be pretty obvious that the resistance cannot very *suddenly* increase, if the velocity be only increased in a small degree. Yet it is certain that the swiftest motions with which cannon-balls can be projected are very soon reduced to the standard; for Mr Robins informs us, that "a 24-pound shot, when discharged with a velocity of 2000 feet in a second, will be reduced to that of 1200 feet in a second in a flight of little more than 500 yards."

In the seventy-first volume of the *Philosophical Transactions*, Count Rumford has proposed a new method of determining the velocities of bullets, by measuring the force of the recoil of the piece. As in all cases action and re-action are supposed to be equal to one another, it appears that the momentum of a gun, or the force of its recoil backwards, must always be equivalent to the force of its charge; that is, the velocity with which the gun recoils, multiplied into its weight, is equal to the velocity of the bullet multiplied into its weight; for every particle of matter, whether solid or fluid, that issues out of the mouth of a piece, must be impelled by the action of some power, which power must *re-act* with equal force against the bottom of the bore. Even the fine elastic invisible fluid which is generated from the powder in its inflammation cannot put itself in motion without at the same time re-acting against the gun. Thus we see pieces, when they are fired with powder alone, recoil as well as when their charges are made to impel a weight of shot, though the recoil is not in the same degree in both cases. It is easy to determine the velocity of the recoil in any given case, by suspending the gun in an horizontal position by two pendulous rods, and measuring the arc of its ascent by means of a ribbon, as mentioned under the article GUNPOWDER; and this will give the momentum of the gun, its weight being known, and consequently the momentum of its charge. But in order to determine the velocity of the bullet from the momentum of the recoil, it will be necessary to know how much the weight and velocity of the elastic fluid contribute towards it.

That part of the recoil which arises from the expansion of the fluid is always very nearly the same, whether the powder is fired alone, or whether the charge is made to impel one or more bullets, as has been determined by a great variety of experiments. If therefore a gun, suspended according to the method prescribed, is fired with any given charge of powder, but without any bullet or wad, and the recoil is observed, and if the same piece is afterwards fired with the same quantity of powder, and a bullet of a known weight, the excess of the velocity of the recoil in the latter case, over that in the former, will be proportional to the velocity of the bullet; for the difference of these velocities, multiplied into the weight of the gun, will be equal to the weight of the bullet multiplied into its velocity. Thus, if W is put equal to the weight of the gun, $U =$ the velocity of the bullet when fired with a given charge of powder without any bullet; $V =$ the velocity of the recoil when the same charge is made to impel a bullet; $B =$ the weight of the bullet, and $v =$ its velocity; it will be $v = \frac{(V - U)W}{B}$.

To determine how far this theory agreed with practice, an experiment was made with a charge of 165 grains of powder, without any bullet, which produced a recoil of 5·5 inches; and in another, with a bullet, the recoil was 5·6 inches, the mean of which is 5·55 inches, answering to a velocity of 1·1358 feet in a second. In five experiments with the same charge of powder, and a bullet weighing 580 grains, the mean was 14·6 inches; and the velocity of the recoil answering to the length just mentioned, is 2·9880 feet in a second; consequently V — U, or 2·9880 — 1·1358, is equal to 1·8522 feet in a second. But as the velocities of recoil are known to be as the chords of the arcs through which the barrel ascends, it is not necessary, in order to determine the velocity of the bullet, to compute the velocities V and U; but the quantity V — U, or the difference of the velocities of the recoil when the given charge is fired with and without a bullet, may be computed from the value of the difference of the chords by one operation. Thus the velocity answering to the chord 9·05 is that of 1·8522 feet in a second, which is just equal to V — U, as was before found.

In this experiment the weight of the barrel with its carriage was just 47$\frac{1}{4}$ pounds, to which $\frac{3}{4}$ths of a pound were to be added on account of the weight of the rods by which it was suspended; thus making W = 48 pounds, or 336,000 grains. The weight of the bullet was 580 grains; whence B is to W as 580 to 336,000, that is, as 1 to 579·31 very nearly. The value of V — U, answering to the experiments before mentioned, was found to be 1·8522; consequently the velocity of the bullet = v, was 1·8522 × 579·31 = 1073 feet, which differs only by 10 from 1083, the velocities found by the pendulum.

The velocities of the bullets may be found from the recoil by a still more simple method. For the velocities of the recoil being as the chords measured upon the ribbon, if c is put equal to the chord of the recoil expressed in English inches, when the piece is fired with powder only, and C = the chord when the same piece is charged with a bullet; then C — c will be as V — U; and consequently as $\frac{(V - U)\,W}{B}$, which measures the velocity of the bullet, the ratio of W to B remaining the same. If therefore we suppose a case in which C — c is equal to one inch, and the velocity of the bullet is computed from that chord, the velocity in any other case, wherein C — c is greater or less than one inch, will be found by multiplying the difference of the chords C and c by the velocity answering to the difference of one inch. The length of the parallel rods by which the piece was suspended being 64 inches, the velocity of the recoil, = C — c = 1 inch measured upon the ribbon, is 0·204655 parts of a foot in one second, which in this case is also the value of V — U; the velocity of the bullet, or v, is therefore 0·204655 × 579·31 = 118·35 feet in a second. Hence the velocity of the bullet may in all cases be found by multiplying the difference of the chords C and c by 118·35, the weight of the barrel, the length of the rods by which it is suspended, and the weight of the bullet, remaining the same; and this whatever the charge of powder made use of may be, and however it may differ in strength and goodness.

The exactness of this second method will appear from the following experiments. On firing the piece with 145 grains of powder and a bullet, the mean of three sets of experiments was 13·25, 13·15, and 13·2; and with the same charge of powder without a bullet, the recoil was 4·5, 4·3, or 4·4. C — c therefore was 13·2 — 4·4 = 8·8 inches; and the velocity of the bullets, = 8·8 × 118·35 = 1045 feet in a second; the velocities by the pendulum coming out 10·40 feet in the same space of time.

In the far greater number of experiments to determine the comparative accuracy of the two methods, a surprising agreement was found between the last-mentioned one and that by the pendulum; but in some few the differences were very remarkable. Thus, in two where the recoil was 12·92 and 13·28, the velocity, by computation from the chords, is 1030 feet per second; but in computing by the pendulum it amounted only to 900; in these, however, some inaccuracy was suspected in the experiment with the pendulum, and the computation from the recoil was most to be depended upon. In another experiment, the velocity by the recoil exceeded that by the pendulum by no less than 346 feet; the former showing 2109, and the latter only 1763 feet in a second. In two others the pendulum was also deficient, though not in such a degree. In all these it is remarkable, that where the difference was considerable, it was still in favour of the recoil. The deficiency in these experiments appears to have been somewhat embarrassing to our author. "It cannot be supposed," says he, "that it arose from any imperfection in Mr Robins's method of determining the velocities of bullets; for that method is founded upon such principles as leave no room to doubt of its accuracy; and the practical errors that occur in making the experiments, and which cannot be entirely prevented, or exactly compensated, are in general so small, that the difference in the velocities cannot be attributed to them. It is true, the effect of those errors is more likely to appear in experiments made under such circumstances as the present; for the bullet being very light,[1] the arc of the ascent of the pendulum was but small; and a small mistake in measuring the chord upon the ribbon would have produced a very considerable error in computing the velocity of the bullet. Thus a difference of one tenth of an inch, more or less, upon the ribbon, in that experiment where the difference was greatest, would have made a difference in the velocity of more than 120 feet in a second. But, independent of the pains that were taken to prevent mistakes, the striking agreement of the velocities in so many other experiments affords abundant reason to conclude, that the errors arising from those causes were in no case very considerable. But if both methods of determining the velocities of bullets are to be relied on, then the difference of the velocities, as determined by them in these experiments, can only be accounted for by supposing that it arose from their having been diminished by the resistance of the air in the passage of the bullets from the mouth of the piece to the pendulum; and this suspicion will be much strengthened, when we consider how great the resistance of the air is to bodies that move very swiftly in it; and that the bullets in these experiments were not only projected with great velocities, but were also very light, and consequently more liable to be retarded by the resistance on that account.

"To put the matter beyond all doubt, let us see what the resistance was that these bullets met with, and how much their velocities were diminished by it. The weight of the bullet in the most erroneous experiment was 90 grains, its diameter 0·78 of an inch, and it was projected with a velocity of 2109 feet in a second. If now a computation be made according to the law laid down by Sir Isaac Newton for compressed fluids, it will be found, that the resistance of this bullet was not less than 8$\frac{1}{2}$ pounds avoirdupois, which is something more than 660 times its own weight. But Mr Robins has shown by experiment, that the resistance of the air to bodies moving in it with

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[1] They were made of lead, enclosing in a nucleus of Paris plaster.

Theory. Theory.

very great velocity, is near three times greater than Sir Isaac has determined it; and as the velocity with which this bullet was impelled is considerably greater than any in Mr Robins's experiments, it is highly probable that the resistance in this instance was at least 2000 times greater than the weight of the bullet.

"The distance from the mouth of the piece to the pendulum was 12 feet; but, as there is reason to think that the blast of the powder, which always follows the bullet, continues to act upon it for some sensible space of time after it is out of the bore, and, by urging it on, counterbalances, or at least counteracts, in a great measure, the resistance of the air, we will suppose that the resistance does not begin, or rather that the motion of the bullet does not begin to be retarded, till it has got to the distance of two feet from the muzzle. The distance, therefore, between the barrel and the pendulum, instead of 12 feet, is to be esteemed at 10 feet; and as the bullet took up about $\frac{1}{192}$ part of a second in running over that space, it must in that time have lost a velocity of about 335 feet in a second, as will appear upon making the computation; and this will very exactly account for the apparent diminution of the velocity in the experiment; for the difference of the velocities, as determined by the recoil and the pendulum $= 2109 - 1763 = 346$ feet in a second, is extremely near 335 feet in a second, the diminution of the velocity by the resistance as here determined.

"If the diminution of the velocities of the bullets in the two subsequent experiments be computed in like manner, it will turn out in one 65, and in the other 33, feet in a second; and, making these corrections, the comparison of the two methods of ascertaining the velocities will stand thus:

Velocities by the pendulum........	1763	1317	1136
Resistance of air to be added.......	335	65	33
	2098	1382	1169
Velocity by the recoil..............	2109	1430	1288
Difference after correction..........	+11	+48	+119

"It appears, therefore, that notwithstanding these corrections, the velocities as determined by the pendulum, particularly in the last, were considerably deficient. But the manifest irregularity of the velocities in those instances, affords abundant reason to conclude, that it must have arisen from some accidental cause, and therefore that little dependence is to be put upon the result of those experiments. I cannot take upon me to determine positively what the cause was which produced this irregularity; but I strongly suspect that it arose from the breaking of the bullets in the barrel by the force of the explosion: for these bullets, as has already been mentioned, were formed of lead, enclosing lesser bullets of plaster of Paris; and I well remember to have observed at the time several small fragments of the plaster which had fallen down by the side of the pendulum. I confess I did not then pay much attention to this circumstance, as I naturally concluded that it arose from the breaking of the bullet in penetrating the target of the pendulum; and that the small pieces of plaster I saw upon the ground had fallen out of the hole by which the bullet entered. But if the bullets were not absolutely broken in pieces in firing, yet if they were considerably bruised, and the plaster, or a part of it, were separated from the lead, such a change in the form might produce a great increase in the resistance, and even their initial velocities might be affected by it; for their form being changed from that of a globe to some other figure, they might not fit the bore; and a part of the force of the charge might be lost by the windage. That this actually happened in the experiment last mentioned seems very probable, as the velocity with which the bullet was projected, as it was determined by the recoil, was considerably less in proportion in that experiment than in many others which preceded and followed it in the same set.

"As allowance has been made for the resistance of the air in these cases, it may be expected that the same should be done in all other cases; but it will probably appear, upon inquiry, that the diminution of the velocities of the bullets on that account was so inconsiderable, that it might safely be neglected: thus, for instance, in the experiments with an ounce of powder, when the velocity of the bullet was more than 1750 feet in a second, the diminution turns out no more than 25 or 30 feet in a second, though we suppose the full resistance to have begun so near as two feet from the mouth of the piece; and in all cases where the velocity was less, the effect of the resistance was less in a much greater proportion; and even in this instance there is reason to think, that the diminution of the velocity, as we have determined it, is too great; for the flame of gunpowder expands with such amazing rapidity, that it is scarcely to be supposed but that it follows the bullet, and continues to act upon it more than two feet, or even four feet, from the gun; and when the velocity of the bullet is less, its action upon it must be sensible at a still greater distance."

As this method of determining the velocities of bullets by the recoil of the piece did not occur to Count Rumford till after he had finished his experiments with a pendulum, and taken down his apparatus, he had it not in his power to determine the comparative strength of the recoil with and without a bullet; and consequently the velocity with which the flame issues from the mouth of a piece. He is of opinion, however, that every thing relating to these matters may be determined with greater accuracy by the new method than by any other formerly practised; and he very justly remarks, that the method of determining the velocity by the recoil, gives it originally as the bullet sets out; whilst that by the pendulum shows it only after a part has been destroyed by the resistance of the air. In the course of his remarks, he criticises a part of Mr Robins' theory, that when bullets of the same diameter, but of different weights, are discharged from the same piece by the same quantity of powder, their velocities are in the subduplicate ratio of their weight. This theory, he observes, is manifestly defective, as being founded upon a supposition, that the action of the elastic fluid generated from the powder is always the same in any and every given part of the bore when the charge is the same, whatever may be the weight of the bullet; and as no allowance is made for the expenditure of force required to put the fluid itself in motion, nor for the loss of it by the vent. "It is true," says he, "Dr Hutton in his experiments found this law to obtain without any great error; and possibly it may hold good with sufficient accuracy in many cases; for it sometimes happens that a number of errors or actions, whose operations have a contrary tendency, so compensate each other, that their effects when united are not sensible. But when this is the case, if any one of the causes of error is removed, those which remain will be detected. When any given charge is loaded with a heavy bullet, more of the powder is inflamed in any very short space of time than when the bullet is lighter, and the action of the powder ought upon that account to be greater; but a heavy bullet takes up longer time in passing through the bore than a light one, and consequently more of the elastic fluid generated from the powder escapes by the vent and by windage. It may happen that the augmentation of the force, on account of one of these circumstances, may be just able to counterbalance the diminution of it arising from the other; and if it should be found upon trial that this is the case in general, in pieces as they are now constructed, and with all the variety of shot that are made use of in practice, it would be of great use to know the fact; but when, with Mr Robins, concluding too hastily from the result of a partial experiment, we suppose, that because the sum total of the pressure of the elastic fluid upon the bullet, during the time of its passage through the bore, happens to be the same when bullets of different weights are made use of, that therefore it is always so, our reasonings may prove very inconclusive, and lead to very dangerous errors."

In the prosecution of his subject Count Rumford proves mathematically, as well as by actual experiment, that the theory laid down by Mr Robins in this respect is erroneous. The excess is in favour of heavy bullets, which acquire a velocity greater than they ought to do according to Mr Robins's rule; and so considerable are the errors, that in one of Count Rumford's experiments the difference was no less than 2042 feet in a second. When the weight of the bullet was increased four times, the action of the powder was found to be nearly doubled; for in one experiment, when four bullets were discharged at once, the collective pressure was as one; but when only a single bullet was made use of, it was no more than 0·5825; and upon the whole he concludes, that the velocity of bullets is in the reciprocal subtriplicate ratio of their weights. Our author observes also, that Mr Robins is not only mistaken in the particular just mentioned, but in his conclusions with regard to the absolute force of gunpowder compared with the pressure of the atmosphere; the latter being to the force of gunpowder as one to 1000 according to Mr Robins, but as one to 1308 according to Count Rumford.

II.—PRACTICE OF GUNNERY.

With regard to the practical part of gunnery, which ought to consist in directing the piece in such a manner as always to hit the object against which it is pointed, there can be no certain rules given. The following maxims are laid down by Mr Robins as of use in practice.

1. In any piece of artillery whatever, the greater the quantity of powder it is charged with, the greater will be the velocity of the bullet.

2. If two pieces of the same bore, but of different lengths, are fired with the same charge of powder, the longer will impel the bullet with a greater celerity than the shorter.

3. If two pieces of artillery different in weight, and formed of different metals, have yet their cylinders of equal bores and equal lengths; then with like charges of powder and like bullets they will each of them discharge their shot with nearly the same degree of celerity.

4. The ranges of pieces at a given elevation are no just measures of the velocity of the shot; for the same piece fired successively at an invariable elevation, with the powder, bullet, and every other circumstance as nearly the same as possible, will yet range to very different distances.

5. The greater part of that uncertainty in the ranges of pieces which is described in the preceding maxim, can only arise from the resistance of the air.

6. The resistance of the air acts upon projectiles in a twofold manner; for it opposes their motion, and thus continually diminishes their celerity; and it besides diverts them from the regular track they would otherwise follow; whence arise those deviations and inflections already treated of.

7. That action of the air by which it retards the motion of projectiles, though much neglected by writers on artillery, is yet, in many instances, of an immense force; and hence the motion of these resisted bodies is totally different from what it would otherwise be.

8. This retarding force of the air acts with different degrees of violence, according as the projectile moves with a greater or less velocity; and the resistances observe this law, that to a velocity which is double another, the resistance within certain limits is fourfold; to a treble velocity, ninefold; and so on.

9. But this proportion between the resistances to two different velocities does not hold if one of the velocities be less than that of 1200 feet in a second, and the other greater; for in that case the resistance to the greater velocity is nearly three times as much as it would come out by a comparison with the smaller, according to the law explained in the last maxim.

10. To the extraordinary power exerted by the resistance of the air it is owing, that when two pieces of different bores are discharged at the same elevation, the piece of the largest bore usually ranges farthest, provided they are both fired with fit bullets, and the customary allotment of powder.

11. The greater part of military projectiles will at the time of their discharge acquire a whirling motion round their axis, by rubbing against the insides of their respective pieces; and this whirling motion will cause them to strike the air very differently from what they would do had they no other than a progressive motion. By this means it may happen that the resistance of the air is not always directly opposed to their flight, but frequently acts in a line oblique to their course, and thereby forces them to deviate from the regular track they would otherwise describe. And this is the true cause of the irregularities described in maxim 4.

12. From the sudden trebling the quantity of the air's resistance, when the projectile moves swifter than at the rate of 1200 feet in a second (as has been explained in maxim 9), it follows, that whatever be the regular range of a bullet discharged with this last-mentioned velocity, that range will be but little increased, how much soever the velocity of the bullet may be still farther augmented by greater charges of powder.

13. If the same piece of cannon be successively fired at an invariable elevation, but with various charges of powder, the greatest charge being the whole weight of the bullet in powder, and the least not less than the fifth part of that weight; then if the elevation be not less than eight or ten degrees, it will be found, that some of the ranges with the least charge will exceed some of those with the greatest.

14. If two pieces of cannon of the same bore, but of different lengths, are successively fired at the same elevation with the same charge of powder; then it will frequently happen that some of the ranges with the shorter piece will exceed some of those with the longer.

15. In distant cannonadings the advantages arising from long pieces and large charges of powder are but of little moment.

16. In firing against troops with grape-shot, it will be found that charges of powder much less than those generally used are the most advantageous.

17. The principal operations in which large charges of powder appear to be more efficacious than small ones, are the ruining of parapets, the dismounting of batteries covered by stout merlins, or battering in breach; for, in all these cases, if the object be but little removed from the piece, every increase of velocity will increase the penetration of the bullet.

18. Whatever operations are to be performed by artillery, the least charges of powder with which they can be effected are always to be preferred.

19. Hence the proper charge of any piece of artillery is not that allotment of powder which will communicate the greatest velocity to the bullet, as most practitioners formerly maintained; nor is it to be determined by an invariable proportion of its weight to the weight of the ball;

but, on the contrary, it is such a quantity of powder as will produce the least velocity for the purpose in hand; and, instead of bearing always a fixed ratio to the weight of the ball, it must be different according to the different business which is to be performed.

20. No field-piece ought at any time to be loaded with more than $\frac{1}{6}$th, or at the utmost $\frac{1}{5}$th, of the weight of its bullet in powder, nor should the charge of any battering piece exceed $\frac{1}{3}$d of the weight of its bullet.

21. Although precepts very different from those we have here given have often been advanced by artillerists, and have been said to be derived from experience, yet is that pretended experience altogether fallacious; since, from our doctrine of resistance established above, it follows that every speculation on the subject of artillery, which is only founded on the experimental ranges of bullets discharged with considerable velocities, is liable to great uncertainty.

The greatest irregularities in the motion of bullets are, as we have seen, owing to the whirling motion on their axis, acquired by the friction against the sides of the piece. The best method hitherto known of preventing these is by the use of pieces with *rifled barrels.* These pieces have the insides of their cylinders cut with a number of spiral channels; so that it is in reality a female screw, varying from the common screws only in this, that its threads or rifles are less deflected, and approach more to a right line; it being usual for the threads with which the rifled barrel is indented, to take little more than one turn in its whole length. The numbers of these threads are different in each barrel, according to the fire of the piece and the fancy of the workman; and in like manner the depth to which they are cut is not regulated by any invariable rule.

The usual method of charging these pieces is this: When the proper quantity of powder is put down, a leaden bullet is taken, a small matter larger than the bore of the piece was before the rifles were cut; and this bullet being laid on the mouth of the piece, and consequently too large to go down of itself, it is forced by a strong rammer impelled by a mallet, and by repeated blows is driven home to the powder; and the softness of the lead giving way to the violence with which the bullet is impelled, that zone of the bullet which is contiguous to the piece varies its circular form, and takes the shape of the inside of the barrel; so that it becomes part of a male screw exactly answering to the incidents of the rifle.

In some parts of Germany and Switzerland, however, an improvement is added to this practice, especially in the larger pieces which are used for shooting at great distances. This is done by cutting a piece of very thin leather, or of thin fustian, in a circular shape, somewhat larger than the bore of the barrel. This circle being greased on one side, is laid upon the muzzle with its greasy side downwards; and the bullet being then placed upon it, is forced down the barrel with it, by which means the leather or fustian encloses the lower half of the bullet, and, by its interposition between the bullet and the rifles, prevents the lead from being cut by them. It must be remembered, however, that in the barrels where this is practised, the rifles are generally shallow, and the bullet ought not to be too large. But as both these methods of charging at the mouth take up a good deal of time, the rifled barrels which have been made in Britain are contrived to be charged at the breach, where the piece is for this purpose made larger than in any other part. The powder and bullet are put in through the side of the barrel, by an opening, which, when the piece is loaded, is then filled up with a screw. By this means, when the piece is fired, the bullet is forced through the rifles, and acquires the spiral motion already described; and perhaps something of this kind, though not in the manner now practised, would be, according to Robins, the most perfect method for the construction of these kinds of barrels.

From the whirling motion communicated by the rifles, it happens, that when the piece is fired, the indented zone of the bullet follows the sweep of the rifles, and thereby, besides its progressive motion, acquires a circular motion round the axis of the piece; which circular motion will be continued to the bullet after its separation from the piece, and thus a bullet discharged from a rifle barrel will revolve round an axis coincident with the line of its flight. By this rotation on its axis, the aberration of the bullet, which proves so prejudicial to all operations in gunnery, is almost totally prevented. The reason of this may be easily understood from considering the slow motion of an arrow through the air. For example, if a bent arrow, with its wings not placed in some degree in a spiral position, so as to make it revolve round its axis as it flies through the air, were shot at a mark with a true direction, it would constantly deviate from it, in consequence of being pressed to one side by the convex part opposing the air obliquely. Let us now suppose this deflection in a flight of 100 yards to be equal to ten yards. Now, if the same bent arrow were made to revolve round its axis once every two yards of its flight, its greatest deviation would take place when it had proceeded only one yard, or made half a revolution; since at the end of the next half revolution it would again return to the same direction it had at first; the convex side of the arrow having been once in opposite positions. In this manner it would proceed during the whole course of its flight, constantly returning to the true path at the end of every two yards; and when it reached the mark, the greatest deflection to either side that could happen would be equal to what it makes in proceeding one yard, equal to $\frac{1}{100}$ part of the former, or 3·6 inches, a very small deflection when compared with the former one. In the same manner, a cannon-ball which revolves not round its axis, deviates greatly from the true path, on account of the inequalities on its surface; which, although small, cause great deviations by reason of the resistance of the air, at the same time that the ball acquires a motion round its axis in some uncertain direction occasioned by the friction against its sides. But by the motion acquired from the rifles, the error is perpetually corrected in the manner just now described; and accordingly such pieces are much more to be depended on, and will do execution at a much greater distance, than the other.

The reasons commonly alleged for the superiority of rifle-barrels over common ones, are, either that the inflammation of the powder is greater, by the resistance which the bullet makes by being thus forced into the barrel, and that thereby it receives a much greater impulse; or that the bullet, by the compounding of its circular and revolving motions, as it were bores the air, and thereby flies to a much greater distance than it would otherwise have done; or that by the same boring motion it makes its way through all solid substances, and penetrates into them much deeper than when fired in the common manner. But these views Mr Robins has proved to be altogether erroneous, by a great number of experiments made with rifle-barrelled pieces. "In these experiments," says he, "I have found that the velocity of the bullet fired from a rifled barrel was usually less than that of the bullet fired from a common piece with the same proportion of powder. Indeed it is but reasonable to expect that this should be the case; for if the rifles are very deep, and the bullet is large enough to fill them up, the friction bears a very considerable proportion to the effort of the powder. And that in this case the friction is of consequence enough to have its effects observed, I have discovered by the continued use of the same barrel. For the metal of the barrel being soft, and wearing away apace, its bore by half a year's use was considerably enlarged, and consequently the depths of its rifles diminished; and then I found that the same quantity of powder would give to the bullet a velocity near a tenth part greater than what it had done at first. And as the velocity of the bullet is not increased by the use of rifled barrels, so neither is the distance to which it flies, nor the depth of its penetration into solid substances. Indeed these two last suppositions seem at first sight too chimerical to deserve a formal confutation. But I cannot help observing, that those who have been habituated to the use of rifled pieces are very excusable in giving way to these prepossessions. For they constantly found, that with them they could fire at a mark with tolerable success, though it were placed at three or four times the distance to which the ordinary pieces were supposed to reach. And therefore, as they were ignorant of the true cause of this variety, and did not know that it arose only from preventing the deflection of the ball; it was not unnatural for them to imagine that the superiority of effect in the rifled piece was owing either to a more violent impulse at first, or to a more easy passage through the air.

"In order to confirm the foregoing theory of rifle-barrelled pieces, I made some experiments by which it might be seen whether one side of the ball discharged from them uniformly keeps foremost during the whole course. To examine this particular, I took a rifled barrel carrying a bullet of six to the pound; but instead of its leaden bullet, I used a wooden one of the same size, made of a soft springy wood, which bent itself easily into the rifles without breaking. And firing the piece thus loaded against a wall at such a distance as the bullet might not be shivered by the blow, I always found, that the same surface which lay foremost in the piece continued foremost, without any sensible deflection during the time of its flight. And this was easily to be observed by examining the bullet, as both the marks of the rifles, and the part that impinged on the wall, were sufficiently apparent. Now, as these wooden bullets were but the sixteenth part of the weight of the leaden ones, I conclude, that if there had been any unequal resistance or deflective power, its effects must have been extremely sensible upon this light body, and consequently, in some of the trials I made, the surface which came foremost from the piece must have been turned round into another situation.

"But again, I took the same piece, and, loading it now with a leaden ball, I set it nearly upright, sloping it only three or four degrees from the perpendicular, in the direction of the wind; and firing it in this situation, the bullet generally continued about half a minute in the air, it rising by computation to near three quarters of a mile perpendicular height. In these trials I found that the bullet commonly came to the ground to the leeward of the piece, and at such a distance from it as nearly corresponded to the angle of its inclination, and to the effort of the wind; it usually falling not nearer to the piece than 100, nor farther from it than 150 yards. And this is a strong confirmation of the almost steady flight of this bullet for about a mile and a half: for were the same trial made with a common piece, I doubt not but the deviation would often amount to half a mile, or perhaps considerably more; though this experiment would be a very difficult one to examine, on account of the little chance there would be of discovering where the ball fell.

"It must be observed, however, that though the bullet impelled from a rifle-barrelled piece keeps for a time to its regular track with sufficient nicety, yet if its flight be so far extended that the track becomes considerably incurvated, it will then undergo considerable deflections. This, according to my experiments, arises from the angle at last made by the axis on which the bullet turns, and the direction in which it flies; for that axis continuing nearly parallel to itself, it must necessarily diverge from the line of the flight of the bullet, when that line is bent from its original direction: and when it once happens that the bullet whirls on an axis which no longer coincides with the line of its flight, then the unequal resistance formerly described will take place, and the deflecting power hence arising will perpetually increase, as the track of the bullet, by having its range extended, becomes more and more incurvated. This matter I have experienced in a small rifle-barrelled piece, carrying a leaden ball of near half an ounce weight; for this piece, charged with one dram of powder, ranged about 550 yards at an angle of twelve degrees with sufficient regularity; but being afterwards elevated to an angle of twenty-four degrees, it then ranged very irregularly, generally deviating from the line of its direction to the left, and in one case not less than 100 yards. This apparently arose from the cause above mentioned, as was confirmed from the constant deviation of the bullet to the left; for, by considering how the revolving motion was continued with the progressive one, it appeared that a deviation that way was to be expected.

"The best remedy I can think of for this defect is the making use of bullets of an egg-like form instead of spherical ones. For if such a bullet hath its shorter axis made to fit the piece, and it be placed in the barrel with its smaller end downwards, then it will acquire by the rifles a rotation round its larger axis; and its centre of gravity lying nearer to its fore than its hinder part, its longer axis will be constantly forced by the resistance of the air into the line of its flight; as we see that by the same means arrows constantly lie in the line of their direction, however that line be incurvated.

"But besides this, there is another circumstance in the use of these pieces, which renders the flight of their bullets uncertain when fired at a considerable elevation. For I find by my experiments, that the velocity of a bullet fired with the same quantity of powder from a rifle barrel, varies much more from itself in different trials than when fired from a common piece. This, as I conceive, is owing to the great quantity of friction, and the impossibility of rendering it equal in each experiment. Indeed, if the rifles are not deeply cut, and if the bullet is nicely fitted to the piece, so as not to require a great force to drive it down, and if leather or fustian well greased is made use of between the bullet and barrel, perhaps, by a careful attention to all these particulars, great part of the inequality in the velocity of the bullet may be prevented, and the difficulty in question be in some measure obviated; but till this be done, it cannot be doubted that the range of the same piece, at an elevation, will vary considerably in every trial, although the charge be each time the same. And this I have myself experienced, in a number of diversified trials, with a rifle-barrelled piece loaded at the breech in the English manner. For here the rifles being indented very deep, and the bullet so large as to fill them up completely, I found, that though it flew with sufficient exactness to the distance of 400 or 500 yards; yet when it was raised to an angle of about twelve degrees (at which angle, being fired with one fifth of its weight in powder, its medium range is nearly 1000 yards); in this case, I say, I found that its range was variable, although the greatest care was taken to prevent any inequalities in the quantity of powder, or in the manner of charging. And as, in this case, the angle was too small for the first-mentioned irregularity to produce the observed effects, they can only be imputed to the different velocities which the bullet each time received by the unequal action of the friction."

Thus we see that it is in a manner impossible entirely to correct the aberrations arising from the resistance of the atmosphere; as even the rifle-barrelled pieces cannot be depended upon for more than one half of their actual range at any considerable elevation. It becomes therefore a problem very difficult of solution to know, even within a very considerable distance, how far a piece will carry its ball with any probability of hitting its mark, or doing any execution. The best rules hitherto laid down on this subject are those of Mr Robins. The foundation of all his calculations is the velocity with which the bullet flies off from the mouth of the piece. Mr Robins himself had not opportunities of making many experiments on the velocities of cannon balls, and the calculations from smaller ones cannot always be depended upon. In the sixty-eighth volume of the *Philosophical Transactions*, Dr Hutton has recited a number of experiments made on cannon carrying balls from one to three pounds weight. His machine for discovering the velocities of these balls was the same with that of Mr Robins, only of a larger size. His charges of powder were two, four, and eight ounces; and the results of fifteen experiments, which seem to have been the most accurate, are as follow:

	Velocity with two ounces.	Velocity with four ounces.	Velocity with eight ounces.
	702 feet in 1″	1068 feet in 1″	1419 feet in 1″
	682	1020	1352
	695	948	1443
	703	973	1360
	725	957	1412
	3507	4966	6986
Mean	701	993	1397

In another course, the mean velocities, with the same charges of powder, were 613, 873, 1162. " The mean velocities of the balls in the first course of experiments (says Dr Hutton) with two, four, and eight ounces of powder, are as the numbers 1, 1·414, and 1·993; but the subduplicate ratio of the weights (two, four, and eight) give the numbers 1, 1·414, and 2, to which the others are sufficiently near. It is obvious, however, that the greatest difference lies in the last number, which answers to the greatest velocity. It will still be a little more in defect if we make the allowance for the weights of the balls; for the mean weights of the balls with the two and four ounces is $18\frac{3}{4}$ ounces, but of the eight ounces it is $18\frac{3}{5}$; diminishing therefore the number 1·993 in the reciprocal subduplicate ratio of $18\frac{3}{5}$ to $18\frac{3}{4}$, it becomes 1·985, which falls short of the number 2 by ·015, or the 133d part of itself. A similar defect was observed in the other course of experiments; and both are owing to three evident causes, viz. 1. The less length of cylinder through which the ball was impelled; for with the eight-ounce charge it lay three or four inches nearer to the muzzle of the piece than with the others. 2. The greater quantity of elastic fluid which escaped in this case than in the others by the windage. This happens from its moving with a greater velocity; in consequence of which, a greater quantity escapes by the vent and windage than in smaller velocities. 3. The greater quantity of powder blown out unfired in this case than in that of the lesser velocities; for the ball which was impelled with the greater velocity would be sooner out of the piece than the others, and the more so as it had a less length of the bore to move through; and if powder fire in time, which cannot be denied, though indeed that time is manifestly very short, a greater quantity of it must remain unfired when the ball with the greater velocity issues from the piece, than when that which has the less velocity goes out, and still the more so as the bulk of powder which was at first to be inflamed in the one case so much exceeded that in the others.

" Let us now compare the corresponding velocities in both cases. In the one they are 701, 993, 1397; in the other, 613, 873, 1162. Now the ratio of the first two numbers, or the velocities with two ounces of powder, is that of 1 to 1·1436, the ratio of the next two is that of 1 to 1·1375, and the ratio of the last is that of 1 to 1·2022. But the mean weight of the shot for two and four ounces of powder was $28\frac{1}{3}$ ounces in the first course, and $18\frac{3}{4}$ in this; and for eight ounces of powder it was $28\frac{2}{3}$ in the first, and $18\frac{3}{4}$ in this. Taking therefore the reciprocal subduplicate ratios of these weights of shot, we obtain the ratio of 1 to 1·224 for that of the balls which were fired with 2 ounces and four ounces of powder, and the ratio of 1 to 1·241 for the balls which were fired with eight ounces. But the real ratios above found are not greatly different from these; and the variation of the actual velocities from this law of the weights of shot inclines the same way in both courses of experiments.

" We may now collect into one view the principal inferences that have resulted from these experiments. 1. It is evident from them that powder fires almost instantaneously. 2. The velocities communicated to balls or shot of the same weight with different quantities of powder, are nearly in the subduplicate ratio of these quantities; a very small variation in defect taking place when the quantities of powder become great. 3. When shot of different weights are fired with the same quantity of powder, the velocities communicated to them are nearly in the reciprocal subduplicate ratio of their weights. 4. Shot which are of different weights, and impelled by different quantities of powder, acquire velocities which are directly as the square roots of the quantities of powder, and inversely as the square roots of the weights of the shot nearly."

The velocities of the bullets being thus found as nearly as possible, the ranges may be found by the following rules laid down by Mr Robins.

1. " Till the velocity of the projectile surpasses that of 1100 in a second, the resistance may be reckoned to be in the duplicate proportion of the velocity, and its mean quantity may be reckoned about half an ounce avoirdupois on a 12-pound shot, moving with a velocity of about twenty-five or twenty-six feet in a second.

2. " If the velocity be greater than that of 1100 or 1200 feet in a second, then the absolute quantity of the resistance in these greater velocities will be near three times as great as it should be by a comparison with the smaller velocities. Hence then it appears, that if a projectile begins to move with a velocity less than that of 1100 feet in 1″, its whole motion may be supposed to be considered on the hypothesis of a resistance in the duplicate ratio of the velocity. And if it begins to move with a velocity greater than this last mentioned, yet if the first part of its motion, till its velocity be reduced to near 1100 feet in 1″, be considered separately from the remaining part in which the velocity is less than 1100 feet in 1″, it is evident that both parts may be truly assigned on the same hypothesis; only the absolute quantity of the resistance is three times greater in the first part than in the last. Wherefore, if the motion of a projectile on the hypothesis of a resistance in the duplicate ratio of the velocity be truly and generally assigned, the actual motions of resisted bodies may be thereby determined, notwithstanding the increased resistances in the great velocities. And, to avoid the division of the motion into two, I shall show how to compute the whole at one operation, with little more trouble than if no such increased resistance took place.

" To avoid frequent circumlocutions, the distance to which any projectile would range in a vacuum on the horizontal plane at 45° of elevation, I shall call the potential random of that projectile; the distance to which the projectile would range *in vacuo* on the horizontal plane at any angle different from 45°, I shall call the potential range of the projectile at that angle; and the distance to which a projectile really ranges, I shall call its actual range.

P ctice.

“ If the velocity with which a projectile begins to move is known, its potential random and its potential range at any given angle are easily determined from the common theory of projectiles; or more generally, if either its original velocity, its potential random, or its potential range, at a given angle, are known, the other two are easily found out.

“ To facilitate the computation of resisted bodies, it is necessary, in the consideration of each resisted body, to assign a certain quantity, which I shall denominate F, adapted to the resistance of that particular projectile. To find this quantity F to any projectile given, we may proceed thus: First find, from the principles already delivered, with what velocity the projectile must move, so that its resistance may be equal to its gravity. Then the height from whence a body must descend in a vacuum to acquire this velocity is the magnitude of F sought. But the most concise way of finding this quantity F to any shell or bullet is this. If it be of solid iron, multiply its diameter measured in inches by 300, the product will be the magnitude of F expressed in yards. If, instead of a solid iron bullet, it is a shell or a bullet of some other substance; then, as the specific gravity of iron is to the specific gravity of the shell or bullet given, so is the F corresponding to an iron bullet of the same diameter to the proper F for the shell or bullet given. The quantity F being thus assigned, the necessary computation of these resisted motions may be dispatched by the three following propositions, always remembering that these propositions proceed on the hypothesis of the resistance being in the duplicate proportion of the velocity of the resisted body. How to apply this principle, when the velocity is so great as to have its resistance augmented beyond this rate, shall be shown in a corollary to be annexed to the first proposition.

Practice.

Actual ranges expressed in F.	Corresponding potential ranges expressed in F.	Actual ranges expressed in F.	Corresponding potential ranges expressed in F.	Actual ranges expressed in F.	Corresponding potential ranges expressed in F.	Actual ranges expressed in F.	Corresponding potential ranges expressed in F.	Actual ranges expressed in F.	Corresponding potential ranges expressed in F.	Actual ranges expressed in F.	Corresponding potential ranges expressed in F.
0·01	0·0100	0·65	0·8170	1·55	2·7890	2·45	6·6435	3·35	14·4195	4·2	29·2792
0·02	0·0201	0·7	0·8964	1·6	2·9413	2·5	6·9460	3·4	15·0377	4·25	30·5202
0·04	0·0405	0·75	0·9787	1·65	3·0994	2·55	7·2605	3·45	15·6814	4·3	31·8138
0·06	0·0612	0·8	1·0638	1·7	3·2635	2·6	7·5875	3·5	16·3517	4·35	33·1625
0·08	0·0822	0·85	1·1521	1·75	3·4338	2·65	7·9276	3·55	17·0497	4·4	34·5686
0·1	0·1034	0·9	1·2436	1·8	3.6107	2·7	8·2813	3·6	17·7768	4·45	36·0346
0·12	0·1249	0·95	1·3383	1·85	3·7944	2·75	8·6492	3·65	18·5341	4·5	37·5632
0·14	0·1468	1·0	1·4366	1·9	3·9851	2·8	9·0319	3·7	19·3229	4·55	39·1571
0·15	0·1578	1·05	1·5384	1·95	4·1833	2·85	9·4000	3·75	20·1446	4·6	40·8193
0·2	0·2140	1·1	1·6439	2·	4·3890	2·9	9·8442	3·8	21·0006	4·65	42·4527
0·25	0·2722	1·15	1·7534	2·05	4·6028	2·95	10·2752	3·85	21·8925	4·7	44·3605
0·3	0·3324	1·2	1·8669	2·1	4·8249	3·0	10·7237	3·9	22·8218	4·75	46·2460
0·35	0·3947	1·25	1·5845	2·15	5·0557	3·05	11·1904	3·95	23·7901	4·8	48·2127
0·4	0·4591	1·3	2·1066	2·2	5·2955	3·1	11·6761	4·0	24·7991	4·85	50·2641
0·45	0·5258	1·35	2·2332	2·25	5·5446	3·15	12·1816	4·05	25·8506	4·9	52·4040
0·5	0·5949	1·4	2·3646	2·3	5·8036	3·2	12·7078	4·1	26·9465	4·95	54·6363
0·55	0·6664	1·45	2·5008	2·35	6·0728	3·25	13·2556	4·15	28·0887	5·0	56·9653
0·6	0·7404	1·5	2·6422	2·4	6·3526	3·3	13·8258				

“ Prop. I. Given the actual range of a given shell or bullet at any small angle not exceeding 8° or 10°; to determine its potential range, and consequently its potential random and original velocity.

“ *Solution.* Let the actual range given be divided by the F corresponding to the given projectile, and find the quote in the first column of the preceding table: then the corresponding number in the second column multiplied into F will be the potential range sought: and thence, by the methods already explained, the potential random and the original velocity of the projectile is given.

“ *Exam.* An 18-pounder, the diameter of whose shot is about five inches, when loaded with two pounds of powder, ranged at an elevation of 3° 30′ to the distance of 975 yards.

“ The F corresponding to this bullet is 1500 yards, and the quote of the actual range by this number is 65; corresponding to which, in the second column, is ·817; whence, 817 F, or 1225 yards, is the potential range sought; and this, augmented in the ratio of the sine of twice the angle of elevation to the radius, gives 10,050 yards for the potential random: whence it will be found that the velocity of this projectile was that of 984 feet in a second.

“ *Cor.* 1. If the converse of this proposition be desired; that is, if the potential range in a small angle be given, and thence the actual range be sought; this may be solved with the same facility by the same table: for if the given potential range be divided by its correspondent F, then opposite to the quote sought in the second column there will be found in the first column a number which, multiplied into F, will give the actual range required. And from hence it follows, that if the actual range be given at one angle, it may be found at every other angle not exceeding 8° or 10°.

“ *Cor.* 2. If the actual range at a given small angle be given, and another actual range be given, to which the angle is sought; this will be determined by finding the potential ranges corresponding to the two given actual ranges; then the angle corresponding to one of those potential ranges being known, the angle corresponding to the other will be found by the common theory of projectiles.

“ *Cor.* 3. If the potential random deduced from the actual range by this proposition exceeds 13,000 yards, then the original velocity of the projectile was so great as to be affected by the treble resistance described above; and consequently the real potential random will be greater than what is here determined. However, in this case, the true potential random may be thus nearly assigned. Take a fourth continued proportional to 13,000 yards, and the potential random found by this proposition, and the fourth proportional thus found may be assumed for the true potential random sought. In like manner, when the true potential random is given greater than 13,000 yards, we must take two mean proportionals between 13,000 and this random; and the first of these mean proportionals must be assumed instead of the random given, in every operation described in these propositions and their corollaries. And this method will nearly allow for the increased resistance in large velocities, the difference only amounting to a few minutes in the angle of direction of the projected body, which, provided that angle exceeds two or three degrees, is usually scarce worth attending to.

"Of this process take the following example:—A 24-pounder fired with 12 pounds of powder, when elevated at 7° 15′, ranged about 2500 yards. Here the F being near 1700 yards, the quote to be sought in the first column is 147, to which the number corresponding in the second column is 2·556; whence the potential range is near 4350 yards, and the potential random thence resulting 17,400. But this being more than 13,000, we must, to get the true potential random, take a fourth continued proportional to 13,000 and 17,400; and this fourth proportional, which is about 31,000 yards, is to be esteemed the true potential random sought; whence the velocity is nearly that of 1730 feet in a second.

"*Scholium.* This proposition is confined to small angles, not exceeding 8° or 10°. In all possible cases of practice, this approximation, thus limited, will not differ from the most rigorous solution by so much as what will often intervene from the variation of the density of the atmosphere in a few hours' time; so that the errors of the approximation are much short of other inevitable errors, which arise from the nature of this subject.

"Prop. II. Given the actual range of a given shell or bullet at any angle not exceeding 45°; to determine its potential range at the same angle, and thence its potential random and original velocity.

"*Solution.* Diminish the F corresponding to the shell or bullet given in the proportion of the radius to the cosine of $\frac{3}{4}$ths of the angle of elevation. Then, by means of the preceding table, operate with this reduced F in the same manner as is prescribed in the solution of the last proposition, and the result will be the potential range sought; whence the potential random, and the original velocity, are easily determined.

"*Exam.* A mortar for sea-service, charged with thirty pounds of powder, has sometimes thrown its shell, of $12\frac{3}{4}$th inches diameter, and of 231 lb. weight, to the distance of two miles, or 5450 yards. This at an elevation of 45°.

"The F to this shell, if it were solid, is 3825 yards; but as the shell is only $\frac{4}{5}$ths of a solid globe, the true F is no more than 3060 yards. This, diminished in the ratio of the radius to the cosine of $\frac{3}{4}$ths of the angle of elevation, becomes 2544. The quote of the potential range by this diminished F is 1·384; which, sought in the first column of the preceding table, gives 2·280 for the corresponding number in the second column; and this multiplied into the reduced F, produces 5800 yards for the potential range sought, which, as the angle of elevation was 45°, is also the potential random; and hence the original velocity of this shell appears to be that of about 748 feet in a second.

"*Cor.* The converse of this proposition, that is, the determination of the actual range from the potential range given, is easily deduced from hence by means of the quote of the potential range divided by the reduced F; for this quote, searched out in the second column, will give a corresponding number in the first column, which, multiplied into the reduced F, will be the actual range sought.

"Also, if the potential random of a projectile be given, or its actual range at a given angle of elevation; its actual range at any other angle of elevation, not greater than 45°, may hence be known. For the potential random will assign the potential range at any given angle; and thence, by the method of this corollary, the actual range may be found.

"*Exam.* A fit musket-bullet fired from a piece of the standard dimensions, with $\frac{1}{3}$th of its weight in good powder, acquires a velocity of near 900 feet in a second; that is, it has a potential random of near 8400 yards. If now the actual range of this bullet at 15° was sought, we must proceed thus:

"From the given potential random it follows, that the potential range at 15° is 4200 yards; the diameter of the bullet is $\frac{3}{4}$ths of an inch; and thence, as it is of lead, its proper F is 337·5 yards, which, reduced in the ratio of the radius to the cosine of $\frac{3}{4}$ths of 15°, becomes 331 yards. The quote of 4200 by this number is 12·7 nearly; which being sought in the second column, gives 3·2 nearly for the corresponding number in the first column; and this multiplied into 331 yards (the reduced F) makes 1059 yards for the actual range sought.

"*Exam.* 2. The same bullet, fired with its whole weight in powder, acquires a velocity of about 2100 feet in a second, to which there corresponds a potential random of about 45,700 yards. But this number greatly exceeding 13,000 yards, it must be reduced by the method described in the third corollary of the first proposition, when it becomes 19,700 yards. If now the actual range of this bullet at 15° be required, we shall from hence find, that the potential range at 15° is 9850 yards; which, divided by the reduced F of the last example, gives for a quote 2975; and thence following the steps prescribed above, the actual range of this bullet comes out 1396 yards, exceeding the former range by no more than 337 yards; whereas the difference between the two potential ranges is above ten miles. Of such prodigious efficacy is the resistance of the air, which hath been hitherto treated as too insignificant a power to be attended to in laying down the theory of projectiles.

"*Schol.* I must here observe, that as the density of the atmosphere perpetually varies, increasing and diminishing often by $\frac{1}{30}$th part, and sometimes more, in a few hours; for that reason, I have not been over rigorous in forming these rules, but have considered them as sufficiently exact when the errors of the approximation do not exceed the inequalities which would take place by a change of $\frac{1}{30}$th part in the density of the atmosphere. With this restriction, the rules of this proposition may be safely applied in all possible cases of practice. That is to say, they will exhibit the true motions of all kinds of shells and cannon-shot, as far as 45° of elevation, and of all musket bullets fired with their largest customary charges, if not elevated more than 30°. Indeed, if experiments are made with extraordinary quantities of powder, producing potential randoms greatly surpassing the usual rate, then in large angles some farther modifications may be necessary. And though, as these cases are beyond the limits of all practice, it may be thought unnecessary to consider them; yet, to enable those who are so disposed to examine these uncommon cases, I shall here insert a proposition which will determine the actual motion of a projectile at 45°, how enormous soever its original velocity may be. But as this proposition will rather relate to speculative than practical cases, instead of supposing the actual range known, thence to assign the potential random, I shall now suppose the potential random given, and the actual range to be thence investigated.

"Prop. III. Given the potential random of a given shell or bullet; to determine its actual range at 45°.

Solution. Divide the given potential random by the F corresponding to the shell or bullet given, and call the quotient q, and let l be the difference between the tabular logarithms of 25 and of q, the logarithm of 10 being supposed unity; then the actual range sought is $3{\cdot}4\,F \mp 2lF$ —

$\frac{ll}{10}$ F, where the double sine of $2lF$ is to be thus understood; that if q be less than 25, it must be $-2lF$; if it be greater, then it must be $+2lF$. In this solution q may be any number not less than 3, nor more than 2500.

"*Cor.* Computing in the manner here laid down, we shall find the relation between the potential randoms, and the actual range at 45°, within the limits of this proposition, to be as expressed in the following table.

Potential Randoms.	Actual Range at 45°.
3 F	1·5 F
6 F	2·1 F
10 F	2·6 F
20 F	3·2 F
30 F	3·6 F
40 F	3·8 F
50 F	4·0 F
100 F	4·6 F
200 F	5·1 F
500 F	5·8 F
1000 F	6·4 F
2500 F	7·0 F.

Whence it appears, that, when the potential random is increased from 3 F to 2500 F, the actual range is only increased from 1½ F to 7 F; so that an increase of 2497 F in the potential random produces no greater an increase in the actual range than 5½ F, which is not its $\frac{1}{400}$th part; and this will again be greatly diminished on account of the increased resistance which takes place in great velocities. So extraordinary are the effects of this resistance, which we have been hitherto taught to regard as inconsiderable.

"That the justness of the approximation laid down in the second and third propositions may be easier examined, I shall conclude these computations by inserting a table of the actual ranges, at 45°, of a projectile which is resisted in the duplicate proportion of its velocity. This table is computed by methods different from those hitherto described, and is sufficiently exact to serve as a standard with which the result of our other rules may be compared. And since whatever errors occur in the application of the preceding propositions, they will be most sensible at 45° of elevation, it follows, that hereby the utmost limits of those errors may be assigned.

Potential Randoms.	Actual Range at 45°.
·1 F	·0963 F
·25 F	·2282 F
·5 F	·4203 F
·75 F	·5868 F
1·0 F	·7323 F
1·25 F	·860 F
1·5 F	·978 F
1·75 F	1·083 F
2·0 F	1·179 F
2·5 F	1·349 F
3·0 F	1·495 F
3·5 F	1·624 F
4·0 F	1·738 F
4·5 F	1·840 F
5·0 F	1·930 F
5·5 F	2·015 F
6·0 F	2·097 F
6·5 F	2·169 F
7·0 F	2·237 F
7·5 F	2·300 F
8·0 F	2·359 F
8·5 F	2·414 F
9·0 F	2·467 F
9·5 F	2·511 F
10·0 F	2·564 F
11·0 F	2·651 F
13·0 F	2·804 F
15·0 F	2·937 F
20·0 F	3·196 F
25·0 F	3·396 F
30·0 F	3·557 F
40·0 F	3·809 F
50·0 F	3·998 F.

It now only remains to consider very shortly that part of practical gunnery which relates to the construction of guns, the proportional length, weight, calibre, and charge of the different kinds of ordnance, the methods of pointing and elevating them, and the purposes to which they are applied.

Formerly guns were made of great length, and upon that account were found extremely troublesome and unmanageable. The error in this respect was first discovered by accident; for some cannon which had been cast by mistake two feet and a half shorter than the common standard, were found to be equally efficacious in service with the common ones, and much more manageable. This soon produced very considerable alterations in the form of artillery throughout Europe; but in no country have greater improvements in this respect been made than in our own[1]

Guns are made either of iron or of brass. Those formed of iron are better adapted for continued and heavy firing than those made of brass; they also last longer, but this depends chiefly upon the purity of the metal. Brass guns, when frequently fired, droop at the muzzle, and become quite useless; but being lighter than iron guns, they are better adapted for service.

The guns mounted on the works of San Sebastian were of brass, and towards the end of the siege they became quite useless; whilst the iron guns of the besiegers, though much oftener fired, and considerably enlarged at the vents or touch-holes, still continued serviceable. An iron gun, if overcharged or overheated, bursts and flies in pieces, which a brass one does not.

The best length for field-guns has been found to be about seventeen calibres, that is, seventeen times the diameter of the bore. Long guns are more easily pointed than short ones, and will to a certain extent throw shot farther with equal charges.[2] There are also a great many guns of the same weight, but of different lengths. This is occasioned by the several classes of vessels, &c. for which they are intended requiring an equal weight of shot, but different lengths of guns.

Very long guns are found to be disadvantageous, as it

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[1] In the article on CANNON-MAKING, we have explained the process of casting guns, whether of iron or other metal, and the composition of the metal commonly called brass. In the same article there are tables exhibiting the dimensions of, and various particulars relating to, the guns employed by Britain and by France.

[2] It is a maxim of Mr Robins, that neither the distance to which a bullet flies, nor its force at the end of its flight, are much increased by very great augmentations of the velocity with which it is impelled; and, therefore, that in distant cannonade, the advantages arising from long guns and great charges are but of little moment. Sir Howard Douglas, however, contends that this maxim relates only to random ranges, and overlooks the advantages arising from the superior accuracy of long guns at moderate distances; that comparing the powers of the long 24-pounder, length 9½ feet, with those of the short 24, length 6 feet 6 inches, though the extreme ranges be nearly the same, yet for practice at 300 yards, the long gun might be laid point-blank, whilst the shorter one would require nearly half a degree of elevation; and that, at 1000 yards the former would only require an elevation of two degrees, which, with the short gun, would only give a range of about 800 yards.

Practice.

is useless to project shot at a greater velocity than fourteen, or at the most sixteen hundred feet per second, since air cannot rush in with greater rapidity than at the rate of 1340 feet per second to fill up the vacuum caused by the ball. In the case of a higher velocity, the air in front would be considerably compressed, and the increased resistance thus occasioned would soon reduce that velocity. It is therefore useless to augment the charge beyond a certain limit.[1]

Practice.

The charge of powder commonly used in practice is, for heavy guns $\frac{1}{3}$d, for light guns $\frac{1}{4}$th, and for carronades $\frac{1}{12}$th the weight of the shot. The thickness of metal for a 42-pounder is 1 calibre at the breach, for a 32-pounder $1\frac{1}{16}$th calibre, for a 24-pounder $1\frac{2}{16}$ths calibre; at the muzzle the thickness of metal is one half that of the base ring.

The proportion of the weight of the metal in a gun is to that of the shot, in heavy guns 2 cwt. to 1 lb., in medium guns $1\frac{1}{2}$ cwt. to 1 lb., and in light guns 1 cwt. to 1 lb.

I.—*The Length, Weight, Calibre, and Charge of the various pieces of Ordnance, and the Purposes to which they are applied.*

	Weight of the Gun.	Length.		Length in Calibres.	Weight.	Proportional Weight of Shot to Gun.	Calibre.	Greatest Diameter of Shot.	Least Diameter of Shot.	Service Charge.		Proof Charge.		When first Cast.	Purposes to which applied.
		Ft.	In.		Cwt.		Inches.	Inches.	Inches.	lbs.	oz.	lbs.	oz.		
Iron guns.	12 in.	8	4	...	$90\frac{3}{4}$	11 to 112	12	11·37	11·	12	0	18	0	1829	The naval service, to carry hollow shot. Constructed by Geo. Miller.
	10 in.	8	4	10	$62\frac{1}{2}$	1 to 95	10	9·	...	8	0	14	0	1828	Do. do.
	10 in.	7	6	9	$57\frac{3}{4}$	1 to 92	10	9·	...	7	0	14	0	1828	Do. do.
	8 in.	6	8	10	50	......	8·05	7·95	7·85	7	0	14	0	1828	Do. having a solid 68 lb. shot.
	42 pr.	10	0	17	8	......	7·018	6·795	6·729	14	0	...		1826	
	...	9	6	16	65	1 to 173	...	...	...	...		...		...	Nearly obsolete; a few remain in some garrisons.
	32 pr.	9	7	...	64	......	6·41	6·207	6·147	10	10	...		1827	Lower deck of 80-gun ships.
	...	9	6	...	55	1 to 195	...	...	...	...		...		...	Lower deck of line-of-battle ships, and coast batteries.
	...	8	0	...	50	1 to 175	...	...	...	..		...		1810	Not used; only six in the arsenal.
	...	8	0	...	48	......	...	...	...	...		...		...	Main deck of 80-gun ships.
	...	5	0	10	25	......	6·3	...	...	4	0	9	0	1825	Carronade gun in place of 32-pounder gun; quarter-deck of ships.
	24 pr.	9	6	...	50	......	5·823	5·639	5·584	8	0	13	0	...	Fortresses and battering guns; also in some first and fourth rates.
	...	9	0	...	47	......	...	...	...	...		...		...	Fortresses and battering guns; also in some second and fourth rates.
	...	8	0	...	43	......	...	...	...	...		...		1812	Not used; only a hundred in the arsenal.
	...	7	6	...	42	......	...	...	...	...		...		1810	Congreve's carronade guns.
	...	7	6	...	40	......	...	...	...	...		...		1810	Bloomfield; appropriated to upper deck of the Donegal.
	...	5	10	10	$18\frac{1}{2}$	...	3·7	...	...	3	0	6	12	1825	Carronade gun; proposed instead of the 24-pounder carronades.
	18 pr.	9	0	...	42	......	5·292	5·124	5·074	6	0	15	0	...	Garrison, battering train; upper deck 74-gun ship.
	...	8	0	...	37	......	...	...	...	...		...		1790	Garrison, battering train; decks of 46 and 42 gun frigates.
	12 pr.	9	0	...	34	......	4·623	4·476	4·432	4	0	12	0	...	Chase guns of line-of-battle ships.
	...	8	6	...	33	......	...	...	...	...		...		...	Quarter-deck of line-of-battle ship; garrisons.
	...	7	6	...	29	......	...	...	...	...		...		...	Garrison, and battering trains.
	9 pr.	9	0	...	31	......	4·2	4·1	4·06	3	0	9	0	...	Garrisons, &c.
	...	8	6	...	29	......	..	...	...	...		...		...	Do.
	...	7	0	...	25	......	...	...	...	...		...		...	Chase guns of frigates.
	6 pr.	8	6	...	23	......	3·668	3·552	3·532	2	0	...		...	Garrisons; but little used.
	...	6	0	...	17	......	...	...	...	...		...		...	Chase guns, sloops.
	4 pr.	6	0	...	12	......	3·284	3·104	3·053	1	0	4	0	...	Not used.

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[1] The increased resistance of the air, occasioned by an increase of velocity in the projectile, has been fully treated of in the preceding part of this article, under the Theory of Gunnery

I.—*The Length, Weight, Calibre, and Charge of the various pieces of Ordnance, &c.—continued.*

	Weight of the Gun.	Length.		Length in Calibres.	Weight.	Proportional Weight of Shot to Gun.	Calibre.	Greatest Diameter of Shot.	Least Diameter of Shot.	Service Charge.		Proof Charge.		When first Cast.	Purposes to which applied.
		Ft.	In.		Cwt.		Inches.	Inches.	Inches.	lbs.	oz.	lbs.	oz.		
Carronades.	68 pr.	3	2	7¾	30	……	8·05	7·95	7·85	3	10	13	0	1778	Two on the lower deck of line-of-battle ships.
	42 pr.	4	4	7	22½	……	6·84	6·795	6·729	3	8	9	0	…	Upper decks of fourth rates.
	32 pr.	4	0	7½	17	……	6·25	6·207	6·147	2	10	8	0	…	Quarter-decks and forecastles generally.
	…	3	0	10	25	……	…	…	…	4	0	9	0	1825	Carronade guns, in place of the old 32-pounder carronade.
	24 pr.	3	8	7½	13	……	5·68	5·639	5·584	2	0	6	0	1773	Mostly used in arming boats; in fortresses for flanks.
	…	5	10	10	18½	……	5·7	…	…	4	0	9	0	1825	Carronade gun, with trunnions; in place of old 24-pounder carronade.
	18 pr.	3	3	…	10	……	5·16	5·124	5·074	1	8	4	0	…	Main-deck of small sloops, and in boats.
	10 pr.	2	8	…	6	……	4·52	4·476	4·432	1	0	3	0	…	For small cutters, and boats; also in fortresses, for flanking.
	6 pr.	2	8	…	4¾	……	3·6	3·568	3·532	0	12	1	8	…	For king's and revenue cutters.
Brass guns.	12 pr.	6	6	…	18	……	4·623	4·476	4·432	4	0	5	0	1788	Medium 12-pounder; an excellent gun.
	…	5	0	…	12	……	…	…	…	…		…		1799	Light 12-pounder.
	9 pr.	6	0	…	13½	……	4·2	4·1	4·06	3	0	3	8	1806	Much used for field service; an excellent gun.
	6 pr.	7	0	…	13	……	3·663	3·568	3·532	2	0	3	0	1773	Long and heavy 6-pounder; throws a shot with great accuracy, but inconvenient in the field.
	…	5	0	…	12	……	…	…	…	1	8	2	0	1782	Good for horse artillery; cutters have two for chase guns.
	3 pr.	6	0	…	6	……	2·913	2·833	2·803	1	0	1	8	1788	Heavy or long 3-pounder.
	…	4	0	…	3	……	…	…	…	…		1	0	1810	Colonial service.
	…	3	0	…	2½	……	…	…	…	…		..		1812	For mountain service.
	1 pr.	5	0	…	2½	……	2·019	1·995	1·923	3	6	…		…	For colonial service.
Brass howitzers.	24 pr.	4	9	10	12½	……	5·72	5·62	5·57	2	8	3	0	1820	For field service; usually attached to 12 or 9 pounder batteries.
	12 in.	3	3	10	6½	……	4·58	4·47	4·43	1	8	1	8	1820	Do. to 6-pounder batteries.
	5½ in.	2	8	…	10	……	5·62	5·62	5·57	2	0	3	0	…	Formerly used for field service, now only for garrison; about to be discontinued.
	4⅖ in.	1	10	…	2½	……	4·52	4·57	4·43	0	8	0	8	…	For colonial or mountain service.
Iron howitzers.	10 in.	5	0	…	39½	……	10·	9·88	9·8	7	0	14	0	1825	For battering trains and garrisons.
	8 in.	4	0	…	30½	……	8·	7·95	7·85	4	0	3	0	…	Do. do. do.
	5½ in.	3	6	…	15	……	5·62	5·62	5·57	…		…		1800	For garrisons and flanking fire.
	5½ in.	3	10	…	12	……	…	…	…	…		…		…	Do. do. do.
Iron mortars.	13 in.	4	15	…	1	200	13·	12·88	12·8	…		20	12	1810	For bomb ships.
	13 in.	4	5	…	82	……	…	…	…	…		…		1786	Do. do.
	10 in.	3	9	…	36	……	…	…	…	…		9	0	1790	For land service.
	10 in.	2	4	…	41	……	10·	9·80	9·8	…		4	0	1780	Do. do.
	8 in.	1	10	…	8	……	8·	7·95	7·85	…		2	0	1780	8 inch, or royal mortar, and in the attack of places.
	5½ in.	…		…	8	……	5·62	6·62	5·57	…		…		1810	
Brass mortars.	5½ in.	1	3	…	1¼	……	…	…	…	…		0	7	…	
	4⅖ in.	1	0	…	¾	……	4·52	4·476	4·432	…		0	5	…	

General Construction of Iron Guns.[1]

FIG. 1.

AB, length of the gun, 24-pounder.
AC, first reinforce, $\frac{2}{7}$ths of AB; 9 feet; weight 47 cwt.
AD, distance from hinder part of the base ring to centre of trunnions D $\frac{3}{7}$ths of AB, AL $\frac{1}{3}$d of AC, rings and astragal included.
CE, second reinforce, $\frac{1}{7}$th of AB + 1 calibre, fillets $\frac{1}{5}$th AC.
EF, chace, $\frac{4}{5}$ths EB; fillets $\frac{1}{4}$th of their rings, ogee at B $\frac{1}{4}$th of its ring.
FB, muzzle, $\frac{1}{5}$th EB; NB = $\frac{1}{5}$th of FB; muzzle mouldings = $\frac{1}{3}$d NB. Trunnions $\begin{cases} lv = 1 \text{ calibre,} \\ \text{diameter} = tv. \end{cases}$

Cascabel,
Fillet a $1\frac{3}{8}$ calibre, $\left\{\begin{matrix} d = 6 \\ e = 3 \\ f = 12 \end{matrix}\right\}$ sixteenths.
Neck b 1 calibre,
Diameter c, fillet a,
GH = $\frac{1}{2}$ calibre.
IK = $\frac{1}{3}$ GH.
lm = GH.
GH the thickness of metal.

Pounders.	
42	1 calibre.
32	$1\frac{1}{16}$
24	$1\frac{2}{16}$
18	$1\frac{3}{16}$
12	$1\frac{4}{16}$
9	$1\frac{5}{16}$
6	$1\frac{6}{16}$

IK = $\frac{1}{2}$ GH.

General Construction of Brass Guns.

FIG. 2.

Guns.	*mn.*	*op.*	Radius.	
17 calibres.	1 cal.	$\frac{9}{16}$	$\frac{4\frac{1}{2}}{16}$	$\frac{6}{16}$
18 do.	do.	do.	do.	do.
6 pr. 5 feet.	...	$\frac{5}{8}$	$\frac{5}{16}$	$\frac{6\frac{1}{2}}{16}$
3 pr. 6 feet.	1 cal.	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$
1 pr. 5 feet.	do.	do.	do.	do.

	Pounder.	Feet.	Inches.	Cwt.
17 cal.	12	6	6	18
	9	5	11	$13\frac{1}{2}$
	6	5	2	9
	3	4	1	$4\frac{1}{2}$
13 cal.	24	6	3	24
	18	5	8	18
	12	5	0	12
	6	5	0	5
	3	6	0	10
	1	5	0	$2\frac{1}{2}$

	Breech.	Muzzle.
18, 12, 9, 6, 3 pounders, of 17 calibres	$\frac{7}{8}$	$\frac{3}{8}$
24, 18, 12 do. of 13 do.	$\frac{3}{4}$	$\frac{3}{8}$
6 do. light, 5 feet, 6 cwt.	$\frac{11}{16}$	$\frac{2}{8}$
1 do. of 9 feet	$\frac{7}{8}$	$\frac{5}{8}$
3 do. of 6 feet	$\frac{7}{8}$	$\frac{3}{8}$

Distance CD in these guns, half a calibre.

Pointing and Elevating a Gun.

By pointing a gun is understood the placing it in such a position that the axis of the piece shall be exactly in a line with the object aimed at; and by elevating a gun is understood the placing it at such an angle above the horizontal line as will counteract the force of gravity, and may strike the object aimed at. When a gun is both pointed and elevated, it is said to be laid. The line-of-metal is a visual line extending from the base-ring to the swell of the muzzle: its position is ascertained by placing the trunnions perfectly horizontal, and then finding the highest point both on the base-ring and the swell of the muzzle, when the line joining those two points will be the line-of-metal. But in consequence of the conical shape of guns, this line has an inclination to the axis of about one degree, which is called the dispart. In pointing a gun, the line-of-metal is first laid in a line with the object; then, if the trunnions are horizontal, the axis of the piece and object will be in the same vertical plane; but if the trunnions are not perfectly so, on account of the dispart, the continuation of the line-of-metal will cross that of the axis of the piece, and the shot will be thrown considerably to that side of the object on which the lowest trunnion is.

In order to counteract this, a dispart sight is placed on the muzzle, which makes it of the same diameter as the breech; and then, however much one trunnion may be lower than the other, the shot cannot be thrown more than the thickness of metal to the right or left. A gun is said to be point blank when the axis of the piece is in a line with the object fired at, without having any elevation, or when the axis is parallel to the horizon. The elevation required to strike any object is found by ascertaining its distance. Sets of tables have been constructed from actual practice (see Tables II. III. IV. and V.), by which the different sorts of shot and shells may be projected with the greatest accuracy.

A scale made of brass, and called a tangent scale, being marked with the different lengths of the tangents for the several degrees, slides up and down in the breech. By means of this the elevation may be given without any reference to the difference between the level of the gun and the object fired at, and it may be elevated and pointed at the same time. In guns which have disparts, the tangent scale only comes into use at a greater angle than that of the dispart of the gun. Degrees are therefore marked upon the base-ring, beginning at the quarter sight, by means of which the gun may be elevated at any less angle than that of the dispart.

The ·21 of an inch is the tangent of one degree to every foot of the gun's length, from the base-ring to the swell of the muzzle; and therefore, if the distance in feet between those two points be multiplied by ·21, the product will be the tangent of 1°, which, when the dispart is subtracted from it, will give the length of the tangent scale above the base-ring at one degree of elevation for that particular gun. If the scale be applied to the quarter sight of the gun, of course the dispart need not be subtracted.

Elevating guns at sea has always been attended with difficulty and uncertainty. To effect this, the following method has been proposed: Let the trunnion of a gun be divided by lines passing through its centre, parallel and perpendicular to the axis of the piece, and the lower limb be divided into degrees, &c.; a plumb suspended from the centre of the trunnion will cut the degree of elevation or depression the gun is pointed at, which of course is always varying, from the motion of the ship. If the axis of the piece therefore be parallel with the deck, the degree of the inclination of the deck and gun will at the same time be ascertained, and the gun will be fired at the moment when the plumb-line cuts the proper degree marked upon the lower ring of the trunnion. Great accuracy may thus be attained at sea.[2]

A scale has of late years been used for iron guns, marked with the number of yards instead of degrees; and this has been found very useful to men who might not perhaps understand the tangent scale.

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[1] This is descriptive of the 24 and 9-pounders, Plate CCLXXIV. figs. 1, 2.

[2] "It is not usual (at sea) to discharge cannon-shot at great elevations, on account of the uncertainty of such practice; nor indeed is it practicable to do so. This is only practised with mortars." (See Major-General Sir Howard Douglas's *Treatise on Naval Gunnery*, art. 115.)

When it is required to fire continually at the same object, for instance a breach, the best way is, after discharging a few rounds, to observe some object which the gun points to when at the proper elevation, and always point at that object. This is called pointing at a false object.

The fire of artillery may be divided into three classes; the *direct*, the *ricochet*, and the *vertical*. The *direct fire* is that used in the field or at sieges, where the gun is discharged directly at the object with a full charge. The *ricochet fire* is not confined to any particular charge or elevation; each must vary according to the distance and level of the object to be fired at, and particularly the spot on which it is intended it shall make the first bound. Firing *en ricochet* was first invented by Marshal Vauban, at the siege of Ath; and it is principally used in sieges for enfilading the face of a work, by sweeping or bounding along it. A work is said to be enfiladed when the enemy place a gun on the prolongation of a line of works, so as to fire along it. *Vertical fire* is that which is thrown from mortars, howitzers, or guns, at elevated angles. This was much used at the siege of the Citadel of Antwerp in 1832.

By the assistance of good tables of practice, and of amplitudes, sines, tangents, and secants, all cases in gunnery in a non-resisting medium are easily solved; and perhaps the solution may be sufficiently correct for practice, if the initial velocity of the projectile be not so great as to make the resistance of the air considerable. (*Vide* Tables II. III. IV. and V.)

The following rules may be observed: 1. The greatest range is at 45 degrees nearly; 2. The ranges with different elevations at the same charge, are as the double sines of elevation; 3. Any angle and its complement give the same range nearly; 4. The times of flight are as the sines of the angles of elevation; 5. The altitude of the curve, at any elevation, is found by this proportion:—as radius : tangent of angle of elevation : : altitude : range. 6. The time of flight at 45° is equal to the square root of the range in feet, divided by 4; or, more nearly, $= \sqrt{\text{quotient}}$ of the range in feet, divided by 1·61, or the space that would be passed through in the first second by the force of gravity alone.

Having the first graze of shot, with a given charge and elevation, to determine the charge for any other first graze and elevation. Multiply the known charge and elevation into the proposed first graze; also the proposed elevation into the known first graze; and divide the first product by the last, for the charge required.

Mortars are generally placed in fortified places, at some distance from the parapet; and in the attack in batteries with high parapets, so that from the mortar itself, the object or place to be fired at can seldom be seen, two ramrods are stuck in the superior slope of the battery, in line with the object; the centre of metal is then taken on the mortar, and chalked; the officer next lays the mortar by placing the centre of metal thus found, in the direction of the ramrods, by means of a plumb-line, and he ascertains that the elevation is correct by the gunner's quadrant. The distance being ascertained, the following rules are to be observed.

General Rules for Mortar Practice.

In a 13-inch mortar, 3 lbs. of powder give a range of 1100 yards; whilst every $\frac{1}{2}$ lb. of increase adds 100 yards; every $\frac{1}{2}$ lb. of decrease diminishes 150 yards. In a 10-inch, half the quantity calculated for a 13-inch is used; in an 8-inch, one-third the quantity for the 10-inch; and in a $5\frac{1}{2}$-inch, a charge of 1 oz. 8 dr. gives 150 yards. The following table shows the weights of the different kinds of mortars, empty and filled:—

	Empty.	Filled.
13-inch	189 lbs. 0 oz.	200 lbs.
10 —	85 — 6 —	92 —
8 —	42 — 8 —	45 —
$5\frac{1}{2}$ —	14 — 12 —	16 —
$4\frac{2}{5}$ —	— — — —	8 —

A shell is a hollow globe of iron filled with powder, which will burst at any intended distance by means of a fuze which has been cut to a certain length, and communicates to the powder within the shell. The fuze is a wooden tube made to fit the hole in the shell, and filled with a composition of sulphur, saltpetre, and mealed powder; it burns about ·2 of an inch in a second. The time of flight of a shell being known, the length of fuze, and consequently the bursting of the shell, are easily ascertained. Shells are generally made to burst just as they would strike the ground; sometimes the fuzes are cut rather long, so that a shell may fall into a house, or a breach, and, by its exploding under ground, act as a small mine.

Shrapnell shells, or, as they were called by the inventor, spherical case shot (a name which they still retain), are filled with a quantity of musket-balls, which, when the shell explodes, are projected about 150 yards further. These shells are fired from guns, mortars, and howitzers, and have been found most efficient, especially against skirmishers or working parties. A six-pounder spherical case contains twenty-seven musket-balls, which, when the shell explodes, do as much injury as the same number of muskets (besides the splinters of the exploded shell), at a distance far beyond the range of musketry.[1]

Case and grape-shot are also fired from guns. They take their names, the one from having a number of small balls confined in a tin case, and the other from having the balls tied or quilted together in a manner resembling a bunch of grapes. They are not calculated for long ranges, but are very efficacious, at three or four hundred yards, against advancing troops, or in the flanks of a fortification for firing along the ditch.

The common shot is a solid sphere of iron, designated according to its weight, and is something less than the diameter of the bore, to allow for windage, which in English guns is $\frac{1}{20}$th of the calibre; so that, in this way, between $\frac{1}{3}$d and $\frac{1}{4}$th of the force is lost.

Great changes have recently been made in howitzers by General Miller of the royal artillery. He has superseded the useless light $5\frac{1}{2}$-inch howitzer by a piece of ordnance which, from its weight of metal and length of bore, authorizes such charges as, with the diminished windage, will produce due velocity and effect. In Plate CCLXXIV. figs. 3 and 4 represent a 12-pounder brass howitzer, and a 10-inch iron howitzer.

During the siege of Cadiz the French fired shells into the town from two large mortars at a distance of 4000 yards. Their calibre was much the same as that of our 13-inch mortars, but in their internal construction they differed materially; the largest took forty pounds of powder for its charge, and was nearly eight feet in length. A great deal of lead was run into the shells; they seldom burst, and when they did so their explosion was inconsiderable. One of these mortars is to be seen on the parade of the Horse Guards, St James's Park.

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[1] This invention, which has hitherto been imperfectly comprehended by some, even in our own service, had absolutely baffled the inquiries of the French; but it is understood that Captain Glünder, of the Hanoverian service, has recently published a minute account of it in a Continental military journal. In future wars, therefore, it is probable that Shrapnell shells will be more prized by us than they have hitherto been, because they will be adopted by our enemies, and we shall then practically feel their effect. (See *United Service Journal* for 1834, part ii. p. 398.)

The *carronade*, invented, or rather improved, by Mr Gascoigne, was in June 1779 instituted as a standard navy-gun, and ten of them were appointed to be added to every ship of war. The carronade is made so short that it is worked with its carriage in the ship's port. It is correctly bored; and the shot being perfectly round, fills the calibre with such exactness, that the least possible impulse of the powder escapes upon explosion, between the cylinder and the shot, which last is also thereby more truly directed in its flight. The bottom of the cylinder is a hemisphere, to which the end of the cartridge is not liable to stick, and in which the smallest charge of powder envelopes the shot, exhausting upon it nearly the whole of its impelling force. There are sights cast upon the vent and muzzle, to point the gun quickly to an object at 250 and 500 yards distance; and there is a ring cast upon the cascabel, through which the breechin-rope is reeved, the only rope used about these guns.

This gun has many advantages over the others of light construction. It is so extremely light, that the smallest ships can carry almost any weight of shot (the 12-pounder weighing under five hundredweight, and the other calibres in proportion), and that without being attended with the inconveniences imputed generally to light guns, since it cannot injure its carriage, or jump out of its station in the port upon recoil; and it never becomes heated.

Though the carronade cannot, strictly speaking, throw its shot to an equal distance with a longer gun, yet, from the adaptation of the shot to its cylinder, the powers of this gun will greatly surpass the expectations of such as are not intimately acquainted with the effects of the elastic force of fired powder; since, with a charge one twelfth part of the weight of its ball, at very small elevations, it will project its shot to triple the distance at which ships usually engage, with sufficient velocity for the greatest execution, and with all the accuracy in its direction that can be attained with guns of greater lengths.[1]

There have been two seeming disadvantages imputed to this gun, which it does not merit, viz. the nicety of fitting the shot to the bore of the gun, and its incapacity to admit more than two shot at one charge. But as seamen have few opportunities of confirming themselves in just opinions by experiments made on shore, and cannot, in that case, be fully conversant with the subject, the following hints may be useful towards removing these objections.

It is an axiom in projectiles, that a shot cannot be impelled from a gun to any distance in a direction truly parallel to the axis of the cylinder of the piece, or what is commonly called *point blank*, arising from several well-known causes. For, however just may be the cylinder, and however perfect and smooth may be the sphere of its corresponding shot, and admitting that the impulse of the powder acts through the centre of gravity of the shot, and that the shot consequently leaves the piece in a direction parallel to the axis of its cylinder; yet the shot is no sooner discharged, than it becomes more or less inflected by its gravity, and deflected, according to its velocity, by the resistance of the air and wind. But these irregularities are of little importance in close sea-fights; and being the effect of physical causes, they are common to all. The deviation of a shot from its true direction, however, is further augmented by the windage between the cylinder and the ball; but the greatest uncertainty in the flight of a shot, making allowance for the action of its gravity, and the resistance of the air, is occasioned by the defects of the shot itself.

If the direction of the flight of a shot to its object, then, is affected by so many seeming trivial causes, the result must be much more uncertain when two or more shots are discharged together from one gun; for the shot next the powder being impelled with more celerity than that immediately before it, strikes against it after the discharge, sometimes shivers itself to pieces, and never fails to change obliquely the direction of both; and this happens with round and double-headed shot, and with all double charges, which, from their various figures, cannot reach an object at the same elevations with the round shot; especially when these other shots are of greater weight than the round, which is often the case. However frightful a broadside with double charges may appear at sea, more confusion is created by them, and more time lost, *within board*, by the strain and excessive recoil, than real damage done *without board* by the additional charge; for upon a trial on shore, where the effect can be traced, it will be found, that at one hundred yards distance, more shot will take place within a small compass by single than by double charges; and the charges will be oftener repeated in a given time, without heating the gun.

The other pieces of artillery commonly made use of are mortars, royals, and howitzers. The mortars are a kind of short cannon of a large bore, with chambers for the powder, and they are made either of brass or of iron. Their use is to throw hollow shells filled with powder, which falling on any building, or into the works of a fortification, burst, and with their fragments destroy every thing near them. Carcases, which are a sort of shells with five holes, filled with pitch and other materials, in order to set buildings on fire, are also discharged from mortars.

Mortars are chiefly distinguished by the dimensions of their bore; for example, a 13-inch mortar is one the diameter of whose bore is 13 inches, and so of the rest. The land mortars are those used in sieges and in battles. They are mounted on beds, and both mortar and bed are transported on block carriages. English mortars are generally fixed to an angle of 45 degrees. This custom, however, does not appear to have any foundation in reason. On the contrary, when shells are thrown upon magazines, or any other buildings, the mortars should be elevated as high as possible, that the shells may acquire a greater force in their fall, and consequently do more execution. The chamber in mortars is the place where the powder is lodged. They are of different forms, and made variously by different nations; but the cylindrical seems to be preferable to any other form.

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[1] At the same time, viewing the matter purely as an artillery question, there is little doubt that, in the armament of some ships a preference should be given to long guns. Sir Howard Douglas recommends (*Naval Gunnery*, art. 89) that a frigate which cannot carry eight-feet 24-pounders, should be fitted with long 18-pounders rather than with six or six and a half feet 24-pounders, or indeed with any kind of carronade exclusively. "The chief objection that may be made to this," says he, "is, that short 24-pounders are more easily worked. This I admit; but surely, with a good strong crew, the difference would be very inconsiderable; and, at all events, not worth the sacrifice of vast superiority of power and practice at long ranges. Perhaps, also," he adds, "expedients may be devised to lessen this, the only disadvantage that can be objected to long guns, for vessels that can receive them." Sir Howard admits that at close quarters carronades are very formidable; but he contends that, at long ranges, they are no match for long guns, and that any vessel fitted exclusively with this description of ordnance, might be destroyed or captured by a vessel of very inferior rate, mounting long guns, if her commander knew how to avail himself of the great superiority of his weapons. "The very mortifying situation," says he, "in which the gallant Sir James Yeo found himself, in September 1813, on Lake Ontario, shows the danger of the carronade system of armament. Sir James states, in his letter of the 12th September, 'the enemy's fleet of eleven sail, having a partial wind, succeeded in getting within range of their long 24 and 32-pounders; and having obtained the wind of us, I found it impossible to bring them to close action. We remained in this mortifying situation five hours, having *only six guns* in the fleet that would reach the enemy. *Not a carronade was fired.* At sunset a breeze sprung up from the westward, when I manœuvred to oblige the enemy to meet us on equal terms. This, however, he carefully avoided.'" Captain Barclay, in a letter also dated the 12th September 1813, makes a similar statement. "The other brig of the enemy," says he, "apparently destined to engage the Queen Charlotte, supported in like manner by two schooners, kept so far to windward as to render the Queen Charlotte's 24-pounder carronades useless, whilst she and the Lady Prevost were exposed to a heavy and destructive fire from the Caledonian, and four other schooners, *armed with long and heavy guns.*"

Royals are a kind of small mortars, which throw a shell whose diameter is 5·5 inches. They are mounted on beds in the same way as other mortars.

The howitzer is a kind of mortar mounted on a field-carriage like a gun; and it differs from the common mortar in having the trunnions in the middle, whereas those of the mortar are at the end. The construction of howitzers is as various and uncertain as that of mortars, excepting that the chambers are all cylindrical. They are distinguished by the diameter of their bore; for instance, a 10-inch howitzer is that which has a bore of ten inches diameter, and so of others. They were much more lately invented than mortars, and indeed are plainly derived from them.

The *canons à bombes*, or *à la Paixhans*, are howitzers of greater length of bore than ordinary, having the shells appropriated to them cast concentric, instead of a *culot*, or reinforcement of metal opposite the fuse-hole. The bomb-cannon are, in fact, only an application of a principle incontestibly proved by Mr Robins and Dr Hutton, and well exemplified in the case of carronades; namely, that the velocities of shot are increased by diminishing the windage. Colonel Paixhans has acknowledged (*Force et Faiblesse de la France*, pp. 396, 415) that the most effective proof of the value of his improvement against fortifications was the practice carried on by Sir Alexander Dickson in 1824, with carronades and howitzers, at a range of four and five hundred yards, against Carnot's wall, covered by his counterguard, and strengthened for about twenty feet with an additional buttress at each end of four feet square. But this practice has nothing to boast of, or to record, in a treatise like the present. "Certainly it would never have been spoken of as extraordinary in the British service, that the charge and elevation should be so apportioned to ordnance as to pitch their projectiles over a counterguard, securing their effect against, and, as it proved, in three hours and a half firing, causing a practicable breach, with eight 68-pounder carronades, and six 10-inch howitzers, in a wall of the same height with the counterguard, and ninety feet from it; but it was asserted at the time, by foreign officers of distinction, that the wall could not be breached, and that it had been attempted in vain by the artillery of the principal powers of Europe."[1]

"The propositions of Colonel Paixhans," says another writer in the same journal, "have been some years before the public; and his ideas as to the construction of guns by which to project shells horizontally have been noticed and acted upon by most if not all the maritime powers of Europe. In England we have guns constructed on his plan by General Miller, but after all it appears to be little more than applying to ordnance with trunnions the well-known principle applied to carronades, that of diminishing the windage to increase the initial velocity, thereby affording an opportunity of reducing the charge. M. Paixhans' new guns, as well as our own, may be best described as iron howitzers, the bore being longer than usual, and the windage decreased; the construction of the gun is, however, of little consequence compared to its application. Now the practice made by the French marine at Brest against a ship of the line at different periods, proves that an eighty-pounder, the hollow shot of which is 8·4 in diameter, may, by a single discharge, cause the destruction of a ship of the first class, and that such result may be produced, either from the bursting of the shell, and the instantaneous injury thereby caused, or from fire; and it further shows, that in every case in which a shell struck the vessel, the injury sustained was very important. The committee of naval and artillery officers, in the report of M. Paixhans' eighty-pounder, observes, 'Il est évident que l'éffet produit a été terrible, et tel qu'on pense qu'une ou deux bombes de cette espèce, éclatant dans un batterie, y causéraient un désordre capable de faire abandonner, du moins de comprometre, la défense du batiment atteint.'

"In our own service, a twelve-inch gun of ten diameters, windage ·15 inches, charge eleven pounds, elevation 1°, range 400 yards, was fired six times against the section of a ship's side, the fac-simile of a ship of war. Four shells struck the section, and produced an effect such as to convince every body present that no vessel could have floated with such injuries; the whole of the interior was covered with splinters, one weighing fifty pounds was picked up at a considerable distance; the knees of the vessel were broken to pieces, one shot alone broke several; the knees protruding beyond the ship's sides, and leaving a tremendous opening. As to the range of these projectiles, it appears, that notwithstanding the reduced charges, it exceeds that ordinarily obtained with the common guns of the largest calibre, and with a charge equal to one-third the weight of the shot."

The largest mortar ever employed against the defences of a place was the iron 24-inch mortar used at the siege of the Citadel of Antwerp in 1832. The dimensions of this "monster," stated in French weights and measures, are as follow:

Diameter of the shell..............	24 inches.
Thickness, exclusive of culot......	2½ —
Weight of empty shell..............	916 lbs.
Powder contained in shell..........	99 —
Weight of shell, full charge........	1015 —
Calibre, massive.....................	1666 —
Weight of mortar, metal.............	14·700 —
.... bed (wood).............	16·000 —
Powder in chamber (full)..........	30 —

"The monster mortar hitherto appears remarkable only for the extremely bad shells which were cast for it, and the time taken in loading it. Our thirteen-inch shells stand the explosion of twenty or thirty pounds of powder, whilst the monster was served with only twelve and a half. It is remarkable that Colonel Paixhans' guns were not used at Antwerp, particularly as the attack appears to have been carried on for display, and to have been spun out, particularly in the attack of the Lunette, as a *siège du polygone*."

As illustrative of the practice at the siege of the Citadel of Antwerp, and in the Peninsular war, and also as serving to show generally the effects of artillery, we subjoin some remarks extracted from the journal above referred to.

"The lieutenant-general (Neigre) commanding this arm, pertinaciously adhered to the principle that it is at point-blank that a cannon fire is most efficacious, and that nothing is gained by that of mortars at a close range; that is, that the impetus of the former does not increase by reducing the distance between the point-blank and a given object; and were it not for glacis and intervening objects, revetements could as easily be breached at full point-blank as at fifty yards, whilst, in regard to the latter, their execution is rendered less certain by the necessity of diminishing the charge and fuse.

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[1] *United Service Journal* for 1834, part ii. p. 398.

"By full point-blank appears to be intended that which the French term *le but en blanc*, distinguished from the *but en blanc primitif ou naturel*, which the English term the line of metal elevation, namely, the elevation of the axis of the bore resulting from the dispart of the gun; a plane passing over and touching the superior part of the breech and muzzle being coincident with the object at which the gun is laid. If the definition now to be assumed be admitted to convey the phrase point-blank, as applied to the opinions of General Neigre, the distance in question will be, when referring to a 24-pounder English, about 700 yards, such being its line of metal range.

"Now, at this distance, it is very certain that a breach may be effected against an ordinary revetement, if not covered by any intervening object, without any difficulty. Sir John May, of the royal artillery, in his memoir of the sieges in the Peninsula, remarks, that at Ciudad Rodrigo, breaches of 130 feet in extent were rendered practicable at ranges of from 500 to 700 yards, in thirty-two and a half hours, the greatest number of guns employed being thirty 24-pounders and two 18-pounders. Sir John Jones, royal engineer, says, 'at Badajoz the extent of the front of the three breaches open was about 500 feet, the greater part of which was as good as can be formed.' This was effected at distances of from 600 to 700 yards with fourteen 18-pounders and twelve 24-pounders, in 104 hours; firing, on the average, nine rounds in the hour. At St Sebastian, twenty 24-pounders caused a practical breach 100 feet in extent in thirty-three hours; and these guns rendered a smaller breach at the same siege practicable in fifteen hours and a half; on an average, twenty rounds a gun were fired in an hour.

"Thus, at these three sieges, assuming the data they afford, and supposing fifty guns employed, a breach of 100 feet might have been effected at a range of from 600 to 700 yards; at Ciudad Rodrigo in fourteen hours twelve minutes, at Badajoz in ten hours, at St Sebastian in twelve hours fifty-six minutes; and the time might have been reduced to ten hours, as it has been proved that English battering guns will admit, without injury, twenty-four rounds in an hour."

With reference to the opinion that "nothing is gained by the fire of mortars at a close range," and that the execution is rendered less certain by the necessity of reducing the charge and fuse, we are of opinion that, if the primary object of mortar batteries be to force through bomb proofs, and to spring the arches of magazines, the distant mortar may be more efficient than one more near. The greatest penetrating effect of a vertical projectile must obviously be obtained by projecting it to such a height as would be requisite, in its descent, by gravity, to attain its terminal, that is, its greatest velocity; but as with the heaviest projectiles the altitude necessary to generate the terminal velocity is such as can only be produced at protracted ranges, or at elevations above 45°, the principle must be modified, so that in endeavouring to procure the greatest momentum for the shell, too much may not be surrendered in point of accuracy of fire. The altitude to produce this terminal velocity with an eight-inch shell, is 2678 feet, with a ten-inch, 3335, with a thirteen-inch, 4340, and with the Antwerp "monster," 6030 feet, supposing its diameter to be twenty-four inches, and the corresponding solid to weigh 2447 lbs. English; but these altitudes require, at 45° elevation, ranges to which shells cannot be thrown with great accuracy. Very satisfactory practice may, however, be made with thirteen and ten-inch mortars at 800 and 1000 yards, the ranges of the principal mortar batteries at Antwerp. Therefore we may say, that decreasing these distances would lessen the efficiency *against permanent works*, in a degree not compensated by the superior accuracy of the fire.

If the intention of the mortar battery be to annoy troops or working parties, much less velocity is required; and as the accuracy of the practice would increase by lessening the range, it would be desirable to do so.

It is highly probable that the great effect of the vertical fire in destroying the shelter of the garrison in the bombardment at Antwerp, is attributable to the distance of the mortar batteries.

The French use brass guns for their battering trains, perhaps "because they have no iron founderies to compare to that of Carron, or indeed to many English establishments." Still it is remarkable that, with the experience they must have had of the comparative inefficiency of guns made of this metal, the French should still adhere to them. If the rate of firing at Antwerp in 1832 be compared with that at any of the Peninsular sieges, as stated by Sir John Jones, the great superiority of iron guns will be at once perceived. The French iron is no doubt very inferior to ours; but, in a matter of so much importance, one would imagine that the interests of a monopoly would not outweigh those of the service.

In the British service, the practice with the Paixhans guns has not been carried to an equal extent as in the French; but with the twelve-inch gun of 90 cwt. 3 qrs. 4 lbs., weight of hollow shot about 125 lbs., windage ·15 inches, charge 12 lbs. only, a range of 1300 yards has been the result. The number of men employed with the guns of Colonel Paixhans was fifteen, being that required for a thirty-six pounder. The English gun mounted on board ship was worked by six men with ease; and it recoiled from four and a half to five feet."

II.—*Charges, Range, &c. with the under-mentioned Iron Ordnance.*

Nature.	Weight.		Charge.	Elevation.	Range.	Elevation.	Range.	Elevation.	Range.
	Cwt.	Qrs.							
42 Pr.	58	1	14 0	PB.	400	1⅓	1100	3½	1500
32	55	2	10 11	¼	500	2	1200	3¾	1550
24	50	...	8 0	½	600	2¼	1250	4	1600
18	42	...	6 0	¾	700	2½	1300	5	1800
12	34	...	4 0	1	800	2¾	1350	6	1980
9	31	...	3 0	1¼	900	3	1400	7	2148
...	...	...	...	1½	1000	3¼	1450	2	4000

III.—*Calculation to fire Spherical Case Shot with Service Charges.*

Medium 12-Pounder.				Long 6 and 9-Pounder.				Light 6-Pounder.			
Elevation.	Fuse.	Range from	to	Elevation.	Fuse.	Range from	to	Elevation.	Fuse.	Range from	to
Degree.	10ths.	Yards	Yards.	Degree.	10ths.	Yards	Yards.	Degree.	10ths.	Yards	Yards.
1¼	2	660	966	1¼	2	640	920	1¼	2	570	800
1¾	3	820	1110	1¾	3	800	1060	1⅚	3	720	930
2¼	4	960	1230	2¼	4	930	1180	2¼	4	845	1040
2¾	5	1080	1340	2¾	5	1050	1290	2⅞	5	955	1145
3¼	6	1195	1445	3¼	6	1160	1390	3⅜	6	1060	1240
3¾	7	1305	1545	3¾	7	1260	1480	4	7	1160	1330
4¾	8	1415	1645	4¾	8	1360	1570	4⅝	8	1255	1415
5	9	1520	1740	5½	9	1455	1655	5¼	9	1345	1500
5¾	10	1620	1830	5¾	10	1555	1700	5⅞	10	1430	1580
6½	11	1720	1920	6½	11	1640	1820	6⅝	11	1510	1655
								7¼	12	1585	1725

IV.—*Ranges with the under-mentioned Brass Ordnance.*

Round Shot			12-Pounder Howitzer.			24-Pounder Howitzer.		
Elevation.	Light 12-Pounders, 6 ditto, and Heavy 3.	Medium 12; long 6 and 9-Pounders.	Elevation.	Fuse.	Range.	Elevation.	Fuse.	Range.
Deg.	Yds.	Yds.	Deg.	10ths	Yards.	Deg.	10ths	Yards.
PB.	200	300	PB.	...	200	PB.	...	250
¼	300	400	¼	...	250	¼	...	300
½	400	500	½	...	300	½	...	350
¾	500	600	¾	...	350	¾	...	400
1	600	700	1	1	400	1	1	450
1¼	650	775	¼	2	450	1¼	1½	500
1	700	850	1½	2½	500	1½	2	550
1¾	750	925	1¾	3	550	1¾	2½	600
2	800	1000	2	3½	600	2	3	650
2¼	850	1050	2¼	4	650	2¼	3½	700
2½	900	1100	2½	4½	700	2½	4	750
2¾	950	1150	2¾	5	750	2¾	4½	800
3	1000	1200	3	5½	800	3	5	850

V.—*Elevation and Range with 68-Pounder, or Eight-Inch Gun.*

Charge 9 lbs.	
Elevation.	Range.
Degrees.	Yards.
Point-blank.	372
¼	444
½	516
¾	588
1	660
1¼	746
1⅛	832
1¾	918
2	1004
2¼	1052
2½	1100
2¾	1148
3	1196

The above tables are constructed from actual practice, with good powder, at Woolwich. According to the present system, much more care is taken to preserve gunpowder from deterioration than was formerly employed.

The description of figs. 10 and 11, Plate CCLXXIV., which, from want of room, could not be engraved on the plate itself, is here subjoined: Fig. 10, AB bracket, BC trail, *o* trail-plate eye, E eye and bolt keys, D and *c* trunion-plates, T cap square, H lock-plate, L traversing stay, M trail bolts, P traversing loop, Q elevating screw, *b* nare or stock, *a* nare hoop, *e* garnish nail, *f* fillies, *d* spokes, *g* nuts, *i* match or shot box, *x* wheel chain, *w* traversing handspike. Fig. 11, A ammunition box, B guard iron, C axle-tree stay, D lip of the bed, H splinter socket, *k* shaft, L limber hook.

GUNPOWDER.

The invention of gunpowder is popularly ascribed to Barthold Schwartz, a German monk and alchemist; and the date of the discovery is further supposed to have been in 1320. The prior claims of our countryman, Roger Bacon, whatever they be, are however unquestionable, as this substance is described in his writings about the year 1270, or fifty years before the time of the supposed discovery of Schwartz. But even Bacon has as little title to this invention as his supposed rival; nor, indeed, when we examine his own description of this then wonderful compound, do we perceive that he makes any claim to have been the discoverer. On the contrary, he quotes it as a well-known substance, in common use all over the world for making squibs to amuse children. So pertinacious are vulgar errors. The passage in Bacon stands as follows: " Ex hoc ludicro puerili, quod fit in multis mundi partibus, scilicet, ut instrumento facto ad quantitatem pollicis humani, ex violentia salis qui salpetræ vocatur, tam horribilis sonus nascitur (this is the description of a parchment cracker) " in ruptura tam modicæ pergamenæ, quod fortis tonitru rugitum et corruscationem maximam sui luminis jubar excedit." Thus the claim is shifted without difficulty from Bacon, and, as Dutens thinks he can show, is removed to Magnus Græcus, whose manuscript he quotes, and from which he presumes that Bacon derived the invention; although, by his own showing, Bacon need not have consulted an obscure writing for an invention of general notoriety. The title of the manuscript in question is as follows: " Incipit *Liber Ignium* a Marco Græco perscriptus, cujus virtus et efficacia est ad comburendum hostes, tam in mari quam in terra;" so that even the military uses of gunpowder were then known. In the same manuscript are contained directions for making a rocket, which we dare not quote on account of its length; but it is such as to prove that the nature of this fire-work was thoroughly understood. It is even remarkable that he recommends particularly the charcoal of willow wood, which we moderns have found by experience to be amongst the best for all the purposes of gunpowder.

Thus far, although we have not fixed the date of the invention, we have carried it, not only beyond Bacon, but even beyond this supposed predecessor; as he himself does not pretend to be the inventor, but the compiler, of a *Liber Ignium*, or treatise on pyrotechny. If, in attempting to ascend still higher, the evidence becomes more rare and more obscure, there are still insuperable facts to prove that its antiquity is far greater, however impossible it may be to approximate to the date of the invention, far less to assign that which seems buried amongst the obscurities of oriental learning. The question of gunpowder, as applied to artillery, is a separate one; but there is abundant reason to believe that this compound was not only used in some form or other as an explosive and combustible substance, but was even applied to military purposes; it may be, in the shape of rockets or other fire-works, which, for objects of amusement at least, have been familiar to the Chinese beyond all record.

The earliest date to which we can refer the knowledge of gunpowder, in defect of a sufficiently remote acquaintance with oriental history, is 355 before Christ; although, from the very nature of this evidence, it follows that it was then not only known to the eastern nations, but that it must have long been so; since, even at that early period, it was applied to warlike purposes. In the code of Hindu laws, indeed, where it is mentioned, it is referred to a period which oriental antiquaries have considered as coincident with the time of Moses. But the evidence to which we more particularly allude is found in a passage of the Life of Apollonius Tyanæus by Philostratus; the purport of which is, that Alexander was unwilling to attack the Oxydracæ, who lived between the Hyphasis and the Ganges, because they were under the care of the gods, and overthrew their enemies with thunder and lightning, which they shot from their walls. The same tale is told of the repulses experienced in this country by Hercules and Bacchus.

The next of these early dates, in which also our evidence is imperfect, is 212 before Christ; but the establishment of the truth of the last would render this one more credible. In the defence of Syracuse by Archimedes, Vitruvius relates that one of his engines threw large stones with a great noise; a description which does not apply to any of the mechanical artillery of the ancients. On a notice so superficial, we must not, however, lay too much stress; and here ends all the information which we have yet procured respecting the earliest knowledge of gunpowder. It seems, however, to be so decidedly capable of being traced from the East, through the intervention of the Arabs, that there can be little doubt of its being on oriental invention, and of its being thence imported into Europe; and, indeed, the military use of rockets in the armies of India ascends to a period beyond record.

Of the earliest period at which it was known in China, we have, in defect of their own evidence, only the testimony of Uffano, an Italian author, who affirms, that not only gunpowder, but ordnance, was in use in that nation in the year 85 of our era; and that cannon were, in his day, remaining from the most ancient times, in some of the maritime provinces, made both of iron and brass. Hence some writers presume that the Chinese communicated the invention to the Indians; whilst it has also been said, but on no sufficient authority, that they themselves received it from Tartary; a nation respecting which we know little or nothing, and in which we should not be inclined to look for an early acquaintance with the arts. This, however, refers to a date so late as 917; so that, if there is any dependence to be placed on the Indian and Chinese hypothesis, the Tartars must themselves have borrowed the invention from those to whom they are said to have lent it.

There is after this a long blank; and the first author on the subject that we have discovered is in 1249, twenty years before the date of Bacon's narrative. This is an Arabic writer, in the Escurial collection, who is translated by Casiri. His description is such that it may apply both to rockets and to shells. In the former case, it only proves the knowledge of the detonating compound; the latter, were it proved, would show that they were also acquainted with the use of ordnance, although it is not impossible but that such projectiles might have been thrown by mechanical artillery.

As the invention of gunpowder has been popularly attributed to Bacon and to Schwartz, so the use of ordnance has been referred to the time of the field of Cressy, or 1346. To pass over the Chinese hypothesis on this part of the subject, we shall find that cannon were known at least as early as 1312. This we derive from the source quoted by Casiri; from Arabian writers, who describe the use of ordnance in 1312 and 1323; whilst, if Barbour is to be trusted, Edward III. was also provided with some pieces of artillery in 1327; and Père Daniel asserts that cannon were known to the French in 1338. We need not carry this discussion lower; though, in favour of the oriental origin of this invention, we would still remark, that artillery was much in use in the Mediterranean when it was still but little used elsewhere; as by the Venetians against Genoa in 1380, and by Alphonso XI. in his wars against the Moors.

Composition of Gunpowder.

The present composition of the Chinese corresponds so nearly with our own, that the difference is nearly insensible; but whether it had arrived at that degree of perfection in their ancient periods, we have no means of knowing. Neither can we judge of its nature and power as known to the Arabs. But, in our own country, it was very late in arriving at its present state of perfection; nor do the various proportions given by one of our earliest writers on the subject argue much in favour of their chemical knowledge, or turn for experiments. Peter Whitehorne, who wrote in 1573, gives numerous proportions, without seeming well aware of their respective values; and, respecting some of them, it is easy to see that they were scarcely fit for squibs, much less for the purpose of projecting shot. Such is nitre, sulphur, charcoal, equal parts; whilst, in the very opposite extreme, we have nitre 12 parts, sulphur and charcoal, of each 3 parts; and, still worse, nitre 27 to 3 of the other two ingredients; or nitre 48 parts, with 7 of sulphur and three of charcoal. Here, such as these compositions are, want of experience can scarcely be pleaded, as they are not better than those given by Nye in 1380. In France also, the composition, at no very remote period, was, nitre 50, sulphur 16, charcoal 34; from which it varied to, nitre 67, sulphur 13, charcoal 20, and to nitre 84, sulphur 8, charcoal 8; these differences being supposed necessary for the larger cannon, and the smaller progressively, and the last being their musket powder.

But as we cannot afford space to describe the gradual progress of improvement in the composition of gunpowder, we shall now state the proportions at present in use in different nations. They do not materially differ from each other, although it is unquestionable that they are not all of equal power.

		Nitre.	Sulphur.	Charcoal.
China		75½	10	14½
Italy		76	12½	12½
Sweden		75	9	16
Russia		70	11½	18½
Poland		80	8	12
Berne		76	10	14
France, three proportions, according to Guyton Morveau, and the Committee of Public Safety	A	76	9	15
	B	77	7	17
	C	80	5	15
Ditto according to Chaptal		77	9	14
Ditto at present in use: three kinds	Ordnance	75	12½	12½
	Small arms	78	10	12
	Mining	65	20	15
Ditto, recommended by Proust		78	9	13
Piedmont, according to Antoni		71 3/7	14 2/7	14 2/7
Holland		70	14	14
England, government		75	10	15

The proportions in the *commercial* gunpowder of England vary indefinitely, according to the views of the manufacturer respecting the markets, the price, and other matters. Cheapness being the leading object where it is only made for sale, and the nitre being the only expensive article, the proportion of this is diminished, and those of the other two ingredients increased. The worst is made for the Guinea trade; and, if we are not misinformed, that for the Canada trade is nearly as bad, whilst the next upwards in the scale is that sold to Turkey. We have never met with any specimen in which there was less than 62 of nitre; but we have reason to believe that some of the inferior kinds do not contain more than 50. For the use of miners it also is made with a low proportion of nitre, producing advantages in mining not intended by the makers, whose only object was to manufacture a cheap article. But the proportions of all the commercial powders are very inconstant, even when furnished *bona fide* to government, as it is impossible to prevent the workmen from purloining the nitre, and replacing it with the cheapest ingredients.

It is not for want of experiments if greater uniformity has not been attained in these compositions, and if all adhere to their own. Baptista Porta was one of the first who made accurate investigations on this subject; and, as long ago as the year 1515, he fixed on the proportions now used in France. Beaumé, some time ago, fixed on 80 of nitre, 5 of sulphur, and 15 of charcoal; and the opinions of Morveau, Chaptal, and Proust, are displayed in the preceding table. It is easy to account for these differences of opinion, when we recollect the numerous accessary circumstances which modify or vitiate the results obtained from practice. With the very same power it is scarcely possible to procure uniform ones, as is well known to artillerists; and hence, from practice alone, unless after an enormous number of trials, no certain conclusions can be drawn. It will, indeed, appear that, under various proportions, the effects may really be the same; because, as the force of powder depends partly on the quantity of gas generated, and partly on the heat to which it is raised, any deficiency on the one hand may be compensated by an increase on the other. Thus, as the greater quantity of gas is produced by the largest proportion of charcoal, the greater heat is caused by augmenting that of the sulphur. In all the trials that have been made in this country, no reason has been found for varying from the proportion 75 nitre, 10 sulphur, and 15 charcoal; and the same is used for arms of all calibres, the only difference for the respective arms being made in the sizes of the grains.

It is proper, on this subject, to state, that whilst the explosive power depends fundamentally on the quantity of gas that is permanently generated, that gas is almost entirely produced by the combustion of the charcoal; the nitre being the cause of that combustion, and furnishing one part of the generated gas from its decomposed acid, as it does the other by converting the charcoal into carbonic acid. Were nothing else required, therefore, to produce the effect, the best powder would consist of nitre and charcoal alone, as the sulphur consumes a considerable part of the oxygen of the nitric acid, without adding any thing to the permanently elastic gas. But as there are two other important elements in this problem, namely, the rapidity of the inflammation and the heat, the sulphur becomes an indispensable ingredient; whilst, by expanding the gas at the moment of explosion, it more than compensates for the diminution of permanent bulk which it causes. Perhaps, on this compound view of the subject, M. Beaumé's composition is really the best, abstractedly considered, as the nitre is sufficient to burn the whole of the sulphur and the charcoal also, and as both the degree of heat and the quantity of gas seem to be best balanced for the intended effect. But a composition of this accurate nature requires equal accuracy of mixture and manufacture; and as that is scarcely attainable on the great scale, it is found better so to increase the sulphur and charcoal as to ensure the total decomposition of the nitre, this being further an object of economy.

Sportsmen, as well as artillerists, ought to know that the fouling of their barrels after firing is in a direct ratio of the weakness and badness of their powder; and this effect is most completely obviated by using M. Beaumé's, or any similar mixture. Not only does the feebleness of such powder prevent the barrel from being swept clean at the explosion, but as the foulness consists chiefly in a mixture of the carbonate and sulphate of potash with charcoal, that becomes necessarily greatest wherever the nitre is reduced in quantity for the purpose of introducing the cheaper ingredients. The analysis of powder, at least as far as that ingredient is concerned, is so easily made, that every one who feels an interest in his success as a sportsman should examine what he uses, as the very worst mixture can be rendered beautiful to the eye by a minute grain and a high polish.

The British government use but one proportion for all services. As far as artillery and musketry are concerned, we do not consider this as of much moment; or that any material object would be obtained by using different ones proportioned to the respective calibres. But we consider that they commit a great error in adopting the same for the *mining* service; and that some of the failures caused in our wars, in attempting to blow up works or demolish bridges, have been produced by the very excellence of the powder, in short, by its too great strength. To take the case of common blast-mining as a simple one, and to put the extreme case of all: If it be attempted to spring a rock by the powder of chlorade of potash, either the plug will be blown out, or a very narrow space round the mine will be broken. With the best musket or cannon powder the same effects, but in a less degree, follow. Here the miners' powder, which seldom contains as much as sixty per cent. of saltpetre, is effectual; and, what is more, it is rendered still more active by being damp from careless keeping, or from remaining some time in the mine before it is fired. Mathematicians will immediately see the solution of this apparent incongruity, by recollecting that the element of time is an ingredient in the problem. With too great a velocity the parts of the general mass nearest to the acting force are disintegrated; so that not only is the force expended in this act, but the gas thus escapes from the opening. With a power acting more slowly, the whole mass, or a much larger one at least than in the first case, is moved; and thus the rock is widely shaken, although not blown into the air. It will be found practically, that the further the fragments are dispersed, the less is the effect; and thus the mine which is most dangerous to the workmen, is also the least efficacious.

It is from this variation respecting the power of gunpowder, hitherto unattended to, from confounding impulse and pressure, to which at least it bears a certain relation, that so many different opinions have been entertained respecting the force of powder in particular cases. Hence also have arisen various projects for increasing its efficacy; amongst which quicklime has been repeatedly recommended. In mining it does actually increase the effect, though not the force. On the contrary, it diminishes the force; and it is from that very cause that it is more effectual in mining or shaking a rock. The same object can be obtained by a mixture of saw-dust; but it must also be remembered that this will not happen unless good powder be used. Ordinary miners' powder will not often bear this kind of dilution. It is easy now to apply this principle to military mining, where the object is to produce as extensive a shock as possible. Mathematicians have calculated the globes of compression for certain charges; but it will be found that these vary so much, according to the strength of the material, that the conclusions cannot be depended on. This is a very important problem, however, because the destruction of a work depends on the area of the base of the paraboloid, or whatever else the figure be, which the explosion produces. We dare not, however, enter further on this subject, as it would lead us beyond our limits.

On the Choice and Examination of the Materials.

Nitre, as it is imported from India, whence all that is used in this country is procured, is mixed with much dirt and with some salts, consisting chiefly of the nitrates and muriates of lime, and of muriate of potash. As the deliquescent salts, in particular, are extremely injurious from their property of attracting moisture, it is most important that the nitre to be used in gunpowder should be thoroughly refined. For this purpose rain-water ought to be used if possible, and if not, such river or other waters as are found, on trial by the appropriate tests, to contain the least quantity of saline matters. The nitre is first boiled, and the grosser impurities separated by filtering through hempen bags, after which it is crystallized. After draining, one washing is sufficient to render the first crystallization sufficiently pure; but the subsequent ones require repeated solution and crystallization before all the foreign salts can be separated. We need not, however, dwell on this subject, and shall only add, that no nitre ought to be used unless it will stand the tests of nitrate of silver and of carbonate of potash, without exhibiting a precipitate.

It is held necessary that the nitre should be thoroughly dried; and, accordingly, much unnecessary labour is bestowed on this subject, since it must be moistened in the mill when the composition is submitted to the rollers. The only real use in drying it is to enable the workman more easily to allot the true weight, which might equally well be done by an average and an experiment. We should scarcely have noticed this, but that the French manufacturers boast much of the superiority which they derive from reducing the nitre to minute crystals, by agitating the solution. In the royal mills it is further the practice to fuse the nitre into large cakes. By this method it is speedily dried, easily stored away, and protected from depredation. These advantages are held to be sufficient to compensate the expense; but it ought to be remembered that there is a degree of hazard in the process, as, if the salt should be overheated, it might be so far decomposed as to have a portion of potash united with it.

Sulphur, as it is received from Sicily, the great emporium of this commodity, is mixed with a considerable proportion of lime, whilst a portion of it is also combined with that substance, forming calcareous hepar, or sulphuret of lime. From this and the grosser accidental matters it is purified by melting; the sulphuret and the earth subsiding to the bottom of the mould, so as to admit of being mechanically separated. This residue, yielding no more pure sulphur by that process, is afterwards submitted to distillation. When the sublimed material is to be used, it requires previous washing, till it be entirely freed from the sulphuric acid adhering to it, and it may be tested for this purpose by means of the muriate of barytes. The fused sulphur, if doubted of, may be submitted to combustion, and the residue noted; but a little deficiency in the purity of this ingredient is of no moment.

With respect to the charcoal, there is considerably more nicety required than is generally imagined. The soft woods have been preferred from time immemorial, since even in the receipt of Magnus Græcus, formerly quoted, the willow is mentioned. The poplar and many others have been used abroad; but in this country those commonly adopted are the white willow and the alder. Even among these soft woods there is a considerable difference, as our own experiments have shown; and in them it was proved that the greatest explosive power, *cæteris paribus*, was produced by the wood of the *Rhamnus frangula*, commonly called black dogwood, as we shall show more particularly hereafter. The hard woods are invariably rejected, and with justice; though the reasons for this practice, which are derived from the presence of salts in these, are not the causes of their inferiority, certainly not the only ones. It is nevertheless true that no wood which contains carbonate of potash, or other deliquescent salts, is fit for the purpose, and for the most obvious reasons. This is the case in the oak, elm, fir, and other trees. But there is another reason for the badness of these kinds of charcoal, the cause of which is not so obvious, although it is evidently connected with their hardness. To us it appears to depend on the small proportion of hydrogen combined with the carbon in these charcoals, compared to that which exists in the produce of the softer woods. Even these can be reduced to the same state by overheating. Thus the hydrogen is dissipated, and the charcoal becomes so hard as to scratch steel; in which case, however obtained, it is always unfit for powder.

As this subject is yet obscure, from our imperfect acquaintance with the true nature of charcoal, and with the modifications of which it is susceptible, it becomes necessary to have recourse to experiment, for the purpose of determining, at any rate, the proximate cause of this difference in the explosive powers of the several kinds. Various trials have accordingly been made, as well by ourselves as by the French chemists; and, for brevity's sake, we add the most important results in the subjoined table. We are not informed of the process which was adopted by the French for measuring the gas; but in our own we had recourse to the pneumatic apparatus, using it in the manner which is described in another part of this article for collecting the total produce of the combustion of gunpowder. The mixture, in the French experiments, consisted uniformly of 60 parts of nitre and 12 of the charcoal submitted to trial. In our own they were varied, and the results taken from those in which the combustion of the charcoal was completed, and the quantity of gas the greatest. As no more nitrous acid could be decomposed than there was coal present to burn the oxygen, it is plain that in these the results are correct.

	Prop. Parts. Gas.	Solid Residue.
French Hemp stalks	62	12
...... Asphodel	62	20
...... Vine	64	20
...... Peartalks	62	21
...... Fir	66	30
...... Spindle tree (*Euonymus Europeus*	66	28
...... Chestnut	66	36
...... Hazel	66	33
...... Lamp black	54	44
...... Coak	54	45
...... Filbert	72	30

These results are such as to prove that there are important differences in the produce of gas; but, with regard to practice, they are of very little value, as few of the substances submitted to trial could be used. To admit of comparison between our own experiments and these, we shall reduce our proportions to the same standard, by taking our scale from the filbert at 72. We neglect the residue, knowing that it proves nothing, as the results are uncertain, in consequence of the irregular absorption of water, and partly from the impossibility of collecting the solid and the gaseous matters both from one charge.

	Gas.
Filbert	72
Oak	61, 63
Mahogany	58
Elm	62
Willow, *Salix alba*	76, 78
Alder	74, 76
Black dogwood, *Rhamnus frangula*	80, 82, 84
Oak bark	58
Animal charcoal	50, 46, 42, 40
Coak	52, 48
Lamp black	54, 52
Oak charcoal overheated	54, 56
Willow ditto	59, 64, 66

These various results, and some others which we have thought it unnecessary to record, may in a certain degree depend on inaccuracies in the experiment; but in the greater number they arise from real differences in the charcoals from the same substance, produced, as we before insinuated, by overheating. This is apparent in the two cases above cited of oak and willow; but in some trials, the differences were even greater. Coak and animal charcoal are particularly liable to vary.

It is evident from the preceding table that the best charcoal for gunpowder must stand in the following order: Black dogwood, willow, alder, filbert. From the French tables, in which we do not, however, place much confidence, we may add, consecutively, hazel and the spindle tree; but our own trials raise these to 70 at least in the scale. Such, at present, are the results of these trials as to the best charcoal; but we are by no means satisfied that we have yet found out the best wood for this purpose. The experiments are laborious; yet we think the subject deserving of more attention than has yet been bestowed on it. With respect to coak and animal coal, they stand very low in the scale, as the over-hardened wood-coals do; and, in all cases, there is a direct relation between the produce of gas and the facility of combustion under ordinary circumstances.

To satisfy ourselves by trials of a more direct nature, and more applicable to practice, we chose a method derived from the flight of rockets, as less liable to disturbance from collateral causes than any practice with pieces of ordnance. The rockets were of compound dimensions, and were all made with the same proportions, and driven by the same hand, so as to ensure all possible uniformity, the only variation being in the nature of the charcoal. The vertical elevations were taken by two quadrants at the same time, and all the flights that deviated from the perpendicular rejected. The mean vertical ascent of a great number of those made with willow, alder, and dogwood, was 480 yards; but between these three coals, the differences were so great as to give various results, which may be represented by the following numbers:

Dogwood	515, 550, 525
Willow	470, 480, 490
Alder	455, 460, 470

Greater accuracy is not attainable in this way, as may easily be conceived by those who know by how many collateral circumstances a rocket is influenced; but these trials are quite sufficient to justify the general inference made from the experiments in the pneumatic apparatus.

It has been held that the charcoal for gunpowder ought to be made in cylinders or retorts by distillation; and this expensive process is consequently universally adopted. It is doubtful if this is not a mistake of the *causa pro non causa.* Pit charcoal being made in coppice woods, is always the produce of oak; and it is probable that this wood, if charred in close vessels, would be even worse than it is now. There is more danger of overheating in the retort than in the pit, while the wood is not better burned; and hence, by a careless management of the process, even the charcoal of willow or alder may be rendered as bad as that of oak. Considering these various circumstances, charcoal requires to be submitted to three tests. It ought to act as little as possible, mechanically, even on copper; it ought to exhibit no salts on being treated with boiling distilled water and tested; and it ought to be thoroughly burned. The best test of this latter circumstance is its giving out no smoke when heated.

A new and economical method of distilling charcoal was not long ago invented by Sir William Congreve. Subsequently, but without any knowledge of what had been done, as we understand, the same process was suggested in America by Dr Bollman, to whom we are indebted for the present cheap method of purifying pyrolignous acid, and rendering it a substitute for common vinegar. In this beautiful process the retorts or cylinders are ranged in a row, a gas pipe from each being conducted to the bottom of the next in succession. By means of a fire under the first alone, the distillation of the whole may be conducted together; the gas which issues from that one being sufficient to char the next, and so on in succession to the end of the chain. The acid is collected in this case, as in others, by means of a separate pipe arising from a lower point in the retort.

Before we dismiss this very important and somewhat neglected department of the gunpowder manufactory, we must point out a circumstance with respect to charcoal, that requires an attention which it has never yet experienced. This is the property which it possesses of absorbing and retaining water, and which we have ascertained to be different in the different kinds of wood; although we have had no opportunity of investigating fully that which is here recommended to the attention of powder manufacturers.

It is from this hygrometric power that gunpowder attracts moisture, even when the nitre has been perfectly purified; a circumstance which materially interferes with its rapidity of inflammation, and consequently with its strength. But as the various hygrometric powers of different charcoals have never yet been properly examined, we can communicate no information on this subject which is worth recording.

On the Manufacture of Gunpowder.

Grinding. The first part of the process consists in pulverizing all the ingredients separately, after which they are weighed and mixed in a general and rude manner before being submitted to the mill. In France, and in some other countries, a pestle engine is used, or a stamping-mill; but it is subject to more hazard and inconveniences than the grinding-mill which is adopted in this country. This is formed on the model of the common bark-mill, and with two rollers at different distances from the axis, so as to cover the whole bed. The weight of each roller is commonly about three tons, and they are generally made of limestone, although iron cylinders have been adopted in some works. The bed, which is surrounded by a wooden margin, is of the same materials; and the whole house is built of slight framed wood, to diminish the evils that might arise from a casual explosion. A wooden rake follows the rollers, for the purpose of bringing the mixture under the cylinder; and the motion is communicated either by water or by the power of horses.

The mixture being distributed on the stone, to the amount of forty or fifty pounds, is moistened with distilled or rain water; but so as not to be wetted. It is barely sufficient to prevent the dust from flying. According to the velocity, the grinding is perfected in a space of time varying from three to seven hours; and it depends on the inspector to determine by trial for each velocity when the mixture is perfect. After that, time is a sufficient measure. The removal of the mill-cake, as it is called, requires caution, as it is commonly at this time that the explosions take place. These, indeed, will generally be produced if the bed and cylinder should come into contact while they are moved round slowly, to enable the materials to be taken out; the friction, under so great a weight, even of the purest limestones, or of iron, being sufficient to inflame gunpowder. To prevent this risk, a thick piece of hide is carried before the cylinder as the powder is removed, and by this plan the contact is prevented.

Pressing, Granulating, and Drying. The mill-cake thus completed is gunpowder, and may be granulated. But it is yet not so firm as it can be rendered by further pressure; and that property is very essential to its durability in travelling. For this reason, it is further condensed by pressure, either in the common screw-press used by packers, or by means of Bramah's hydraulic engine. Thus it becomes indurated to a hardness equal to that of many stones, and its specific gravity is also increased. In the press, also, it is divided into cakes of an inch or more in thickness, that it may be the more easily broken into pieces for the granulating engine.

This machine consists of a number of sieves made of strong vellum, perforated by punched holes, and supplied with top and bottom covers, like those used by druggists. A platform, to which a horizontal circular motion is communicated by machinery, receives a number of these, which are fixed in it. The lumps of the press-cake are introduced into each of these, together with a block of lignum vitæ or other hard wood, shaped somewhat like a Dutch cheese. During the rotatory motion, the lumps become thus broken into smaller fragments, which fall through the holes, together with the dust, into the receptacle below.

It remains to separate the grains according to the sizes that are required; and for military purposes, these are three; one for large ordnance, another for musketry, and a third for pistols. The powder generally used by sportsmen is of still finer grain than the last. The separation is performed by means of wire gauze, or strong silk gauze, of different apertures; the sieves being commonly cylindrical, and turned by the machinery. At the same time the dust is separated, and afterwards returned to the press.

The last operation is known by the name of glazing, a term literally true in the case of sportsmen's shooting powder. But the real object of this operation is to take off all those acute angles from the grains, which would otherwise be ground off in travelling, and thus produce great inconveniences, by introducing dust into the casks. This process is performed by causing the separate classes of grains to revolve in cylinders so constructed as only to let the dust through; and the mutual friction of the grains produces the desired effect. When it is required to give the powder a brilliant surface, as is the case with fine sportsmen's powder, the cylinder is lined with a woollen cloth; and sometimes, if a high polished gloss is desired, some black lead is introduced into it. But these are matters of mere ornament.

Although the powder thus completed appears dry to the feel as well as to the sight, it contains a considerable quantity of water. This must be separated by drying. In hot climates exposure to the sun is sufficient; but in most cases artificial heat is required. In France, a complex process was adopted by passing heated and dry air through a closed chamber, with the intention of diminishing the risk of explosion; but, with any moderate degree of care, it may be done in any manner. In some of the older works, the stove in use was a closed room with air holes above, heated by means of an iron cupola or large pot, to which a fire was applied outside of the building; the temperature being regulated by a thermometer fixed in the door, and indicating the heat externally. In this room, the powder was exposed in flat trays round the circumference. Lately, the method by steam pipes has become generally adopted; and in this way, every possible security, real as well as imaginary, is obtained.

Analysis of Gunpowder.

It is often useful, and frequently indispensable, to analyse gunpowder. This process will, indeed, generally supersede the necessity of *proving* by the usual methods, as it is always certain that a specimen of gunpowder, well made, will produce the best proof. It is particularly convenient in the case of gunpowder purchased from merchants, or by contract; as, from the several causes which may easily be conjectured, such an article may be deficient in the quantity or in the quality of the saltpetre, or in both. It is useful, moreover, in the case of damaged powder, returned from military and naval service; as we can determine by these means whether it has been wetted by rain or by sea-water, or whether any portion of the nitre has been washed out. Powder thus damaged by fresh water only, and otherwise uninjured, may be committed to the mill and restored at a very trifling expense. If the saltpetre is diminished, it can thus also be restored; but, on the contrary, if the damage has been produced by sea-water, it becomes necessary to destroy the powder for the purpose of extracting the nitre.

By washing the powder previously weighed in a filter, with hot distilled water, the nitre is dissolved, and admits of being crystallized and weighed. The tests formerly mentioned, namely, nitrate of mercury and carbonate of potash, may then be used to determine its purity. Thus it may be ascertained whether, in a new sample, the nitre is in sufficient proportion, and whether it has been well purified; and in a damaged one, whether the injury has arisen from fresh or from salt water. It only remains to examine the proportions of the charcoal and sulphur; a task, however, which is less easy, but which is, at the same time, less necessary, as the manufacturers are under no great temptation to assume a wrong proportion of these, although the joint quantity of the whole may be in excess. This mixture, being dried and weighed, must be exposed to a moderate heat, as long as any sulphur can be sublimed. But as the last portions are inseparable in this manner, it is necessary at length to have recourse to other means. Among those that have been tried, there is none more convenient than boiling in a solution of pure alkali, by which a sulphuret is formed, and the weight of the dried charcoal thus completes the analysis.

Analysis of Gunpowder after Explosion.

To a certain extent, at least, an analysis of gunpowder after explosion is necessary, for the purpose of procuring data whence its force may, *a priori*, be calculated. The rest is only matter of curiosity, and we have borrowed the determination from the experiments of the late Mr Cruikshank, a name known to chemists as that of the discoverer of carbonic oxide. As far as this analysis may differ from that of others, it must be recollected that the separation of mixed gases is not a very easy problem. The mere collection of the total gaseous products is easy; and had the same method been followed by Robins and others, less difficulty would have been found in their computations. Had Count Rumford, and a numerous party of speculators on this subject, adopted so simple an expedient, they would not have had recourse to the expansive force of steam, or of the air contained within the charge, for an explanation of the cause and nature of the force.

By ramming a hundred grains of powder into a narrow metallic tube, furnished with a long handle, it is easily caused to burn under water, as the combustion is slow and safe when it is thus condensed; and this quantity is sufficient for any purpose of experiment. The tube being plunged under the water with its mouth downwards, under the bell-glass of the pneumatic apparatus, the powder may be lighted without any loss. This is done by introducing, into that part of the tube above the charge, which is purposely left empty, a crooked wire heated to redness. After the hot wire and the tube in this position are immersed under the bell, the former is brought into contact with the charge. To prevent the water from absorbing any portion of the carbonic acid, sulphuric acid may be added to it, as well as many other matters too obvious to mention; or else it may be heated. Thus the gaseous product may be collected and examined at leisure, by the means which chemistry furnishes, and which our limits will not permit us to detail.

To collect the solid product, it is most convenient to use a glass vessel, on account of the certainty of obtaining the produce, which is, in great part, carried up in smoke, and adheres to the receptacle in which the powder is burnt. But we need not describe the numerous modes in which this object can be attained; and shall only add, that to diminish the hazard, the powder employed for this purpose may be wetted without affecting the results.

The following statement, then, contains the gaseous produce of 100 grains, made of the proportions 75 nitre, 10 sulphur, 115 charcoal; the measure and weight being both included. The temperature is reduced to 65, and the barometric pressure to 29·5. The total gaseous produce measured 91 cubic inches, and the total weight 50 grains. Thus, about half the weight of the powder becomes converted into gas, and the remainder forms the solid produce.

	Grains.	Inches.
Azote	13·24	42
Carbonic acid	28·77	30
Carburetted hydrogen	2·70	9
Nitrous gas	3·25	6
Sulphuretted hydrogen	2·03	4
	49·99	91

The solid produce, however, appears in excess, possibly from being imperfectly dried; or else from some other unnoticed errors in the experiment. It is as follows:

	Grains.
Subcarbonate of potash	40
Sulphate of potash	11
Charcoal	3
Sulphur	0·5
	54·5

It is not difficult to account for these various products, and it is evident that the carbonic acid and the azote are the principal causes of the explosion. The decomposition of the acid, and the combustion of the charcoal, form the basis of the elastic force. It may be imagined that the hydrogen is the produce of contained water; but we consider that it is principally derived from the charcoal and from the sulphur. The two combinations which it forms are such as might be expected, and the nitrous gas requires no remark. Respecting the solid produce, the produce of the subcarbonate and sulphate of potash is a matter of course; and it is only necessary to point out the excess, of charcoal principally, of sulphur slightly. It is evident that more nitre would be required to consume them; but, as we formerly remarked, it is held expedient that there should be an excess in this way rather than in the other. We need not, however, dwell longer on this analysis; since, as far as the effects of gunpowder are concerned, it is the quantity, not the quality, of the produce that is an object of interest.

On the Sizes and Forms of the Grains in Gunpowder.

The variety in the effects of gunpowder, arising from differences in the sizes and forms of the grains, has been an object of much inquiry. The conditions of the problem are somewhat complicated. Within certain limits, which gunpowder made of nitre cannot exceed, rapidity of inflammation is essential to the production of a full effect. Not to inquire into other causes, without this property, a part of the charge is rendered useless by being blown out unburned; an accident not uncommon on ordinary occasions. This may also happen from the form of the piece and that of the charge; it will occur in a long charge or in a short piece, or, most of all, when both are united. Hence variations in the effect of gunpowder, which are independent of its quality, and which will render computations founded on that circumstance alone deceptive. As we have not room to dwell on this subject as it deserves, we must refer our readers to Robins and others who have written on it.

Now, this rapidity of inflammation may be attained, in some measure, in two ways; by intense heat, and by facility of transmission of the flame. But if a charge is considerable, no intensity of heat can compensate for the absence of the second condition. To put an extreme case: If the eight-pound battering charge of a 24-pounder were a single grain, it requires little thought to perceive that the shot would have quitted the gun before the charge was half burned. Hence granulation is as necessary for ensuring the full effect as it is for convenience. And thus, also, we are led to the cause of the bad consequences of hard ramming. A charge very thoroughly rammed, and lighted at the anterior end, would burn like a fuse or a squib; if lighted by a touch-hole, it will be blown out like a shot. Thus the rapidity of the inflammation is secured by multiplying as much as possible the intervals for the passage of the flame, or by diminishing the size of the grains. Yet there is a limit even to this; and as that can only be determined by experiment, it is from such trials that the grain for the smallest charges has been fixed. As the charge, however, increases in dimension, the volume of flame and the intensity of the heat produced admit of a grain of greater bulk, or one containing, in a given dimension, a smaller number of intervals. Much refinement on this subject being, however, unnecessary, one size is used for all ordnance; whilst an inferior size is made for muskets, and one still less for pistols. The powder manufactured for fowling-pieces is also of the smallest size.

But there is a further element concerned in this question; and that is, the different specific gravities of the different sizes of powder, or, what is especially to the purpose here, the different spaces occupied by the different sizes. The same measure which contains 172 grains of the smallest, contains 180 of the medium, and 195 of the largest. If powder be measured instead of weighed, it is evident that there will be one ninth more of the large than of the small-grained in a given charge. If weighed, the larger will occupy about one ninth less space. In either case the greater force will be excited by the large-grained, presuming that the inflammation is perfect. When it is weighed, as is the correct practice, it will not be very difficult to calculate the difference; as the force of the expanding fluid is in a certain inverse ratio of the space in which it is confined.

To increase the rapidity of inflammation, the French have manufactured spherical powder. The details of the process are such as would exceed the limits allotted to this article; but the principle may be understood by saying, that it is similar to that used by confectioners in making comfits. Angular grains are rolled in machinery adapted to that purpose, in powder dust slightly moistened; and thus small globules are formed. This grain is less liable to wear in travelling, from the absence of angles; but it is at the same time more tender, and less able to bear pressure, than pressed powder. Nor do the French experiments, either by the eprouvettes or the tables of practice, prove its superiority; on the contrary, the average results of its comparison with ordinary powder are unfavourable; and this also was observed in our own trial. Hence it has not been adopted in Britain.

Proving of Gunpowder.

To ascertain, by practical trials, the strength of gunpowder, is not merely a matter of curiosity, but of absolute necesssity. As the force in battering ordnance, and the range in mortar and howitzer practice, are regulated by the quantity of the charge, it is obvious that no regular practice in the field, or consistent results, will be obtained, unless the standard of strength in the powder is both known and invariable. This is particularly the case with mortar practice against small works or redoubts, or against the enemy's trenches; and also with howitzer practice against moving columns in the field. An invariable standard is, unfortunately, impossible; but it is always something to approximate to it. In military arrangements, a proof is also requisite, for the most obvious reasons, when powder is purchased from merchant manufacturers; not only that a minimum standard of strength may be fixed, but that, as far as is possible, the various qualities furnished may be reduced by mixture to an uniform standard.

It is usual, in the *first* place, amongst the workmen, as well as the merchants, to form a judgment of the quality of gunpowder by the aspect and firmness of the grain; and the latter, indeed, is a quality which is indispensable, if it is to be exposed to much land-carriage. The nicety of tact required for this is, however, only to be attained by practice, as in all other species of sampling. The moisture is judged of by weighing, and by subsequent drying and comparison. The quantity of this is a question of profit and loss in the purchase. But it is more important to ascertain its hygrometrical powers, by exposure to moisture after drying. That is the best which gains least weight by this operation; nor, in any case, should the absorption of water amount to $\frac{3}{4}$ per cent. It is also a common practice to try it by what is termed *flashing;* but this only serves to show whether it has been thoroughly ground; if not, the charcoal will produce sparks.

The trial of force is made by eprouvettes of different constructions, or else by practice. The most common eprouvette is a short chamber, provided with a gun-lock, the orifice of which is closed by a cover, connected with a graduated and ratchet wheel and spring. The quantity of the wheel's revolution is the esteemed measure of the force. But, often as this machine has been varied and improved, the results are so irregular, that it may fairly be considered as useless. Various other instruments for this purpose have been invented and tried; but, without figures, we could not render their constructions intelligible. Regnier's does not materially differ from the preceding in its principles; and the results are equally unsatisfactory. His hydrostatic one appears to be still worse. We may say the same of that described by Saint-Remy, and of another recommended by the Chevalier d'Arcy; and, of the whole, we would remark that the leading fault is want of simplicity. In a case like the explosion of gunpowder, where so many disturbing forces are always at hand to vitiate the true results, we cannot be too careful in eliciting all unnecessary causes of disturbance. If there is any one class of machinery in which simplicity is indispensable, it is that which belongs to gunpowder, under any of its relations.

We, however, consider that, as an eprouvette, Dr Hutton's pendulum is as free from exception as any machine can be. The disturbing forces are nothing, or as little as possible; the charging and firing admits of great uniformity; and, on trial, the consistency of the results justifies the expectations formed from its simplicity. In this pendulum, the barrel is fixed upon the bob, and the force of the gunpowder is therefore measured, not, as in Robins', by the impulse of a shot, but by the recoil. The indication of the extremity of the arc of vibration is made by a hand continuous with the pendulum rod, which moves an index furnished with a spring sufficiently strong to retain it at that point of a graduated arc where it was left by the movement of the hand. The barrel used for this purpose is an inch in diameter, and is charged with two ounces of powder put in loosely, without wadding or ball. In this, as in all other cases of eprouvettes, the standard of strength is arbitrary; and, for service, is assumed from the best average of gunpowder manufactured by government. The goodness of particular specimens is estimated by their agreement, or otherwise, with this standard.

Notwithstanding, however, the apparent accuracy of this method, artillery officers, both in France and in England, are not satisfied with it as a method of proving powder for service. It is perhaps right that practical men should, in a matter of so much importance, rely only upon such a method of proof as agrees best with the particular objects for which the material is intended. Yet it should also be recollected, that all Robins' conclusions respecting the force of gunpowder were drawn from experiments made on his balistic pendulum, and that the much more accurate ones of Dr Hutton, on which we now rely, were the results of the practice with that pendulum which we have just described.

The method of proving, then, adopted both in France and England, consists in real practice from a mortar at short ranges. In France a mortar is used of which the diameter is 0·191 metres, or nearly eight inches English, and that of the touch-hole somewhat less than two lines. The diameter of the ball is 0·1895 metres, and the windage consequently is ·0015. The weight of the ball is about sixty pounds. A troublesome verification of the diameter of the bore, of the vent, and of the shot, is made for each day's practice. The mortar is condemned when the diameter is enlarged to 0·192, or if that of the vent becomes ·0005 more than it ought to be. A difference of windage, amounting to ·0002 metres more than what is allowed, condemns the shot, or, as it may happen, the whole apparatus.

All these verifications are so tedious, and the wear of the mortar, the vent, and the shot, so rapid, that it becomes inconvenient and impossible to follow them so nicely in practice when there is much business. It is, therefore, found more convenient to make a standard trial for each day's proof, and to refer all the others to this one; instead of trying to preserve what becomes impossible in practice, an absolute and invariable range.

The English proof-mortar, therefore, nearly corresponds with the French, it being of the eight-inch calibre, and of brass. The shot is turned and polished so as to be true, and to have at the commencement the least practicable windage. During the progress of use, as the windage increases from the wear both of the bore and of the shot, the range becomes contracted; a circumstance which also follows from the enlargement of the vent, in consequence of which a greater proportion of the generated air escapes at that aperture. But, from the practice adopted with us, these variations are of no moment, till the range becomes contracted so as to render it expedient to replace the shot or the mortar, or both.

The quantity of powder that is used is four ounces, and the mortar being elevated to forty-five degrees, the range is measured in each trial. If the standard range for the day is 225 yards, the powder that gives a range of only 200 is rejected. The chief precautions requisite to procure fair results in this comparative method, are, to take care that the level of the platform and the elevation of the mortar are subject to no accidents; that the powder be fairly placed in the chamber; that the priming tube always reaches to the same depth within the charge; and that the mortar be brought to the same temperature at each experiment. For this purpose, it is to be cooled with water.

Musket powder is submitted to a different species of proof, founded on the same views of rendering the proof for each kind as nearly corresponding as possible with the purposes for which they are designed. A barrel fitted with a turned steel ball, and with as little windage as possible, is used for this purpose. The ball is discharged at the distance of a few yards only, against a compound butt, made of elm planks an inch thick, soaked in water, and separated at a short distance from each other. The extent of the penetration is the proof of the strength of the powder; and the trials in this case also are referred to a standard experiment made each day. Before concluding this subject, we must add, that trials are also made for the purpose of ascertaining the hygrometrical property of the powder to be purchased or issued. This is done by exposing a quantity for a given time in a box perforated with holes, and in a damp room, and then submitting it to the same proof.

Powder from Oxymuriate of Potash.

To increase the strength of gunpowder has been a favourite project with inventors at all times; most of them forgetting that the same end can be attained, as far as it is attainable, by augmenting the charge, and that neither the one nor the other is practicable without an entire reformation of the whole system of artillery. Could the force of powder be increased one half, for example, it would be necessary to condemn almost every gun in use; and not only every gun, but every carriage, breeching, ringbolt, nay, we might almost add, every ship in the service. And supposing a new species of ordnance invented to suit the new powder, it would require at least one half as much more of weight in guns and mortars; the same in gun-carriages, with additional strength in every object concerned about them. In the field, in the same manner, an increased number of horses would be required. This view presumes that the object is, what in fact it always has been with the herd of inventors on this subject, to gain additional force or range. If the purpose is only that of being enabled to reduce the quantity, and thus diminish the bulk and trouble of transportation, it is so trifling an object as scarcely to be worth attaining. With regard to the main intention, or that of gaining greater range and force, it is only necessary to say, that the powder is already too strong for the artillery.

As soon as the oxymuriate of potash was known, it became obvious that it would not answer the same purpose as nitre, but, from its more energetic action, produce a more rapid combustion. It was first proposed and made by M. Berthollet in 1786; but an accident having happened from it at Essone, by which many people lost their lives, it was abandoned. The proportions used were 80 oxymuriate, 5 sulphur, and 15 charcoal. Afterwards they attempted to make a modified compound, by using only a proportion of it with the nitre; but after various trials of this kind, the whole project was abandoned.

We have repeated Berthollet's method, at different times, and on a very large scale, without accidents; but we consider that the proportion of oxymuriate is too large, or at least that it is larger than is necessary. A better proportion appears to be 75 oxymuriate, 5 sulphur, and 20 charcoal. As this compound is very easily exploded by friction, it is necessary to be extremely cautious throughout the whole process, particularly in the granulations; nor is it safe to make more than one pound at a time. Of course, it may be mixed in wooden mortars, as it requires no large apparatus.

The great objection to its use is the facility with which it is inflamed by friction, or by a hard blow. The expense, indeed, would alone be an insuperable one, were there no other; as the price of this salt is more than twenty times that of nitre. It also corrodes the barrels very quickly. In fowling-pieces it is, however, of use; being the detonating priming of Forsyth's and Manton's gun-locks. We may add, that very good powder may be made from this salt and charcoal alone, in the proportion of eighty to twenty; but the grain is not very compact, and it is subject to the same faults as the former.

The action of this powder on the shot in a charge is very capricious, and far from intelligible. In the French trials, it was found to give ranges sometimes double and sometimes triple those of common powder, using the same weights. In various experiments made in this country, the ranges were double in a majority of comparisons, when moderate charges were used. But, by increasing the charges beyond this, the ranges, instead of increasing in the same ratio, began to contract; double the quantity producing but a moderate increase in the range, and a third proportion making an addition still less than the preceding. This, however, agrees with Robins' experiments on common gunpowder; and he has accounted for it by what he calls the triple resistance; proving, as he thinks, that whenever the initial velocity exceeds 1142 feet in the second, a vacuum is formed behind the shot, which, by increasing the resistance before it, speedily reduces the velocity to what it would have been with a smaller charge. We need say no more respecting a compound, the use of which is not likely to be ever extended beyond its application to the detonating gun-locks.

Keeping and Restôration of Powder.

Powder for service, whether by sea or land, is kept in barrels, containing each one cwt. the size of which is nearly that of a ten-gallon cask, and they are hooped with copper. It being difficult to keep dry casks water-tight, as indeed it was not thought necessary that they should be so, much powder was always rendered useless on service by wet. Lately copper linings have been very properly introduced, and the casks are now water-tight. As great quantities of powder, however, always have been, and always must be, returned unserviceable, it is an important object to be able to restore it, or render it useful, in the most economical manner.

Sometimes the grain is merely adhering, and can be shaken loose again; and this effect is not unfrequent even in magazines on shore. Such powder, when dried by restoring, appears sufficiently perfect; but it will be found that it is increased in bulk, and has become spongy and tender. On examination by the magnifying glass, it will also be perceived that the nitre is partially separated. Powder which has once undergone this change is deteriorated, yet is still fit for all ordinary purposes. It is not strong enough, however, to bear travelling; and should it be required for that purpose, it ought to be remilled, and granulated over again.

When the casks have been opened on service, before being returned, it is necessary to examine carefully whether they do not contain nails, or other foreign matters, an accident not uncommon. In such a case it is unsafe to commit them to the mill, and they must be reserved for extraction. When the powder has been so wetted as to be nearly formed into lumps, it is first necessary to examine, by the test of nitrate of mercury, whether the damage has been done by fresh or salt water. If by the latter, it must also be sent to the extracting house. If it has been very thoroughly wetted, even by fresh water, it will often be found that some of the saltpetre has been washed away. In this case it must be analyzed, so far at least as to determine the proportion of saltpetre wanting, which must be added to it in the mill. In the process of extracting, nothing more is necessary than to boil the powder in pure water, and to filter the solution through thick woollen bags. The crystals are purified exactly as in the case of rough nitre. This is a wasteful process, however, and, in all cases where it is possible, remilling is to be preferred.

On Accidental Explosions in Powder Manufactories.

This is a subject which deserves far more attention than it has yet received; and we can only regret that our researches do not enable us to add more to the present suspicions as to the causes of these, than the little which follows. That want of sufficient care is the general source of these disasters is, however, certain; as certain merchants' mills have been celebrated for them, whilst in others, as well as in those belonging to the government, they have been extremely rare. Such accidents may take place in any part of the works; but they are most frequent, as well as least injurious, when they happen in the mills, the quantity of powder in these never exceeding fifty lbs. It ought at least to be an invariable rule to remove each charge to the pressing-house as soon as it is completed.

We have already hinted at the cause of the explosions in the mills, when they happen at the time of removing the powder from beneath the stones. As stamping-mills are not used in this country, it may be thought superfluous to remark, that, in these cases, this accident sometimes happens from attempting to remove, by a mallet and chisel, the lumps of powder which adhere to the pestles. It is one of the inconveniences attached to that mode of grinding. But it is also proper to observe, that the mills are sometimes blown up whilst working; and, from some examinations which we have made, we have little doubt that this has arisen from fragments of the stones falling off, and being bruised together with the powder. We indeed consider metallic rollers as every way safer than stone ones; since they can only produce fire in case of friction in contact during the removal of the charge. If iron be held objectionable, it is easy to face them with a sheet of copper; but it is proper to recollect that even thus the chances of explosion from friction are not removed. It is a great mistake to suppose that the absolute hardness of any metal is indispensable to the production of explosion in gunpowder. A blow sufficiently powerful, or friction caused by sufficient weight and rapidity, will compensate for the absence of this, in very soft metals, as well as in many other substances which do not readily give fire. Limestone we consider as a very objectionable substance. Excepting that of Carrara, we know of none, either primary or secondary, which does not contain much silica; often, indeed, particles of quartz sand. In the secondary calcareous rocks it is universal, nor is even the finest white marble of Carrara always exempt, as is well known to statuaries. But the softness even of the purest limestones is no defence; as the friction between these is still more capable of setting fire to gunpowder than that of iron. The readiest way of putting these different substances to the test is by experiments in fulminating silver (that of Howard); as the irritability of this substance enables us to ascertain the facts with a moderate and convenient force.

We know of no explosions in the stove, except in one noted instance, when it was pretty well ascertained to have been produced by a workman, who had determined on suicide in this manner. In the steam stove it can never happen from overheating; but as the floor must necessarily be dry when the workmen enter to remove the powder, instead of being wet, as it always is in the other houses, it requires additional care respecting the feet of the people employed. The only method that is quite safe, in all houses and magazines, is to oblige the workmen to labour barefooted. The heavy leather slippers in common use are far from safe; as, from not fitting well, they are frequently dragged along; in which way they may easily entangle particles of sand. It ought to be known to all powder-makers, that the breaking of a fragment of quartz, or the sufficient friction of two grains between copper, or even wood, is capable of igniting gunpowder. This is more particularly the case when the finer charcoals are used; as it is this which is the susceptible ingredient.

Explosions in the pressing and granulating house have happened much too often, nor have the causes been ascertained. As there is a considerable quantity of powder always present here, these are of a very serious nature. It would be proper that these two buildings should always be separated, and, in the usual way, by a work of earth. The old granulating houses are far from safe, as the cranks and other parts of the moving machinery are contained within the house, which is always filled with the dust of the powder. It is trusting too much to the attention of persons, whom practice renders habitually careless, to expect that they will always keep the parts oiled. It is easy to remedy this evil by entirely separating the working machinery from the granulating engine, which may be suspended and steadied by ropes, so as to avoid all chance of friction.

In the pressing house there seem to be two sources of danger, both of which may be obviated. It is easy for powder to become entangled among the threads of the screw; and the consequence of this must be obvious. This would be remedied by adopting Bramah's press. We also think that the sudden condensation of air entangled among the fragments in the pressing box may be sufficient to produce fire. Whether this be the case or not, it will always be prudent to make the first pressure as slowly as possible, that the air may be allowed to escape.

We have observed three other causes for accident, though neither of them belong properly to the manufacturing houses. It is, nevertheless, very important that they should be generally known. Charcoal, in certain cases, is liable to take fire spontaneously, and that even in the lump. This is a case exactly analogous to the pyrophorus of Homberg; and it unquestionably arises from the same cause, namely, the presence of a portion of potassium. It is an accident which, we imagine, can only happen to charcoal made in retorts; as, in the pit method, the potassium could scarcely be expected to escape combustion. The precautions hence requisite, respecting the stowage of charcoal, and the place of the distilling houses, must be evident. When in a state of powder, and under pressure, it also has been known to inflame; and, possibly, from the same cause.

We are not aware that it is usual to keep many waggons and powder-cart tilts about powder magazines; but we do know that this has happened, and with the effect of producing fire. It ought to be generally known, for many other reasons, that fresh painted canvass, stowed close, is subject to spontaneous combustion.

Lastly, it has frequently been observed that fire was struck in closing up the powder barrels, as well on board ships as in magazines; an accident which was supposed impossible, since both copper hoops and hammers are exclusively used. We at length discovered that this accident had arisen from using cast rivets, in the surface of which the sand of the mould had become entangled. Hence the obvious necessity of using none but forged copper rivets; and since the adoption of these in the government stores, this accident has been unknown.

On the Force of Gunpowder when Fired.

It remains to inquire, whether there are any means, *a priori*, of determining the explosive force of gunpowder, and of discovering what that is or ought to be. Many calculations have been made on this subject, and some of them, we need scarcely say, are deserving of great regard, although by no means in accordance with each other. Many, on the contrary, proceed on principles so often gratuitous or false, as to be entitled to no consideration. When we consider the reputation of some of the authors of these speculations, and the real knowledge of the true cause of explosion which was then in existence, the history of these opinions, and thus of the deduced results, is not a little curious.

Lemery, Wolf, Papin, and some others, considered that the cause of the explosion was to be sought in the rarefaction of air contained in the interstices of the powder; forgetting, that in a rocket, which can contain none, the production of air was sufficient to communicate and maintain a considerable velocity during the whole time of the combustion. John Bernoulli imagined that this air contributed an eighth part of the force only, and that the remainder arose from water contained in the saltpetre. Muschenbroeck, Stahl, Beaumé, and Macquer, again, considered the whole effect as produced by the conversion of the water of the nitre into steam; an error quite unpardonable in the two last chemists, who ought to have known that nitre contained little or no water of crystallization; and still more so in Count Rumford, who has followed them in this theory. Lombard, attempting to improve on it, adds to the expansion of steam that of the nitric acid. The Abbé Nollet allows the water but a share in the explosion. But, not to enumerate more of these hypotheses, we shall only mention further, that of those who have attributed the expansive force to the conversion of latent into free or radiant caloric, as they have thought fit to term it.

It would have been much more easy and correct to have put this question to the test of experiment, when the real cause would have immediately appeared. It was sufficiently unpardonable, in the greater number of these persons, not to have inquired what had been done before them; since Boyle, Hales, Hawksbee, and others, were aware that the combustion of gunpowder produced a permanently elastic fluid; although their mode of obtaining it in an exhausted receiver was not a very accurate one. Hawksbee found that one grain of powder, when fired *in vacuo*, produced a cubic inch of a permanently elastic fluid, and that the same result was obtained in air. Hence, though not acquainted with modern chemistry so as to be aware of the nature of the generated gas, he knew well that it could not have arisen from the expansion either of air or water contained in the powder. The inaccuracy of Count Rumford's views, and the extraordinary results of his numerous and laborious experiments, exceed, however, all that has been done on this, or perhaps on any subject in modern experimental philosophy.

The history of opinions respecting the explosive force of gunpowder, and all alike pretending to be deduced from experiments, is scarcely less amusing than the hypothesis respecting the cause, although rendered much more marvellous by their extraordinary discrepancy. John Bernoulli considered the initial force as equal to 100 times the pressure of the atmosphere; whilst Daniel Bernoulli made it 10,000. Bracehus determines it at 450, D'Antone as lying between 1400 and 1900, and Ingenhouz at 2276. According to Dulacy it is 4000, by Amontons it is estimated at 5000, and by Lombard it is stated at 9215. After this there is a rapidly increasing estimate among other experimenters; Monsieur le General de la Martillière representing it at 43,600, Count Rumford at 54,750; and Monsieur Gay de Vernon, who outdoes all his competitors, stating it as making from 30,000 to 80,000.

Amongst the French, Gilot's experiments appear the only tolerably accurate ones, as he states the produce of 100 lbs. of powder in gas to be 463 cubic feet. This, however, is considerably under the truth, at least in the present French powder, as well as in our own. Of course, this is not meant to represent the total force; but he has not given any statement of the increase of volume produced by the temperature on firing. The coincidence between Robins' and Gilot's results is, however, considerable; but the French philosopher is beyond the truth.

According to Robins, from experiments made in an exhausted receiver, the produce of gas from a given quantity of powder, bulk for bulk, is 236; or one cubic inch of powder produces 236 inches of elastic fluid at the mean temperature and pressure. If the powder be rammed into the smallest possible space, the produce is double, or 472 inches of air; as it may be condensed, by hard ramming, into half the space which it occupies when loose. But we must beware of assuming this as an element in the computation of the initial force, however true a representation it is of the fact, abstractedly considered. In practice, powder would produce no corresponding effect in this state, because the ball would have quitted the piece before it was half burned. Now, Mr Robins' experiments tally very nearly with our own, as formerly stated; the produce from rammed powder being about 520 on an average of trials, which, being reduced in the proper ratio for powder as it is fired, gives 260 instead of 236. It is not impossible but that our powder may have been superior to his.

Thus much for the permanent produce. But there is another important element required, before the expansive force of the powder at the time of firing can be determined, and the initial velocity calculated. This is the augmentation of bulk produced by the elevated temperature which results from the combustion. According to Robins, that is such as to render the pressure, or force of the generated fluid at the moment of explosion, equal to 1000 atmospheres. Dr Hutton, more justly, states this at 2000; a force far short of the imaginary ones which we have quoted above.

We should have proceeded to examine the experiments on which this determination was founded, and to compare the calculations with the results of practice. But our limits warn us that we must draw this article to a close; and we shall therefore refer our readers to the writings of Robins, Euler, and Hutton, on this subject, as alone deserving of attention. Yet we cannot conclude, without suggesting the only method, a method yet untried, by which the true force of the explosion may be discovered *a priori;* or, at least, the real bulk of any given quantity of the generated gas, at the moment of inflammation, may be ascertained. It is a heat which cannot be conjectured, and to which no true approximation has been made by any method yet used.

By firing the given charge of gunpowder under a given quantity of water or mercury, it is easy to measure the temperature to which it is raised. Hence, recurring to the difference of capacity for heat between either of these substances and the generated gas, to their relative quantities, and to the law for the expansion of gaseous fluids by heat, as determined by Gay-Lussac, the problem may be solved, for that case at least; as we are fully sensible that no rule truly applicable to all cases can be established, when the numerous variations to which, in practice, the conditions are liable, are considered.

Gun-Smithery, the business of a gun-smith, or the art of making fire-arms of the smaller sort, as muskets, fowling-pieces, pistols, and the like. See Gun-Making.

GUNSBURG, a bailiwick of the circle of the Upper Danube, in the kingdom of Bavaria, extending over 130 square miles. It contains two cities, two market-towns, and forty-eight villages, with 18,620 inhabitants. It is a fertile district, productive of corn, cattle, hops, flax, and timber. The capital is a city of the same name, situated at the point where the Guntz falls into the Danube. It contains 596 houses, and 3460 inhabitants, and has considerable trade by inland navigation. Long. 10. 11. E. Lat. 48. 27. N.

GUNTER, Edmund, an excellent English mathematician and astronomer, was born in Hertfordshire in 1581, and studied at Westminster-school, whence he removed to Oxford, where he took the degree of master of arts in 1606, and afterwards entered into holy orders. In 1615 he took the degree of bachelor of divinity; but being peculiarly eminent for his knowledge in the mathematics, he had two years before been chosen professor of astronomy in Gresham College, London, where he distinguished himself by his lectures and writings. He invented a small portable quadrant; and also the line of proportions which, after the inventor, is called *Gunter's scale.* He likewise published *Canon Triangulorum;* and a work on the sector, cross-staff, and other instruments. This last was published, with an English translation of the *Canon Triangulorum*, in 4to, by Samuel Foster, professor of Gresham College. Mr Gunter died at that college in 1626.

Gunter's Line, a logarithmic line, usually graduated upon scales, sectors, and the like. It is also called the *line of lines* and *line of numbers;* being only the logarithms graduated upon a ruler, which therefore serves to solve problems instrumentally in the same manner as logarithms do arithmetically. It is usually divided into 100 parts, every tenth of which is numbered, beginning with 1 and ending with 10; so that if the first great division, marked 1, stand for one tenth of any integer, the next division, marked two, will stand for two tenths, 3 for three tenths, and so on; and the intermediate divisions will in like manner represent hundredth parts of the same integer. If each of the great divisions represent 10 integers, then will the lesser divisions stand for integers; and if the greater divisions be supposed to be each 100, the subdivisions will be each 10.

Use of Gunter's Line. 1. *To find the product of two numbers.* From 1 extend the compasses to the multiplier; and the same extent, applied the same way from the multiplicand, will reach to the product. Thus if the product of 4 and 8 be required, extend the compasses from 1 to 4, and that extent laid from 8, the same will reach to 32, their product. 2. *To divide one number by another.* The extent from the divisor to unity will reach from the dividend to the quotient. Thus, to divide 36 by 4, extend the compasses from 4 to 1, and the same extent will reach from 36 to 9, the quotient sought. 3. *To three given numbers, to find a fourth proportional.* Suppose the numbers 6, 8, 9: extend the compasses from 6 to 8; and this extent, laid from 9 the same way, will reach to 12, the fourth proportional required. 4. *To find a mean proportional between any two given numbers.* Suppose 8 and 32: extend the compasses from 8, in the left-hand part of the line, to 32 in the right; then bisecting this distance, its half will reach from 8 forward, or from 32 backwards, to 16, the mean proportional sought. 5. *To extract the square-root of any number.* Suppose 25. Bisect the distance between 1 on the scale and the point representing 25; then the half of this distance, set off from 1, will give the point representing the root 5. In the same manner the cube root, or that of any higher power, may be found by dividing the distance on the line between 1 and the given number into as many equal parts as the index of the power expresses; then one of those parts, set from 1, will find the point representing the root required.

Gunter's Quadrant, an instrument made of wood, brass, or other substance, containing a kind of stereographic projection of the sphere, on the plane of the equinoctial; the eye being supposed to be placed in one of the poles.

Gunter's Scale, called by navigators simply the *Gunter*, is a large plain scale, generally two feet long, and about an inch and a half broad, with artificial lines delineated on it, of great use in solving questions in trigonometry, navigation, &c.

GUNTOOR, one of the districts in Hindustan, on the western side of the Bay of Bengal, called the Northern Circars. It is situated principally between the sixteenth and seventeenth degrees of north latitude, and lies immediately north of the Carnatic, and south of the river Kistnah or Krishnah, which separates it from Condapilly. It is the most southerly of the Northern Circars, and comprehends an area of about 2500 square miles, exclusively of the mountainous district on the west. This district was the jaghire of Bassalut Jung, the brother of the nizam, when Lord Clive obtained, in 1765, the Northern Circars from the Mogul, on which account he was allowed to retain it during his life; but after this it was to devolve to the Company. He died in 1782, but the country was not taken possession of by their agents till 1788. It is a low, flat country, better calculated for growing rice than the more valuable grains. Its principal sea-port is Mootapilly, and its principal towns are Guntoor, Condavir, Bellumcondah, and Nizampatam. With the addition of Palnaud, the Guntoor territory now forms one of the districts under the Madras presidency, into which the Northern Circars were divided when the present Bengal judicial and revenue system was established. Guntoor is the capital. Long. 80. 20. E. Lat. 16. 12. N.

GUNWALE, or GUNNEL, is the uppermost wale of a ship, or that piece of timber which reaches on either side from the quarter-deck to the forecastle, being the uppermost bend which finishes the upper works of the hull, in that part in which are put the stanchions that support the waste trees.

GURDAIZ, a town in the Afghan territories, in the province of Cabul, thirty-nine miles east by south from Ghizni. Long. 68. 53. E. Lat. 33. 31. N.

GURRAH, a town of Hindustan, in the province of Malwah, in a district of the same name. It had formerly a mint. It lies a hundred and forty miles north by east from Nagpoor. Long. 80. 15. E. Lat. 23. 10. N. The district is situated about the twenty-third degree of north latitude. It was formerly the seat of a considerable Hindu principality, but was conquered by the troops of the Emperor Akbar, and afterwards by Aurungzebe. It has been estimated to contain 25,000 square miles of high, mountainous, and unproductive territory. The principal towns are Gurrah, Panagur, and Mundlah; whilst the Nerbuddah, which has its source on the eastern frontier towards Gundwanah, is the chief river. It is a thinly populated and imperfectly cultivated district, though many parts of it are remarkably fertile.

GURRUMCONDAH, a strong-built fort and town, the capital of a district of the same name, a hundred and twenty-five miles west-north-west from Madras. Long. 78. 40. E. Lat. 13. 45. N. It was besieged in 1791 by the nizam's army, assisted by a small detachment of the British, but was afterwards taken by Hyder Sahib, Tippoo's son. The district, which is situated between the thirteenth and fourteenth degrees of north latitude, is of a mountainous surface, abounding in strong positions, and is now comprehended in the collectorship of Cuddapah.

GURUDWARAH, an extensive village of Northern Hindustan, in the province of Serinagur. It is noted for a handsome temple erected by Ram Roy, the founder of the Sikks; also for a great annual fair held at the vernal equinox, and numerously attended by pilgrims from Lahore and the western countries. The surrounding district is remarkably fertile, but much oppressed by the heavy exactions of the Nepaulese government.

GURWAL, a province of Northern Hindustan, situated at the foot of the Himalaya Mountains, principally between the thirtieth and thirty-first degrees of north latitude. The great Himalaya range separates it from Thibet on the north; on the south it has the plain of the Ganges; to the east the Dauli, Alacananda, and Ramgunga rivers; and to the west the Jumna. It comprehends an area of 9000 square miles. This country formerly included the province of Kemaon; and in 1814 the Ghoorkhas had possession of the whole tract which extended northward to the dependencies of China. Since the country was conquered by the British, it has been divided into two distinct portions, the British government having retained possession of the Deyrah Doone, the passes of the Ganges and Jumna, at either extremity of that valley, as also all the country to the eastward of the Alacananda and Bhagirathi, which last tract has been annexed to Kemaon, and the remainder restored to the expatriated rajah. The present boundaries, therefore, of his territories are the Alacananda, from Rudraprayag until its conjunction with the Bhagirathi, and thence to the plains by the united streams of the Ganges, and above Rudraprayag, where the Alacananda receives the Mandakini by the latter river. The territory to the east of that line has been permanently annexed to Kemaon. This country being the commencement of the Himalaya Mountains, presents to the southward, towards Lolldong, an assemblage of hills jumbled together in many forms and directions; sometimes in chains lying parallel to each other, but of no great extent, and often connected at their termination by narrow ridges running across the valleys at right angles. The summits of all are usually narrow, and of various shapes, and the distance between each other short; and so confined are the valleys, that it is scarcely possible within their narrow limits to accommodate a corps of 1000 men. These ranges are occasionally covered with trees; others are naked and stony, affording shelter for neither birds nor beasts. On the eastern borders of this province, amongst the lower ranges of the mountains, are extensive forests of oak, holly, horse-chestnut, and fir; and beds of strawberries are also seen (denoting the temperate nature of the climate), which equal in flavour those of Europe. From Lolldong to the Ganges the country forms, with very little interruption, a continued chain of woody hills, which extend eastward to an indefinite extent. The elephant abounds in these forests, but is greatly inferior in size and strength to the Chittagong elephant, on which account it is seldom domesticated. On the eastern borders there are hill pheasants among the mountains, which seldom, however, venture into the valleys, unless compelled by heavy falls of snow. A small portion of the country is only cultivated, a great proportion being left in the undisturbed possession of the wild animals. Gurwal is tolerably well watered by the head streams of the Ganges. The Bhagirathi and Alacananda, whose junction forms this great river, are the largest streams in the country. The Bilhang, which falls into the Bhagirathi, the Mandakini, the Pinden, the Mandaioki, the Birke, and the Dauli, all of which join the Alacananda, may be considered as streams of the second order. Most of these streams have their sources in the Himalaya Mountains; the Dauli penetrates these mountains, and is the remotest source of the Ganges. None of them are fordable; and they are crossed by rope and platform bridges, at the most convenient points of communication, the rocks and stones which encumber their channel preventing the use of boats. The roads are merely foot-paths, carried along the slope of a mountain in the direction of the principal streams and water-courses. Those leading to Bhadrinath are annually repaired for the accommodation of pilgrims, who congregate in great numbers at this sacred resort; but they are almost impracticable for cattle. This province abounds with celebrated places of worship, which have been held sacred for many ages, although the conversion of the inhabitants to the Brahminical faith is not of any very ancient date. Four of the five places noted for the holy junctions of rivers, and celebrated for their sanctity, are within the limits of this province.

Gurwal was a dependent province on some of the neighbouring and more powerful hill states until the reign of Mohiput Shah, who declared himself independent, and built Serinagur, where he resided. His son was his successor, and he was succeeded by his uncle's son, who considerably extended the Gurwal territories to the north, penetrating into Thibet, and exacting a tribute from the rajah of Deba, which continues to the present day. Gurwal was subdued by the Nepaulese about the year 1803. The rajah sold the family throne for 150,000 rupees, and retired into the British territories, where, having raised some troops, he returned and fought a battle with the invaders of his territories, in which he was defeated and slain. After the country was conquered by the British in 1814, part of his dominions, with a revenue of 40,000 rupees, was restored to the rajah. But Serinagur, the chief town, is within the territory reserved by the British. The rajah has consequently fixed his residence at Barahaut, where the details of his civil government are conducted by his own officers, and he is under the protection of the British government. The district over which he rules was estimated by the Nepaulese, when they were in possession of the country, to contain 25,720 inhabitants; a very scanty population for so extensive, and in many places so fertile, a tract of country. (See Buchanan's *Travels*, Hamilton's *Description of Hindustan*, &c.)

GUNZENHAUSEN, a bailiwick in the circle of the Rezat, in the kingdom of Bavaria, extending over eighty-eight square miles. It contains one city, one market-town, and fifty-two villages, with 14,670 inhabitants. It is generally a light sandy soil, but well cultivated by a prosperous peasantry. The capital, of the same name, is a city situated on the river Altmuhl. It is walled, and has three churches, 298 houses, and 1864 inhabitants, of whom many are tanners.

GUSTAVUS I. king of Sweden, was son of Eric de Vasa, duke of Gripsholm. Christian II. king of Denmark, having made himself master of the kingdom of Sweden, confined Gustavus at Copenhagen; but the latter making his escape, wandered for a long time in the forests, till the cruelties of the tyrant having occasioned a revolution, he was first declared governor of Sweden, and then in 1513 elected king. This prince introduced Lutheranism into his dominions, which in a little time spread itself all over the kingdom. He died in 1560; having made his kingdom hereditary, which was before elective. See SWEDEN.

GUSTAVUS Adolphus, surnamed the *Great*, king of Sweden, was born at Stockholm in 1594, and succeeded his father Charles in 1611. He espoused the cause of the Protestants in Germany, who were oppressed and almost entirely ruined by the Emperor Ferdinand. He was a great warrior, and gained many victories, but fell at last in the battle of Lutzen. See SWEDEN.

GUSTROW, a duchy of the dominion of Mecklenburg-Schwerin, which came to that dukedom in 1695. It is an extensive district, containing 140,000 inhabitants. The city of Gustrow is a large old town, and its walls have been converted into pleasant walks and gardens. It contains 823 houses, with 8264 inhabitants. There is a large palace, said to have been built by the Austrian general Wallenstein, but now used as a prison. The chief trade is brewing and distilling.

GUTPURBA, a small river of Hindustan, which takes its rise in the Western Ghauts, and, after a short course, falls into the river Kistnah, near the village of Almady. Long. 76. 5. E. Lat. 16. 37. N.

GUTTA, a Latin term for what in English we call *drop*.

GUTTA Serena, a disease in which the patient, without any apparent fault in the eye, is deprived of sight.

GUTTA, in *Architecture*, an ornament in the form of a little cone, used in the Doric corniche, or on the architrave underneath the triglyphs, representing a sort of drop or bell.

GUTTURAL, a term applied to letters or sounds pronounced or formed as it were in the throat.

GUTTY, in *Heraldry*, a term used when any thing is charged or sprinkled with drops. In blazoning, the colour of the drops is to be named; as gutty of sable, of gules, and so forth.

GUY, THOMAS, an eminent bookseller, founder of the hospital for sick and lame in Southwark which bears his name, was the son of Thomas Guy, lighterman and coal-dealer in Horsley-down, Southwark. He was put as apprentice, in 1660, to a bookseller in the porch of Mercer's Chapel; and set up trade with a stock of about L.200, in the house which formed the angle between Cornhill and Lombard Street. The English bibles being at that time very badly printed, Mr Guy engaged with others in a scheme for printing them in Holland, and importing them; but this being put a stop to, he contracted with the university of Oxford for their privilege of printing them, and carried on a trade in bibles for many years to a considerable advantage. The bulk of his fortune, however, was acquired by purchasing seamen's tickets during Queen Anne's wars, and by South-Sea stock in the memorable year 1720. To show what great events spring from trivial causes, it is asserted that the public owe the dedication of the greater part of his immense fortune to charitable purposes, to the indiscreet officiousness of his maid-servant in interfering with the mending of the pavement before his door. Guy, it seems, had agreed to marry her, and, preparatory to his nuptials, had ordered the pavement before his door, which was in a neglected state, to be mended, as far as a particular stone which he pointed out. The maid, whilst her master was out, innocently looking on the paviers at work, observed a broken place they had not repaired, and mentioned it to them; but they told her that Mr Guy had directed them not to go so far. "Well," said she, "do you mend it; tell him I bade you, and I know he will not be angry." It happened, however, that the poor girl presumed too much on her influence over her careful lover, with whom a few extraordinary shillings of expense turned the scale totally against her. The men obeyed; Guy was enraged to find his orders exceeded; his matrimonial scheme was renounced; and, instead of marrying, he built hospitals in his old age. In the year 1707 he built and furnished three wards on the north side of the outer court of St Thomas's Hospital in Southwark, and gave L.100 to it annually for eleven years preceding the erection of his own hospital; and, some time before his death, he erected the stately iron gate, with the large houses on each side, at the expense of about L.3000. He was seventy-six years of age when he formed the design of building the hospital which bears his name, contiguous to that of St Thomas's; and he lived to see it roofed in, having died in the year 1724. The charge of erecting this vast pile amounted to L.18,793, and he left L.219,499 to endow it; a much larger sum than had ever before been dedicated to charitable uses by any one man in this kingdom. He erected at Tamworth in Staffordshire, the place of his mother's nativity, and of which he had been representative in parliament, an alms-house, with a library, for fourteen poor men and women; and for their pensions, as well as for putting out poor children as apprentices, he bequeathed L.125 a year. Lastly, he bequeathed L.1000 to every one who could prove himself related to him in any degree, however remote.

Guy, a rope used to keep steady any weighty body whilst it is hoisting or lowering, particularly when the ship is shaken by a tempestuous sea.

Guy is likewise a large slack rope, extending from the head of the main-mast to the head of the fore-mast, and having two or three large blocks fastened to the middle of it. This is chiefly employed to sustain the tackle used to hoist in and out the cargo of a merchant ship, and is accordingly removed from the mast-head as soon as the vessel is laden or delivered.

Guy's Cliff, in Warwickshire, a great cliff on the west side of the Avon and the north side of Warwick, where in the time of the Britons there was an oratory, and in that of the Saxons an hermitage, and where Guy, earl of Warwick, is said to have retired after being fatigued with the toils and pleasures of the world, to have built a chapel, and cohabited with the hermit. This hermitage was kept up till the reign of Henry VI. when Richard Beauchamp, earl of Warwick, established there a chantry, which derived its name from the king-maker, and, in memory of the famous Guy, erected a large statue in the chapel, eight feet in height, at the same time raising a roof over the adjacent springs.

GUYON, Jeanne Bouviers de la Motte, a French lady, memorable for her writings, and for her sufferings in the cause of quietism, was descended from a noble family, and born at Montargis in 1648. She was daughter of Claude Bouvier, seigneur of La Motte-Vergonville, and master of requests. At a very early age she exhibited extraordinary symptoms of illumination, and tried to take the veil before she was of age to dispose of herself; but her parents obliged her to marry a gentleman to whom she had been betrothed in nonage. She was a widow at the age of twenty-eight; when, distinguishing herself in the way of contemplation and prayer, and making many converts to quietism, complaints were made of her spiritualism, and she was by order of the king confined for eight months. At the end of this period she was discharged; but being afterwards involved in the persecution of the Archbishop of Cambrai, she was thrown into the Bastille, where she underwent many examinations; but nothing being made out against her, she once more obtained her liberty, and lived in private till her death, which happened in 1717. Madame Guyon spent her latter years in mystical reveries; covering her tables, ceilings, and every part of her residence, with the sallies of a visionary imagination.

It is by no means proved that the *Vie de Madame Guyon, écrite par elle-même*, which was printed after her death, is entirely of her composition. It seems indeed to have been composed from different memoirs furnished by herself, first, to the official or judge of the bishop's court, Chéron, and then to the Bishop of Meaux at the time of the conferences of Issy. These materials, collected by a redacteur still more mystical than herself, appeared at Cologne, 1720, in three vols. 12mo. The verses of Madame Guyon, or at least those which are attributed to her, were collected and published at Amsterdam, 1689, in five vols. 8vo, under the title of *Recueil de Poésies Spirituelles;* a collection which was freely translated into English by William Cowper. This lady is also believed to have been the author of *Cantiques Spirituels, ou Emblèmes sur l'Amour divin*, in five volumes; and *La Bible traduite en Français, avec des Explications et des Réflexions qui regarde la Vie intérieure*, Cologne, 1715, in twenty vols. 8vo. Her treatise on Spiritual Torrents, after having been long circulated in manuscript, was printed, for the first time, in her *Opuscules Spirituels*, Cologne, 1704, in 12mo, with a preface describing her person. Besides these, her *Lettres Spirituelles* form four vols. in 8vo; so that her works extend in all to thirty-nine volumes, which, however, are scarcely read now-a-days, except from curiosity. (See the article Fenelon.)

Guyton de Morveau.

GUYTON DE MORVEAU, Baron Louis Bernard, a celebrated chemist, known also as an advocate of eminence, and less advantageously, in his political character, as a regicide, was the son of Antony Guyton de Morveau and Margaret de Saulle his wife, and born at Dijon, on the 4th of January 1737.

His father was of a respectable family, and filled the situation of professor of the civil law in the university of Dijon. He was fond of building; and, from the artificers who were frequently employed about his house, young Guyton appears to have derived, almost in his infancy, a taste for mechanical pursuits, which led to an astonishing development of premature talent. For when he was only seven years old, he prevailed on his father to purchase, for his amusement, a clock which was greatly out of repair, and, as is said, he actually put it together and remedied its defects, without any assistance, so effectually, that it continued to go extremely well for fifty or sixty years afterwards. The next year he was equally successful in cleaning and repairing a watch belonging to his mother. But, notwithstanding these remarkable exertions of ingenuity, it does not appear that they depended on any particular bent of the genius to the cultivation of the mechanical arts; at least no such bias was ever exhibited in any of his subsequent pursuits. His education was conducted in the ordinary manner at a provincial school or college, which he left at sixteen. Upon his return home he applied, for a short time, to botany, and he was soon afterwards admitted as a student of law in the university of Dijon, where he remained for three years, and then removed to Paris, in order to continue his studies at the bar. In 1756, he paid a visit to Voltaire at Ferney; and he seems to have imbibed from this personage a taste for satirical poetry, which he soon afterwards displayed, upon the occurrence of a trifling accident, in a ceremony relating to a popular Jesuit of the day. Amongst his posthumous papers, he also left some unfinished sketches of tragedies, which are said not to have been deficient in poetical merit.

At the age of twenty-four, when he made some progress in the practice of his profession as an advocate, his father procured for him, at the price of 40,000 francs, the appointment of advocate-general of the parliament at Dijon, so that he had no farther solicitude for the acquisition of an income adequate to his competent subsistence. His health was then considered as delicate; but the fears which were entertained for it proved to be completely groundless.

In January 1764, he was made an honorary member of the Academy of Sciences at Dijon, then lately established under the patronage of the Prince of Condé. This occurrence seems to have had considerable influence on the pursuits which occupied his leisure hours; and he soon became by far the most distinguished ornament of the academy which had paid him this compliment. His particular application to chemistry arose in a great measure out of an accidental emulation with Dr Chardenon, who afterwards very liberally undertook to assist him in the cultivation of this branch of science. He studied the works of Macquer and of Beaumé, and he was furnished by the latter with the materials necessary for the establishment of a small laboratory for his own use.

With regard to the more general cultivation of literature and science, he displayed considerable talent in a memoir on public instruction, together with a plan for a college, which he presented to the parliament of Burgundy, insisting, with great force and success, in opposition to Diderot, on the importance of early education in modelling the character of the human mind. About the same time he also wrote a prize essay, an Encomium on Charles V. of France, surnamed the Wise, which was afterwards inserted in the collection of his *Discourses*, published in three volumes.

In July 1767, he visited Paris with a view to the advancement of his scientific pursuits, and excited the admiration of the most celebrated chemists of the day, by the facility which he had acquired in the manipulation of his experiments. He entered, after his return, into the investigation of the great question respecting the oxidation of metals, though he did not succeed in removing the difficulties which then embarrassed it. In 1769, he pronounced, at the opening of the parliament, an elegant oration upon morals. He was soon afterwards engaged in some experiments respecting the communication of heat to different substances, the results of which, though not published, were of some importance to the theory of temperature. At the request of his friend Dr Durande, he undertook to inquire into the nature of biliary calculi, which he found to be readily soluble in ether; and it appears that a combination of ether and oil of turpentine proved of advantage to several of Dr Durande's patients, who were suffering from these concretions.

In the year 1773 he was employed in an interesting investigation of the mutual adhesion of the surfaces of solids and fluids, a class of phenomena of which the mathematical theory was never at all understood, until the publication of an essay on the Cohesion of Fluids in the *Philosophical Transactions*, soon after the beginning of this century, in which the laws of capillary action are extended to a complete analogy with all the experiments of M. de Morveau, as well as those of Taylor and Achard of a similar nature. He succeeded, about the same time, in discovering a mode of destroying the contagious vapours of pestilential diseases, by fumigation with the muriatic acid gas; he afterwards found the oxymuriatic acid, or pure chlorine, still more effectual; and it does not appear that the nitric acid, since proposed in England, has any advantages over either of these substances.

M. de Morveau's anxious desire to co-operate in the promotion of chemical knowledge induced him to make a new exertion in its favour, by undertaking, in 1776, to deliver a public and gratuitous course of lectures as a regular professor of the science, authorized by the approbation and encouragement of his brother magistrates at Dijon. He soon afterwards wrote some essays on the peculiar characters of the carbonic acid; and he strenuously combated the popular prejudice which prevailed, against the introduction of conductors, for preserving buildings from lightning. He established a large manufactory of nitre, which was afterwards conducted by M. Courtois, the father of the M. Courtois who discovered iodine. From chemistry he naturally diverged into the study of mineralogy; in 1777 he made a tour through the province of Burgundy, with a view to the examination of all its productions; and he actually discovered a rich lead mine, though, for want of coal, it was impossible to derive much benefit from it. He also found a white variety of the emerald in the same province, as well as some combinations of barita, and he invented a new method of obtaining the pure barita from its sulphate.

He had long been intimately acquainted with the Count de Buffon and with Malesherbes, both persons distinguished by elegance of taste, the one in science, the other in general literature. In 1779 and 1780 he enlarged his connections among the men of letters resident at Paris; and he was induced by Panckoucke, the bookseller, to undertake the chemical department of the *Encyclopédie Méthodique;* but it was six years before the *Dictionary of Chemistry* appeared; the articles relating to pharmacy and metallurgy were supplied by Maret and Duhamel. In the progress of this work he found himself compelled to disbelieve the existence of phlogiston as a distinct principle of inflammability, though at the beginning he had defended the doctrines of the old school. But he soon became one of the most zealous advocates of the new theory; and he contributed very much to its general introduction by the active part which he took in the arrangement of a new nomenclature. His proposals were at first thought objectionable by many of the members of the Academy of Sciences; but they soon became generally adopted throughout Europe; and the system was without doubt of great use for a time, as far as it assisted the memory and the imagination in retaining the discoveries and comprehending the theories which had so much of novelty to make them interesting. Among the original matter contained in the Dictionary, were some researches on the nature of steel, which coincided in their results with those of Monge, Vandermonde, and Berthollet, made about the same time, but published somewhat earlier. The whole volume was received in the most flattering manner by all the lovers of chemistry; but it was not till 1791 that the author's ambition was gratified by the award of the Academy of Sciences, adjudging him a prize of two thousand francs, which had been allotted to the most useful work which should appear in the course of the year. The prize, however, he begged to offer to the exigencies of the state, which were then very urgent. The Dictionary was afterwards ably continued by M. de Fourcroy.

In the mean time he condescended to appear as the translator of the *Opuscula* of Bergman, which he illustrated by notes. The example was followed by Madame Picardet, and by others of his friends, who were zealous for the promotion of science; so that the French chemists were by these means speedily made acquainted with the labours of all their contemporaries in different parts of the world. In the year 1787, M. de Morveau applied his speculations to a practical purpose, in establishing a manufactory of soda from common salt, exposed to the atmosphere, with a large proportion of lime, the soda slowly efflorescing as a carbonate. It was in the same year that, having published his *Collection of Pleadings*, he finally resigned his office at the bar, in order that the whole of his time might be devoted to the pursuit of science.

His next undertaking was of a more adventurous nature; for, in April 1784, he ascended with the President de Virly in a balloon; and he repeated the experiment in the month of June, hoping to be able to direct his aërial course at pleasure. The balloon appears to have been about thirty feet in diameter; and, when we consider the action of the wind upon a surface of such extent, we must be aware that every attempt to oppose or modify it must have been perfectly futile. He was visited soon afterwards by the ingenious and lamented Mr Tennant, who went to Dijon purposely to become acquainted with him, and who had an opportunity of performing some original experiments in his laboratory. He was made a member of the Royal Academy of Medicine at Paris in 1786, as a compliment to the merits of his labours for the preservation of the public health. He received a visit, in the succeeding year, at once from Lavoisier, Berthollet, and Fourcroy, together with Monge and Vandermonde; and our countryman, Dr Beddoes, who was then travelling in France, had the good fortune to join this interesting party, all of them deeply engaged in the discussion of the great chemical questions which were then undecided. In April 1788, M. de Morveau was placed on the list of the foreign members of the Royal Society of London; and the same mark of respect was also paid him at different times by almost all the scientific societies of Europe.

In September 1791 he was unfortunately elected a member of the Legislative Body; and having also been made solicitor-general of his department, he could no longer continue the chemical lectures which he had delivered without intermission for fifteen years, and he resigned his chair to Dr Chausier. It must not be omitted by an impartial biographer, that, on the 16th of January 1793, he thought himself compelled to vote with the majority, for the death of the king; and it is a poor compensation for this fatal error that, in the same year, he resigned a pension of two thousand francs a year, in favour of that republic to which he had already sacrificed the best feelings of humanity. He afterwards became a commissary of the assembly attached to the army of the Netherlands. In this capacity, besides many other instances of personal courage, he is said to have rendered essential service to his countrymen, by the construction of a balloon, in which he ascended, together with some of the staff of General Jourdan, in order to observe the motions of the enemy during the battle of Fleurus. After his return to Paris he was appointed professor of chemistry in the *Ecole Polytechnique*, and he was an effective co-operator in the first establishment of that useful institution. In 1795 he was again chosen a member of the Council of Five Hundred; and he was appointed by the government one of the forty-eight members of the National Institute, then recently embodied. He had for some time been a correspondent, but was never a member, of the Academy of Sciences. His political engagements terminated in 1797, when he resolved once more to devote himself exclusively to science. In 1798, he fulfilled the duties of director of the *Ecole Polytechnique* during the absence of Monge, who was in Egypt, and for whom he insisted that the salary should be reserved. The following year, Bonaparte, then first consul, made him a general administrator of the mint. He received the cross of the Legion of Honour in 1803, and obtained, two years afterwards, still higher rank in the order, particularly as an acknowledgment for the public benefits which had been derived from his methods of fumigation. In 1811, he was elevated to the dignity of a baron of the French empire.

From 1798 to 1813, he continued his labours as professor of chemistry in the Polytechnic School; he then obtained leave to retire, but he survived only a few years, and died of a paralytic affection, or rather of a total decay of strength, the 21st of December 1815, at a period when he would shortly have had to encounter the effects of a retribution, which would have been very severely felt at so advanced an age. In stature he was rather below than above the middle size; his conversation was animated and copious, his manners courteous and obliging; he was full of anecdote, and always ready to communicate whatever information he possessed. He married, late in life, Madame Picardet, the widow of an academician of Dijon, whose tastes and pursuits were congenial with his own, and who had distinguished herself by translating several works of science and of literature from the different languages of the north of Europe. As to his numerous publications, a bare catalogue of these will be amply sufficient to show the extent of his researches and the variety of his pursuits. It is the more necessary to do justice to his diligence and perseverance, as we cannot easily point out any one important discovery or invention that can be considered as commensurate to the high promise of his early infancy. The article Acid of the *Dictionary*, and the *Methodical Nomenclature*, must be ranged as the best of his productions; but the character of both these is rather useful than splendid.

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GUZELHISAR, a city of Asia Minor, built upon the site of the ancient Magnesia. It is situated on a hill about three miles in compass, level at the top, and having a steep declivity around. The modern city is at least four miles in circumference, and surrounded by very slight walls: the streets are broader and better laid out than is usual in Turkish cities. It is one of the most considerable towns in Asia Minor, being the residence of the pasha; and carries on a great trade, especially in cotton and cotton yarn. It has also manufactures of coarse calicoes; and considerable quantities of European goods are imported into the country. It is the residence of many rich merchants, and of opulent families, particularly beys. It has a beautiful appearance, being full of courts and gardens, planted with cypress and orange trees; and the view is beautiful over the plain of the Meander, a finely-enclosed country planted with fig and almond trees. Long. 27. 50. E. Lat. 37. 45. N.

GUZNOGUR, an Afghan district, in the province of Cabul, situated between the thirty-fourth and thirty-fifth degrees of north latitude. Its interior is but imperfectly known. It is bounded on the north by Caffaristan, and on the west by the Chuganserai river.

GYBING, the act of shifting a boom-sail from one side of the mast to the other.

In order to understand this operation more clearly, it is necessary to remark, that by a boom-sail is meant any sail, the lowest part of which is extended by a boom, and the fore-end hooked to its respective mast, so as to swing occasionally on either side of the vessel, describing an arch, of which the mast is the centre. As the wind or the course changes, it also becomes frequently necessary to change the position of the boom, together with its sail, which is accordingly shifted to the other side of the vessel, as a door turns upon its hinges. The boom is pushed out by the effort of the wind upon the sail, and is restrained in a proper situation by a strong tackle communicating with the vessel's stern.

GYGES, in fabulous history, a Lydian, to whom Candaules, king of the country, showed his wife naked. The queen was so incensed at this instance of imprudence and infirmity in her husband, that she ordered Gyges either to prepare for death himself, or to put Candaules to death. He chose the latter; and having married the queen, ascended the vacant throne about 718 years before the Christian era. He was the first of the Mermnadæ who reigned in Lydia. He reigned thirty-eight years, and distinguished himself by the immense presents which he made to the oracle of Delphi. (Herod. i. c. 8.) According to Plato, Gyges descended into a chasm of the earth, where he found a brazen horse, the sides of which he opened, and saw within the body the carcass of a man of uncommon size, from whose finger he took a brazen ring. This ring, when he put it on his finger, rendered him invisible; and by means of its virtue he introduced himself to the queen, murdered her husband, married her, and usurped the crown of Lydia.

GYMNASIARCH, in *Antiquity*, the director of the gymnasium. This functionary had two deputies; the one called *xystarch*, who presided over the athletæ, and had the charge of wrestling; and the other *gymnastes*, who had the direction of all other exercises.

GYMNASIUM, in Grecian antiquity, a place fitted for performing exercises of the body. The word is Greek, being formed from γυμνος, naked; because the youth anciently put off their clothes, to practise with the more freedom.

Gymnasia, according to Potter, were first used at Lacedæmon, but were afterwards common in all parts of Greece, from which the institution was transferred to Rome, where it was much improved. There were three principal gymnasia at Athens; the academy where Plato taught; the Lyceum, noted for Aristotle's lectures; and the Cynosarges, allotted for the populace.

Vitruvius describes the structure and form of the ancient Gymnasia (lib. v. cap. 11). They were so called, because several of the exercises were performed naked; they derived the name of *palæstræ*, from wrestling, which was one of the most usual exercises there; and the Romans sometimes denominated them *thermæ*, because the baths formed a principal part of the building. It appears that in the time of Homer they did not perform their exercises quite naked, but always in drawers; which were not laid aside before the thirty-second Olympiad. Orsippus is said to have been the first who introduced this practice; for having been worsted in consequence of getting entangled by his drawers, he threw them aside; and others afterwards imitated his example. The Gymnasia were not single edifices, but a knot of buildings united, being sufficiently capacious to contain many thousands of people at once, and having likewise room enough for philosophers, rhetoricians, and professors of all other sciences to read their lectures, as well as for wrestlers, dancers, and all others who had a mind to exercise, without the least disturbance or interruption. They consisted of a great many parts. Vitruvius mentions no fewer than twelve, namely, 1. The exterior porticoes, where the philosophers, rhetoricians, mathematicians, physicians, and other virtuosi, read public lectures, and where they also disputed and rehearsed their performances; 2. the *ephebeum*, where the youth assembled very early, to learn their exercises in private, without any spectators; 3. the *coryceum*, *apodyterion*, or *gymnasterion*, a kind of ante-chamber, where they stripped, either to bathe or exercise; 4. the *elæothesium*, *alipterion*, or *unctuarium*, appointed for the unctions, which either preceded or followed the use of the bath, wrestling, pancratia, &c.; 5. the *conisterium* or *conistra*, in which they covered themselves with sand or dust, to dry up the oil or sweat; 6. the *palæstra*, properly so called, where they practised wrestling, pugilation, pancratia, and other exercises; 7. the *sphæristerium* or tennis-court, reserved for exercises in which balls were used; 8. large unpaved alleys, which comprehended the space between the porticoes and the walls with which the edifice was surrounded; 9. the *xysti*, or porticoes for the wrestlers in winter or bad weather; 10. other *xysti* or open alleys, allotted for summer and fine weather, some of which were quite open, and others planted with trees; 11. the baths, consisting of several different apartments; and, 12. the *stadium*, a large space of a semicircular form, covered with sand, and surrounded with seats for the spectators.

For the administration of the Gymnasia, there were officers, the principal of whom were, 1. the *gymnasiarcha*, who was the director and superintendent of the whole; 2. the *xystarcha*, who presided in the *xystus* or *stadium*; 3. the *gymnasta*, or master of the exercises, who understood their different effects, and could accommodate them to the different complexions of the athletæ; 4. the *pædotriba*, whose business was mechanically to teach the exercises, without understanding their theory or use. Under these four officers there were a number of subalterns, whose names distinguished their different functions.

The gymnastic exercises may be reduced to two general classes; those which depend on the action of the body alone, and those requiring external agents or instruments. The latter consisted chiefly in mounting the horse, driving the chariot, and swimming. The former were chiefly of two kinds, *orchestice* and *palæstrice.* The *orchestice* comprehended, 1. dancing; 2. *cubistice,* or the art of tumbling; 3. *sphæristice* or tennis, including all the exercises with pilæ or balls. The *palæstrice* included all exercises under the denomination *palæstræ,* as wrestling, boxing, pancratia, hoplomachia, running, leaping, throwing the discus, the exercise of the javelin, and that of the hoop, denominated by the Greeks τροχος, which consisted in rolling an iron hoop five or six feet in diameter, beset with iron rings, the noise of which apprising the people to give way, afforded them also an amusement. Both strength and skill were requisite in directing this hoop, which was driven with an iron rod. To these must also be added the exercises belonging to the medicinal gymnastics; as, walking, vociferation or shouting, and restraining one's breath. Hoffman enumerates no fewer than fifty-five sorts of exercises which were practised in the Gymnasia.

GYMNASTICS, in the general acceptation of the term, denotes every exercise which tends to develope and invigorate the bodily powers; such as walking, running, riding, fencing, rowing, skating, dancing, and many others. In a narrower sense gymnastics includes those manly and healthful games, which have been encouraged by all high-minded nations, as calculated to improve the physical strength, and to keep alive the martial spirit, of their inhabitants. In a yet more limited sense, the term gymnastics has been employed to denote that modern system of bodily exercises, some account of which will be given in the sequel of this article.

In the rudest states of society, such as that which obtains amongst the aboriginal tribes of America, the necessity of repelling the aggressions and punishing the insults of hostile tribes naturally leads to the cultivation of those physical powers the development of which is essential to the purposes of self-defence. Hence, even in this stage, we discover the elements of a gymnastic education. Want and invention, in the history of mankind, stand to each other in the relation of parent and offspring. Under the operation of the law of necessity, we find parents anxious to nerve their children for the labours which in after-life must procure them sustenance, and to habituate them to the watchfulness and agility which alone can enable them to baffle their foes. From infancy the latter are accordingly trained, by progressive steps, to the practice of archery; instructed to swim across the most rapid rivers; and habituated not only to remain for a considerable time beneath the surface of the water, but also to make their way to its lowest depths. Running over the roughest ways, hurling missiles from the hand, and wielding clubs or hatchets with effective force, are amongst the number of their accomplishments; and not the least remarkable part of their training is that by which they are taught to acquire a mastery over physical pain. Under this rigid system of discipline, enforced by the elders of the tribe, the savage has been found to acquire qualities which the milder institutions of civilised life are not calculated to unfold; the physical powers are developed with a symmetry and beauty which remind the beholder of the finer forms of ancient sculpture; and the individual, conscious of his strength, firmness, and resources in the midst of danger, walks with a more independent tread, and indulges in the cheerfulness natural to a fearless disposition.

The Greeks, in the earliest period of their history, seem to have been little, if at all, advanced beyond the state which we have here endeavoured to describe. It appears from several passages in Homer, particularly from the account given in the twenty-third book of the Iliad, of the games celebrated at the obsequies of Patroclus, that gymnastic exercises were not unknown at the time of the Trojan war. From this description, which is the earliest monument extant on the subject, we learn that, on the occasion referred to, there were chariot-races, foot-races, boxing, wrestling, gladiatorial combats, throwing the discus, shooting with the bow, and hurling the javelin. At the period in question, however, these exercises were no doubt equally rude and inartificial with those of the Indian tribes to which we have alluded; but, in progress of time, when their importance began to be fully perceived, areas and edifices were allotted for their practice, masters were appointed to instruct the youth, and prizes, contended for in the presence of assembled nations, were awarded to the victors in the different contests, with all the pomp and solemnity of a religious celebration. The exercises of the Greek athletæ, namely, running, wrestling, boxing, throwing the discus and the javelin, equitation, and charioteering, are known to every classical scholar, and need not therefore be particularly described. These were instituted originally with the view, no doubt, of preparing the citizens, by a systematic course of training, for undergoing the toils and fatigues of war. But, by degrees, the natural vanity of excelling in that which all more or less cultivated, fostered by the preposterous adulation bestowed on the victors in the Olympic games, introduced the habit of cultivating one exercise alone, instead of seeking to develope equally all the bodily powers. A good wrestler, an expert boxer, or one capable of carrying an immense weight, became in some degree an article of luxury, or a subject of speculation. Persons of this description were kept and fed like game-cocks, and destined for purposes of equal dignity and importance. The object originally contemplated by the patrons of the athletic exercises was completely lost sight of; the real soldier learned to despise the bully of the gymnasium and the palæstra; gymnastics lost repute by being at once perverted and degraded; and the sarcastic remark of the great Theban commander decided their fate.

Rome was from the first a species of camp, and war the principal occupation of her people. The youth were trained to hardihood and exertion, but it was chiefly in actual service, and as members of a great body, which moved as if animated by only one soul. To act in concert and unison, to afford mutual support, to give simultaneous impetus to the charge, to preserve order in retreat, and in all circumstances to observe the law of a stern discipline; such was the great object of their study. Their exercises were intended not so much to train the individual as to form the mass; not to encourage isolated efforts, but to produce unity and mobility. But when, in process of time, the military became a distinct profession; when the army was composed of prætorian bands, and legionary soldiers drawn from the conquered countries; Rome, having no efficient academy for training her citizens to active exercises, began to decline. The ancient discipline gradually relaxed; and her sons, instead of breasting the Tiber in armour, or riding and hurling the javelin in the Campus Martius, sought the cruel and debasing amusement of witnessing the massacre of slaves, or the combats with wild beasts in the amphitheatre.

Of the gymnastic exercises practised by the Teutonic nations who overthrew the Roman empire no satisfactory account has reached us. But some of the later historians of Rome speak with consternation of the manner in which the Germans, by the aid of their *frameæ,* bounded over the pikes of the foremost ranks, or sprung upon the hostile battlements; and Tacitus alludes to certain games in which the German youth, naked and unarmed, danced amidst pointed spears and drawn swords, displaying wonderful quickness of eye, elasticity of limb, and fearlessness of disposition. During the middle ages, the peculiar mode of warfare introduced by the northern nations rendered it of the utmost importance that the knights and men-at-arms should be subjected to a system of severe physical training. Hence they were taught to sustain during the heat of the day a heavy load of armour, to carry huge burdens, to run for a length of time, to climb tall ladders by the aid of their arms alone, to swim, to ride the great horse, and to run with a spear against a target so arranged that he who missed or struck foul received in return a blow from a pole attached to it.

But when the organization and movement of armies had been reduced to system, when the art of war became a subject of arithmetical calculation, and when the invention of powder rendered bodily superiority in a great measure unavailing, athletic exercises were less insisted on than formerly; and the evil was increased, partly by the separation of the military as a distinct class, and partly also by the increasing sedentary habits of civilians. In short, physical education was neglected in proportion as every other branch became more widely diffused and more zealously cultivated; without considering the intimate connection between the body and the mind, the former was suffered to degenerate, whilst indolent and luxurious habits engendered nervous irritability, with a consequent predisposition to mental disorders. Rousseau, in his *Emile*, was the first to raise his voice against this degeneracy; and although the world laughed at the ludicrous contradiction between his practice and his precepts, yet the latter insensibly prevailed, and in time a more rational regard began to be paid to the preservation of a firm and robust habit of body. In all countries the manly amusements of an earlier age had in some degree survived amongst the peasantry; in some, the pleasures of the chase had stimulated even the higher classes to cultivate habits of hardihood and exertion. By degrees, athletic exercises became once more fashionable; and then was invented that system of gymnastics which is now taught in the military and other schools.

This system derives its immediate origin from the widely-ramified confederacy which diffused throughout Germany a spirit of disaffection to the French, and prepared the people of that country to co-operate in shaking off the yoke which had been imposed on them. Convinced from the first that the deliverance of Germany could only be effected by the sword, the leaders of this confederacy directed their attention to the grand object of secretly training and preparing soldiers for the approaching struggle. With this view, whilst Von Stein was communicating to almost every individual in the Prussian territories some notion of military discipline, and labouring to impress them with a notion of its importance, Jahn and his followers were establishing gymnastic areas (*turn-plätze*) throughout the whole of Germany. The youth of different ages were encouraged and incited to attend. They were taught to take pleasure in their exercises; a spirit of emulation was sedulously cherished; peals of laughter and merriment resounded in each area; and national songs, sung in chorus by the friendly antagonists as they repaired to or returned from the *turn-plätze*, served at once to excite and sustain the general enthusiasm. In addition to the usual routine of running, wrestling, and leaping, a series of exercises with poles, bars, ropes, and ladders, was devised and introduced into the *turn-plätze*. In these areas, the youths were prepared for the toils and labours of the field; and, when the grand crisis arrived, the means were found adequate to the end contemplated. For some time after the overthrow of Napoleon, these exercises continued to be patronised by the governments of Germany, and taught in all the public schools. But the spirit which it had been found so easy to raise against the dominion of Napoleon, and in support of the old hereditary governments, did not so readily vanish when its immediate task was accomplished. In adversity and in danger promises had been made, the performance of which was evaded in the hour of triumph; and, as some of the chief patrons of physical education were amongst the loudest in denouncing the faithlessness of their governments, the German rulers gravely alleged that gymnastic exercises necessarily engendered democratical principles; and on this ingenious pretence all the public institutions for their promotion were at once suppressed. A few private establishments are still winked at, and, in some states, the military receive regular instructions; but the day of gymnastics is for the present over in Germany.

In other countries, however, the political logicians have not yet discerned any necessary connection between gymnastics and republicanism; and accordingly those exercises which have been anathematised in Germany as generative of democracy, have been warmly patronized in France and Switzerland, and are now steadily making their way even in Britain, where innovations of all kinds, especially in education, are most cautiously entertained. The propriety of employing training to develope the powers of the body is beginning in many parts to be as readily acknowledged, as the necessity of education to cultivate the faculties of the mind. But nothing is privileged from abuse; and empiricism, which has brought so many other things into disrepute, has unluckily fastened upon gymnastics. In the *Encyclopédie Moderne* we find the subject divided into, 1. *Gymnastique civile et industrielle;* 2. *Gymnastique militaire, terrestre et maritime;* 3. *Gymnastique médicale;* and, 4. *Gymnastique scénique ou funambulique.* Nor is this all. Each of these divisions is subdivided into four or five branches, as if the subject, forsooth, admitted of the most systematic arrangement. Thus, under the head of *Gymnastique médicale,* are included, first, *Gymnastique hygiénique ou prophylactique, pour conserver une santé robuste;* secondly, *Gymnastique thérapeutique, pour le traitment des maladies;* thirdly, *Gymnastique analeptique, ou des convalescens;* fourthly, *Gymnastique orthopédique, qui a pour but la guerison des déformités.* This affectation of method is exceedingly absurd, inasmuch as it confounds with the exercises themselves certain hypothetical uses, and assumes as the very basis of the classification results which have not been satisfactorily ascertained. But however this may be, the importance of gymnastics, in another point of view, cannot possibly be disputed. If persevered in, they are calculated to develope every muscle of the trunk, arms, and legs to its utmost extent; they give the student the most perfect command of his whole bodily frame; they are the best preparatives for the elegant and manly accomplishment of fencing, whether with the small or the broad sword; and they afford excellent training for the amateurs of running, leaping, wrestling, and sparring. Nor are the advantages derived from such exercises confined to the soldier or the sailor; their usefulness is experienced in many other situations of life. But their importance can only be fully known when we are called upon in emergencies of unexpected danger; amidst fire, shipwreck, the destruction of bridges, or the fall of buildings; to evince the superiority resulting from that presence of mind, and fertility of resources, which are conferred by the consciousness of physical strength and nerve, and by the habit of acting and moving where other men would be instantly paralysed. Lastly, clear heads and light hearts, the natural concomitants of health, are the unfailing rewards of a judicious and moderate prosecution of gymnastics.

The elementary exercises in gymnastics are performed by means of the horizontal pole, the parallel bars, the masts or poles, the ropes, the triangle and trapezium, the ladder, the wooden horse, the inclined plane, and the flying course or giant's steps. The pupils, after being prepared by a course of comparatively gentle but active exertion, proceed to take lessons on the *horizontal pole;* the principal use of which is to develope the strength of the hands and arms, though many other exercises are performed on it. The *parallel bars* are usually made circular, and vary from six to eight feet in length, and from three to four inches in diameter; they are fixed about two feet apart, and placed at a height of from three to four feet from the ground. Captain Clias gives sixteen movements in this apparatus, and Colonel Amoros thirty-eight; but it is obvious that the lessons are susceptible of great variety, and that the interest may be increased by fixing the bars occasionally at the height of six or seven feet from the ground. The exercises on the *masts* or *poles* are varied by the latter being placed in different positions, either vertically or angularly, and by the introduction of rope-ladders or knotted ropes. The *ropes* are used sometimes plain, sometimes with large knots in them, and sometimes with a bar across. They are placed vertically, horizontally, and angularly, to give variety to the exercises, which is also increased by loosening and tightening them. The *triangle* and *trapezium* are two of the most amusing instruments in modern gymnasiums, and, from the lightness of their construction, and their being constantly in motion, give an appearance of ease and grace to all the revolutions performed on them. The invention of the triangle has been claimed by Captain Clias, though of right it belongs to the mountebanks of Italy, who employed it to amuse the public long before this celebrated gymnast was heard of; the trapezium owes its origin, or at least its introduction into the schools, to Colonel Amoros. The *wooden ladder* is usually fixed firmly between two walls, with the lower end just high enough for the pupils to reach it with both hands. Sometimes it is also placed perpendicularly with one end resting on the ground; but the exercises admit of more variety when it is placed in the position first described. The distance between the bars in the perpendicular ladder is commonly from eight to twelve inches; but when its position is inclined the spaces should always be wide enough to admit of the pupil passing easily through them. The *rope ladder* is susceptible of still greater variety of position, and the bars are usually placed closer together, as few movements beyond the different modes of ascending and descending are practised upon them. The *wooden horse*, although extremely interesting from the number of exercises practised on it, both in vaulting and leaping, and in feats of actual strength, appears as yet to be but little known in the small gymnasiums of this country. It is necessary that there should be a graduated succession of seizes, to suit the height and progress of the different classes. The *inclined plane* is ordinarily an unpolished board of pine, varying from twenty-five to thirty feet in length, and about two feet in breadth; it admits of some highly useful exercises, and has been recommended by medical men as tending to strengthen the hands, arms, chest, abdomen, legs, and feet. The same observation applies to the inclined pole. The *flying course*, or *giant's steps*, is amusing to young people; but it affords no advantages which are not fully attained by the apparatus already described. For the detail of the exercises performed, with figures illustrative of the different positions, we refer to the works of Clias, Amoros, and Roland.

Almost all the advantages which are generally supposed to result from gymnastic exercises, may be attained by the practice of our own national games, which, if not in every case British in their origin, are peculiarly so by their adoption and continued improvement. They merit notice, therefore, first, by reason of their nationality, and because, for the most part, they require in an eminent degree the union of strength, perseverance, and courage. 1st, *Wrestling*, though conspicuously introduced into all foreign works on the present system of gymnastics, is little more than theoretically known on the Continent; whereas, in some of the English counties, the practical wrestlers are unrivalled. We therefore claim this as one of our national games, and venture to affirm that its champions will not hesitate to enter into competition with any foreign gymnasium. 2d, *Boxing* is an exercise which brings the body into active and healthy exertion, increasing the elasticity of the limbs, improving the play of the lungs, and giving a firmness on the legs and a power in the arms not otherwise attainable. Quickness of eye, and accuracy in measuring distances, are also acquired by the practice of boxing; by which, be it observed, we mean *sparring*, as practised by gentlemen, that graceful imitation battle, which differs as widely from the brutalising exhibitions of prize-fighting, as the *cestus* with which Dares dashed out the teeth of Entellus differs from the well-stuffed gloves of Mr Roland. 3d, *Riding*, *walking*, and *running*, are exercises requiring strength, perseverance, and activity; and, as a nation, our recorded equestrian and pedestrian feats may challenge Europe. We have, indeed, heard of three Frenchmen, Gervois, Labat, and Stumon, who are said to have run a French league in ten minutes, an exploit which surpasses any thing in our sporting annals; but the story is too improbable to be admitted without strong confirmation. 4th, *Archery*, one of our most ancient and manly recreations, is still kept up in many parts of England and Scotland; and although its champions would no doubt cut but a sorry figure in competition with the Lockesley of Ivanhoe, or even with him whose grandsire "drew a good bow at Hastings," yet the spirit of emulation has produced no mean degree of excellence in this graceful and healthy exercise. 5th, *Cricket*, a noble game, is so indisputably our own, that nothing need be said upon the subject, except that it is yearly becoming a greater favourite in Scotland, where formerly it was seldom played. 6th, *Single-stick* has now but a small number of admirers, and its professors are of course still more limited; in fact, it is seldom practised except from motives which few are willing to avow. 7th, *Putting the stone* and *throwing the hammer* fall more appropriately under the head of Scottish gymnastics. In the Highlands of Scotland there are instances of celebrity in throwing the hammer descending from father to son for generations, as a family characteristic. This is most graphically described in the account given by Sir Walter Scott, of the contest between Norman nan Ord and Hal o' Wynd, who is represented as a perfect prince amongst the gymnasts of an age when such accomplishments were in the highest repute. It may be added, that, at the present day, the Scottish national games are kept up with great spirit, and that clubs have been instituted in various parts of the country, for the purpose of encouraging them, by awarding medals, and other honorary distinctions, to such as excel in these pastimes. (See Roland's *Gymnastics*, Edinburgh, 1831, in 8vo.) (A.)

GYMNOSOPHISTS, a set of Indian philosophers, famous in antiquity. The word is formed from the Greek, γυμνοσοφιστης, a sophist or philosopher who goes naked.

This name was applied to the Indian philosophers, whom the excessive heat of the country obliged to go naked; as that of *Peripatetics* was given to those who philosophised walking. The Gymnosophists, however, did not go absolutely naked, but only clothed themselves no further than modesty required. There were some of these sages in Africa; but the most celebrated were those of India. The African Gymnosophists dwelt upon a mountain in Ethiopia, near the Nile, and did not form themselves into societies, like those of India; but each had his private recess, where he studied and performed his devotions by himself. If any person had by chance killed another, he applied to these sages for absolution, and submitted to whatever penances they enjoined. They observed an extraordinary frugality, and lived only upon the fruits of the earth. Lucan ascribes to these Gymnosophists several new discoveries in astronomy.

As to the Indian Gymnosophists, they dwelt in the woods, where they lived upon the wild products of the earth, and never either drank wine or married. Some of them practised physic, travelled from one place to another, and were particularly famous for their remedies against barrenness. Others pretended to practise magic, and to foretell future events.

In general, however, the Gymnosophists were wise and learned men; for their maxims and discourses, recorded by historians, do not in the least savour of a barbarous education, but are plainly the result of great sense and deep thought. They kept up the dignity of their character to such a degree, that they never waited upon any one, not even upon princes. They believed the immortality and transmigration of the soul; they placed the chief happiness of man in a contempt of the goods of fortune and of the pleasures of sense; and they gloried in having given faithful and disinterested counsels to princes and magistrates. It is said, that when they became old and infirm, they threw themselves into a pile of burning wood, in order to prevent the miseries of advanced age. One of them, named Calanus, burned himself in the presence of Alexander the Great.

Apuleius thus describes the Gymnosophists: "They are all devoted to the study of wisdom, both the older masters and the younger pupils; and what to me appears the most amiable thing in their character is, that they have an aversion to idleness and indolence. Accordingly, as soon as the table is spread, before a bit of victuals be brought, the youths are called together from their several places and offices, and the masters examine them what good they have done since the sunrise. Here one relates something he has discovered by meditation; another has learned something by demonstration; and as for those who have nothing to allege why they should dine, they are turned out to work fasting."

GYNÆCEUM, amongst the ancients, the apartment of the women, a separate room in the inner part of the house, where they employed themselves in spinning, weaving, and needle-work.

GYNÆCOCRACY denotes the government of women, or that state where women are capable of the supreme command.

GYNÆCOCRATUMENI, an ancient people of Sarmatia Europæa, inhabiting the eastern banks of the river Tanais, near its opening into the Palus Mæotis, and so called, because they had no women among them, or rather, perhaps, because they were under the dominion of women. The word is formed from γυνη, *woman*, and κρατουμενος, the participle of κρατεω, *I overcome*.

GYONGIOS, a large market-town of Hungary, in the circle of the Hither Theis, with a Catholic university, and 800 inhabitants, who trade largely in wine, fruit, corn, and the other internal products. Long. 20. 17. E. Lat. 47. 47. N.

GYPSIES, or EGYPTIANS, a strange kind of commonwealth of wandering impostors and jugglers, who made their first appearance in Germany about the beginning of the sixteenth century. Munster, it is true, who is followed and relied upon by Spelman, fixes the time of their first appearance in the year 1417; but as he owns that the first time he ever saw them was in 1529, it is probably an error of the press for 1517; especially as other historians inform us, that when Sultan Selim conquered Egypt in the year 1517, several of the natives refused to submit to the Turkish yoke, and revolted under one Zinganeus, whence the Turks call them Zinganees; but being at length surrounded and banished, they agreed to disperse in small parties all over the world, where their supposed skill in the black art gave them an universal reception in that age of superstition and credulity. In the space of a very few years they gained such a number of idle proselytes (who imitated their language and complexion, and betook themselves to the same arts of chiromancy, begging, and pilfering), that they became troublesome, and even formidable, to most of the states of Europe. Hence they were expelled from France in the year 1560, and from Spain in the year 1591. But the government of England took the alarm much earlier; for in 1530 they are described by statute 22 Henry VIII. c. 10, as "an outlandish people calling themselves Egyptians, using no craft nor feat of merchandise, who have come into this realm, and gone from shire to shire, and place to place, in great companies, and used great, subtle, and crafty means to deceive the people; bearing them in hand that they by palmistry could tell men's and women's fortunes; and so many times by craft and subtility have deceived the people of their money, and also have committed many heinous felonies and robberies." They are, therefore, directed to avoid the realm, and not to return under pain of imprisonment, and forfeiture of their goods and chattels; and it is further declared, that upon their trials for any felony which they may have committed, they shall not be entitled to a jury *de medietate linguæ*. And afterwards it was enacted, by statutes 1st and 2d Philip and Mary, c. 4, and 5th Eliz. c. 20, that if any such persons shall be imported into the kingdom, the importer shall forfeit L.40. And if the Egyptians themselves remain one month in the kingdom, or if any person being fourteen years old, whether natural-born subject or stranger, who has been seen or found in the fellowship of such Egyptians, or having disguised him or herself like them, shall remain in the same one month at one or several times, it is felony without benefit of clergy. And Sir Mathew Hale informs us, that at one Suffolk assizes no less than thirteen persons were executed upon these statutes a few years before the restoration. But, to the honour of our national humanity, there are no instances more modern than this of carrying these laws into practice; and the last sanguinary act itself was repealed by 23 Geo. III. c. 54.

In Scotland they seem to have enjoyed some share of indulgence; for a writ of privy seal, dated in 1594, supports John Faw, lord and earl of Little Egypt, in the execution of justice on his company and folk, conform to the laws of Egypt, and in punishing certain persons therein named who had rebelled, robbed him, absconded, and refused to return home. James's subjects are commanded to assist in apprehending the fugitives, and in assisting Faw and his adherents to return home. There is another writ in his favour from Mary queen of Scots, 1553, and in 1554 he obtained a pardon for the murder of Nunan Small; so that it appears he had remained long in Scotland, and perhaps spent some time in England. From him this kind of strolling people received the name of the *Faw Gang*, which they still retain among the common people.

A very circumstantial account of this singular race has been given in a German treatise by Grellman, which has been translated into English by Mr Raper, and published in a quarto volume. It is incredible to think how this regular swarm of banditti has spread itself over the face of the earth. They wander about in Asia, and in the interior parts of Africa, and have overrun most of the European nations. In the reigns of Henry VIII. and Queen Elizabeth, they were set up as a mark of general persecution in England; yet their numbers do not appear to have much diminished in consequence. They are scattered, though not in great numbers, throughout Germany, Denmark, Sweden, and Russia; but their chief population is in the south-east parts of Europe. For nearly four centuries they have wandered through the world; and in every region, and amongst every people, whether barbarous or civilized, they have continued equally unchanged by the lapse of time, the variety of climate, or the force of example. Their singular physiognomy and particular manners are the same in every country. Their swarthy complexion receives no darker shade from the burning sun of Africa, nor any fairer tincture from the temperate climes of Europe; they contract no additional laziness in Spain, nor acquire any new industry in England; in Turkey they behold the mosque and the crescent with the same indifference as they do the Catholic and the Reformed church in Europe. In the neighbourhood of civilized life they continue barbarous; and, beholding around them cities and settled inhabitants, they live in tents or holes in the earth, and wander from place to place as fugitives and vagabonds.

They are passionately fond of ornaments, in which however they consult neither propriety nor consistency; for they will wear an old laced coat, whilst the rest of their garments scarcely hang together. In Hungary and Transylvania their summer habitations are tents; their winter residences holes dug ten or twelve feet deep in the earth, except such as keep inns or exercise trades. They are fond of plate, particularly silver cups, which they bury under the hearth for security. Their principal occupations are, smith's-work, or tinkering, wooden ware, and horse-dealing; and in Hungary and Transylvania they are executioners of criminals, flayers of dead beasts, and washers of gold. The women deal in old clothes, prostitution, wanton dances, and fortune-telling. Notwithstanding these occupations, the majority of this people are lazy, beggars, and thieves. They bring up their children to their own professions, and are very fond of them.

The gypsies have, at least in Transylvania, a sort of regular government, rather nominal than real or effective. They have their leaders of chiefs, whom they distinguish by the Sclavonian title *waywode.* To this dignity every person is eligible who is of a family descended from a former waywode; but the preference is generally given to those who have the best clothes and the most wealth, or who are of a large stature, and not past the meridian of life. Of religion, however, they have no sense; though, with their usual cunning and hypocrisy, they profess the established faith of every country in which they live. They also speak the languages of the respective countries, yet have a language of their own, though whence derived authors are by no means agreed. It seems to be a sort of linguafranca, formed out of fragments and corruptions of many tongues. The only science which they have attained is music. Their poetry is ungrammatical and indecent rhyme.

The origin of this people, as we have seen, has been generally believed to be Egyptian; and that belief is as old as their existence in Europe. This theory, however, according to Grellman, is without foundation. The Egyptian descent of these people, he thinks, is not only destitute of proofs, but the most positive evidence is found to contradict it. Their language differs entirely from the Coptic; and their customs are very different from those of the Egyptians. They are indeed to be found in Egypt; but they wander about there as strangers, and form a distinct people, as in other countries. The expressions of Bellonius are strong and decisive: "No part of the world, I believe, is free from those banditti, wandering about in troops, whom we by mistake call *Egyptians* and *Bohemians.* When we were at Cairo, and in the villages bordering on the Nile, we found troops of these strolling thieves sitting under palm trees; and they are esteemed foreigners in Egypt as well as among us."

The Egyptian descent of the gypsies being rejected, our author next endeavours to show that they came originally from Hindustan. The same opinion is maintained by Mr Marsden, in a paper on this subject in the seventh volume of the *Archæologia.* Mr Grellman does not insist on the similarity of colour between the two people, nor on the cowardice common to both, nor on the attachment of the Indians to tents, or letting their children go naked, all these being traits to be met with in other nations; but he dwells on the word *Polgar*, the name of one of the first gypsy leaders, and of the Hindustanee god of marriage; also on the correspondence between the travelling smiths among the two people, who carry two pairs of bellows, the Indian's boy blowing them in India, the wife or child of the gypsy in Europe; as if every travelling tinker, in every nation where tinkers travel, had not the same journeymen. In lascivious dances and chiromancy the two people agree; nor are these uncommon in other parts of the globe. The excessive loquacity of both is produced as another coincidence; as if no other nations in the world were loquacious. The fainter resemblances are, a fondness for saffron, and the intermarrying only with their own people. The last position in the author's theory is, that the gypsies are of the lowest class of Indians, namely, *Pariahs*, or, as they are called in Hindustan, *Sudras.* He compares the manners of this class with those of the gypsies, and enumerates many circumstances in which they agree; but some of the comparisons are frivolous, and prove nothing.

The objections, however, to which this learned author's theory is liable, are such as only show that it is not conclusive, but do not prove that it is wrong. It may possibly be right; and upon this supposition the cause of their emigration from their country, he conjectures, not without probability, may have been the war of Timour Beg in India. In the years 1408 and 1409 this conqueror ravaged India; and the progress of his arms was attended with horrid devastation and cruelty. All who offered resistance were destroyed; and those who fell into the enemy's hands were made slaves, of whom, however, one hundred thousand were put to death. As on this occasion an universal panic took place, what could be more natural than that a great number of terrified inhabitants should endeavour to save themselves by flight? In the last place, the author endeavours to trace the route by which the gypsies came from Hindustan to Europe; but here he frankly acknowledges that all that can be said on the subject is mere surmise.

H.

H, THE eighth letter and sixth consonant in our alphabet; though some grammarians conceive it to be only an aspiration, or breathing. But nothing can be more ridiculous than to dispute its being a distinct sound, and formed in a particular manner by the organs of speech, at least in our language: witness the words *eat* and *heat*, *arm* and *harm*, *ear* and *hear*, *at* and *hat*, as pronounced with or without the *h*. This letter is pronounced by a strong expiration of the breath between the lips, closing as it were by a gentle motion of the lower jaw to the upper, and the tongue nearly approaching the palate. There seems to be no doubt that our *h*, which is the same with that of the Romans, derived its figure from that of the Hebrew ה. And, indeed, the Phœnicians, and the ancient Greeks and Romans, used the same figure with our H, which in the series of all these alphabets keeps its primitive place, being the eighth letter. H, used as a numeral, denotes 200, and with a dash over it, H̄ 200,000. As an abbreviation, H was used by the ancients to denote *homo*, *hæres*, *hora*, &c. Thus H. B. stood for *hæres bonorum;* H. S. corruptly for L L S. sesterce; and H. A. for Hadrianus.

HAARLEM, or HAERLEM, a city of the Netherlands, the capital of the province, and of a circle of the same name. It lies about four miles from the sea-shore, on an extensive lake of fresh water, which it is now under consideration to drain and convert into meadows. It is a well-built town, with a fine market-place; but some of the streets, though well built and paved, are narrow. It is the seat of a Catholic bishop, who officiates in a cathedral; but the largest church, called the Dome Church, is occupied by the Protestants. It has one of the most powerful and best-toned organs in Europe, with 8000 pipes, some thirty-two feet in length. It contains, besides these, seven Catholic, five Calvinist, and one Lutheran church, and chapels for some smaller sects. The houses are about 8000, and the inhabitants amounted in 1831 to 21,667.

The trade and manufactures are extensive. The water is deemed peculiarly adapted for bleaching, and many fine linens made in Germany and Holland are sent here to receive the desired whiteness. There are printed cottons well executed; and vast quantities of small wares, such as thread, tapes, bobbins, and Dutch lace, still made, though the rivalry of England has diminished the sale for them. One great trade of Haarlem is in flower seeds, flowers, and bulbs, which are sent on a large scale from beautifully arranged and ornamented gardens around the city. Near it are some magnificent country houses, especially that of the Hopes, occupied by Louis Buonaparte whilst king of Holland. In the market is a statue of Coster, who in Haerlem is contended to have been the inventor of printing. Long. 4. 29. 25. E. Lat. 52. 22. 16. N.

HABAKKUK, one of the twelve lesser prophets, whose prophecies are admitted into the canon of the Old Testament. The name is written in the Hebrew with ח, *heth*, and signifies *a wrestler*. There is no precise time mentioned in Scripture when this Habakkuk lived; but from his predicting the ruin of the Jews by the Chaldæans, it may be concluded that he prophesied before Zedekiah, or about the time of Manasseh. He is reported to have been the author of several prophecies which are not extant; but those which are indisputably his are contained in three chapters. In these the prophet complains very pathetically of the disorders which he observed in the kingdom of Judæa. God reveals to him that he would shortly punish the Jews in a very terrible manner by the arms of the Chaldæans. He foretells the conquests of Nebuchadnezzar, his metamorphosis, and death; and also predicts, that the vast designs of Jehoiakim would be frustrated. He speaks against a prince, probably the king of Tyre, who built with blood and iniquity; and he accuses another king, perhaps the king of Egypt, of having intoxicated his friend in order to discover his nakedness. The third chapter is a song or prayer to God, whose majesty he describes with the utmost grandeur and sublimity of expression.

HABDALA, a ceremony of the Jews, observed on the evening of the Sabbath when every one of the family has returned home. Then they light a taper or lamp, with at least two wicks; upon which the master of the family takes a cup, with some wine, mixed with fragrant spices, and having repeated a passage or two of Scripture, he blesses the wine and spices. He afterwards blesses the light of the fire; and then casts his eyes on his hands and nails, as if remembering that he is going to work. The whole is intended to signify that the Sabbath is over, and is from that moment divided from the day of labour which follows. For this reason the ceremony is called *Habdala*, which signifies *distinction*. After the ceremony is concluded, and the company breaks up, they wish one another, not a good night, but a good week.

HABEAS CORPUS, the most celebrated writ in the English law. Of this there are various kinds made use of by the courts at Westminster, for removing prisoners from one court into another for the more easy administration of justice. The *habeas corpus ad respondendum* is issued when a man has a cause of action against one who is confined by the process of some inferior court, in order to remove the prisoner, and charge him with this new action in the court above. The *habeas corpus ad satisfaciendum* issues when a prisoner has had judgment against him in an action, and the plaintiff is desirous to bring him up to some superior court to charge him with the process of execution. The similar writs *ad prosequendum*, *testificandum*, *deliberandum*, issue when it is necessary to remove a prisoner, in order to prosecute or bear testimony in any court, or to be tried in the proper jurisdiction in which the fact was committed. Lastly, the common writ *ad faciendum et recipiendum*, issues out of any of the courts of Westminster Hall, when a person is sued in some inferior jurisdiction, and is desirous to remove the action into the superior court; commanding the inferior judges to produce the body of the defendant, together with the day and cause of his caption and detainer (whence the writ is frequently denominated an *habeas corpus cum causa*), to *do and receive* whatsoever the king's court shall consider in that behalf. But the great and efficacious writ, in all manner of illegal confinement, is that of *habeas corpus ad subjiciendum*, directed to the person detaining another, and commanding him to produce the body of the prisoner, with a specification of the day and cause of his caption and detention, *ad faciendum, subjiciendum, et recipiendum*, to do, submit to, and receive whatsoever the judge or court awarding such writ shall consider in that behalf. This is a high prerogative writ, and therefore by the common law issues out of the Court of King's Bench, not only in term-time, but also during the vacation, by a fiat from the chief-justice, or any other of the judges, and runs into all parts of the king's dominions, except Scotland; for the king is at all times entitled to have an account why the liberty of any of his subjects is restrained, wherever that restraint may be inflicted. If it issues in vacation, it is usually returnable before the judge himself who awarded it, and he proceeds by himself thereon; unless the term should intervene, and then it may be returned in court. Indeed, if the party were privileged in the Courts of Common Pleas and Exchequer, as being an officer or suitor of the court, an *habeas corpus ad subjiciendum* might also have been awarded from thence; and if the cause of imprisonment were palpably illegal, they might have discharged him. But if he were committed for any criminal matter, they could only have remanded him, or taken bail for his appearance in the Court of King's Bench, which occasioned the Common Pleas to discountenance such applications. It has also been said, and by very respectable authorities, that the like *habeas corpus* may issue out of the Court of Chancery in vacation; but upon the famous application to Lord Nottingham by Jenks, notwithstanding the most diligent searches, no precedent could be found where the chancellor had issued such a writ in vacation, and therefore his lordship refused it.

In the Court of King's Bench it was, and still is, necessary to apply for it by motion to the court, as in the case of all other prerogative writs, such as *certiorari*, prohibition, *mandamus*, and the like, which do not issue as of mere course, without showing some probable cause why the extraordinary power of the crown is called in to the party's assistance. For, as it was argued by Lord Chief-Justice Vaughan, "it is granted on motion, because it cannot be had of course, and there is therefore no *necessity* to grant it; for the court ought to be satisfied that the party has a probable cause to be delivered." And this seems the more reasonable, because, when once granted, the person to whom it is directed can return no satisfactory excuse for not bringing up the body of the prisoner. So that, if it issued of mere course, without showing to the court or judge some reasonable ground for awarding it, a traitor or felon under sentence of death, a soldier or mariner in the king's service, a wife, a child, a relation, or a domestic, confined for insanity or other prudential reasons, might obtain a temporary enlargement by suing out an *habeas corpus*, though sure to be remanded as soon as brought up to the court. And therefore Sir Edward Coke, when chief-justice, did not scruple (in 13 Jac. I.) to deny a *habeas corpus* to one confined by the Court of Admiralty for piracy, there appearing, upon his own showing, sufficient grounds to confine him. On the other hand, if a probable ground be shown that the party is imprisoned without just cause, and therefore has a right to be delivered, the writ of *habeas corpus* is then a writ of right, which "may not be denied, but ought to be granted to every man that is committed, or detained in prison, or otherwise restrained, though it be by the command of the king, the privy council, or any other."

Habeas Corpus Act is the famous act of 31 Car. II. c. 2, which is frequently considered as another *magna charta* of the kingdom. It enacts, 1. That the writ of *habeas corpus* shall be returned, and the prisoner brought up, within a limited time according to the distance, not exceeding in any case twenty days. 2. That such writs shall be indorsed, as granted in pursuance of this act, and signed by the person awarding them. 3. That on complaint and request in writing by or on behalf of any person committed and charged with any crime, unless committed for treason or felony expressed in the warrant, or for suspicion of the same, or as accessary thereto before the fact, or convicted or charged in execution by legal process, the Lord Chancellor, or any of the twelve judges in vacation, upon viewing a copy of the warrant, or affidavit that a copy is denied, shall, unless the party has neglected for two terms to apply to any court for his enlargement, award a *habeas corpus* for such prisoner, returnable immediately before himself or any other of the judges; and upon the return made shall discharge the party, if bailable, upon giving security to appear and answer to the accusation in the proper court of judicature. 4. That officers and keepers neglecting to make due returns, or not delivering to the prisoner or his agent, within six hours after demand, a copy of the warrant of commitment, or shifting the custody of a prisoner from one to another without sufficient reason or authority (specified in the act), shall for the first offence forfeit L.100, and for the second offence L.200, to the party grieved, and be disabled to hold his office. 5. That no person, once delivered by *habeas corpus*, shall be recommitted for the same offence, under a penalty of L.500. 6. That every person committed for treason or felony shall, if he requires it the first week of the next term, or the first day of the next session of *oyer* and *terminer*, be indicted in that term or session, or else admitted to bail, unless the king's witnesses cannot be produced at that time; and if acquitted, or if not indicted and tried in the second term or session, he shall be discharged from his imprisonment for such imputed offence; but that no person, after the assizes shall be opened for the county in which he is detained, shall be removed by *habeas corpus*, until after the assizes are ended, but shall be left to the justice of the judges of assize. 7. That any such prisoner may, however, move for and obtain his *habeas corpus*, as well out of the Chancery or Exchequer as out of the King's Bench or Common Pleas; and the Lord Chancellor or judges denying the same, on sight of the warrant, shall, on oath that the same is refused, forfeit severally to the party grieved the sum of L.500. 8. That the writ of *habeas corpus* shall run into the counties palatine, cinque ports, and other privileged places, and the islands of Jersey and Guernsey. 9. That no inhabitant of England, except persons contracting, or convicts praying to be transported, or having committed some capital offence in the place to which they are sent, shall be sent prisoners to Scotland, Ireland, Jersey, Guernsey, or any places beyond the seas, within or without the king's dominions, on pain that the party committing, his advisers, aiders, and assistants, shall forfeit to the party grieved a sum not less than L.500, to be recovered with treble costs, shall be disabled from holding any office of trust or profit, shall incur the penalties of *præmunire*, and shall be incapable of the king's pardon.

This is the substance of that great and important statute, which, however, extends only to the case of commitments for such criminal charges as can produce no inconvenience to public justice by a temporary enlargement of the prisoner; all other cases of unjust imprisonment being left to the *habeas corpus* at common law. But even upon writs at the common law it is expected by the court, agreeably to ancient precedents and the spirit of the act of parliament, that this writ should be immediately obeyed, without waiting for any *alias* or *pluries* writ; otherwise an attachment will issue. By these admirable regulations, judicial as well as parliamentary, the remedy is now complete for removing the injury of unjust and illegal confinement; a remedy the more necessary, because the oppression does not always arise from the ill-nature, but sometimes from the mere inattention, of government. For it frequently happens in foreign countries, and has happened in England during the temporary suspension of the statute, that persons apprehended upon suspicion have suffered a long imprisonment, merely because they were forgotten.

HABELSCHWERT, a city of the Prussian province of Silesia, in the district of the same name, situated on the river Neisse. It is fortified, and stands in a very defensible situation. It contains 324 houses, and 3124 inhabitants, mostly manufacturers of linens and woollens. Long. 16. 36. 10. E. Lat. 50. 14. 45. N.

HABERDASHER, in commerce, a seller of hats and other wares.

HABERGION, or Haubergeon, Habergetum, a

coat of mail, or ancient piece of defensive armour, in form of a coat, descending from the neck to the middle, and formed of little iron rings, or meshes, linked into each other. It is also written *haberge*, *hauberge*, *haubere*, *haubert*, *hautber*, *hautbert*, and *hauberk*. Spelman derives it from the ancient French *hault*, high, and *berg*, armour or covering; as serving to defend the upper part of the body. Du Cange and Skinner derive it from the Belgic *hals*, or Teutonic *haltz*, neck, and *bergen*, to cover; that is, a defence for the neck. Others conceive that it is formed of *al*, *alla*, meaning all, and *bergen*, to cover; as importing a cover for the whole body. In Scripture it seems to signify an offensive weapon. "The sword of him that layeth at him cannot hold; the spear, the dart, nor the habergeon." (Job, xli. 26.)

HABIT, an aptitude or disposition either of mind or body, acquired by frequent repetition of the same act.

HABIT is also employed to signify a dress or garb, or the composition of garments, with which a person is covered. The principal part of the dress worn by the Jews and Greeks was the ἱματιον and the χιτων. The ἱματιον was an upper garment, consisting of a loose square piece of cloth wrapped round the body; the χιτων was an under garment, or tunic, which was fastened round the body and embraced it closely, falling down to the mid thigh. It is proper to observe, however, that a person divested of this upper garment or ἱματιον is, in the language of the east, styled *naked;* and in this sense David danced naked before the ark.

HABIT is particularly used to signify the uniform garments of the religious orders, conformably to the rule of which they make profession; as the habit of St Benedict, of St Augustin, St Francis, St Dominic, and the like. In this sense we say absolutely, such a person has taken the habit, meaning he has entered upon a noviciate in a certain order. So he is said to quit the habit when he renounces the order. The habits of the several religious orders are not supposed to have been calculated for singularity or novelty. The founders of the orders, who were at first chiefly inhabitants of deserts and solitudes, gave their monks the habit usual amongst the country people. The primitive habits of St Anthony, St Hilarion, St Benedict, and others, are described by the ancient writers as consisting chiefly of sheep skins, the common dress of the peasants, shepherds, and mountaineers of that time; and the same they gave to their disciples. The orders established in and about cities and inhabited places took the habit worn by other ecclesiastics at the time of their institution. Thus, St Dominic gave his disciples the habit of regular canons, which he himself had always worn to that time. The same thing may be said of the Jesuits, Barnabites, Theatins, Oratorians, and others, who took the common habit of the ecclesiastics at the time of their foundation. And what makes them differ so much from each other, as well as from the ecclesiastical habit of the present times, is, that they have always kept invariably to the same costume; whereas the ecclesiastics and laics have been changing their mode on every occasion.

HABSAL, a circle of the Russian province of Esthonia, in the Gulf of Finland, extending over 1536 square miles, partly on the continent, but comprehending the islands Dagoe and Worms. It contains two towns, thirteen parishes, and 113 noble estates, with 41,500 inhabitants. The capital, of the same name, is situated in a bay protected by the island of Worms. It contains only 148 houses, but the security of the harbour brings some ships to it. Long. 23. 30. 55. E. Lat. 58. 56. 30. N.

HABSBURG, a small district of Switzerland, in the canton of Lucerne, on the lake of that name. It is only remarkable as the barony, once the family seat, of that house which has long given emperors to Germany, and now fills the throne of Austria. The chateau is a venerable heap of ruins, but of no great extent.

HABUR, a small island in the Red Sea, six miles from the Arabian shore. Lat. 16. 45. N.

HACKET, JOHN, bishop of Litchfield and Coventry, was born in the year 1592. In 1623 he was made chaplain to James I. and prebendary of Lincoln; and soon afterwards he obtained the rectory of St Andrew's, Holborn, with that of Cheam in Surrey, his patron observing, that he intended Holborn for wealth, and Cheam for health. In 1642 he was presented to a prebendary and residentiary; but he was deprived of the enjoyment of them, as well as of St Andrew's, by the ensuing troubles. He then lived retired at Cheam, until he recovered his preferments at the restoration of Charles II. by whom he was preferred to the see of Litchfield and Coventry in 1661. Finding the beautiful cathedral of Litchfield almost battered to the ground, he in eight years finished a complete church superior to the former one, at an expense of L.20,000, excepting L.1000 which he received from the dean and chapter, with what he could procure from private benefactors. He laid out L.1000 on a prebendal house, his palaces at Litchfield and Eccleshall having been demolished during the civil wars; and, besides these acts of munificence, he left several other benefactions at his death, which took place in 1670. He published, before he entered into orders, a comedy entitled *Loyola*, which was twice acted before King James I. After his death there appeared a *Century of his Sermons on several Remarkable Subjects*, in folio; and *The Life of Archbishop Williams*, also in folio, which was abridged by Ambrose Philips in 1700.

HACKNEY, a large parish of the hundred of Osulton, in the county of Middlesex. It is one of those villages which, from a collection of scattered hamlets and a few houses round the parish church, have, in the course of a century, so increased as to be more than equal to many continental cities, and even to several capitals. Being within three miles of London, the more wealthy of the middle class of traders have fixed their residences in it. It comprehends several hamlets, as they are still called, though they have also become towns. These are Upper and Lower Clapton, Dalston, Shackelwill, and Homerton. A new parish church of appropriate size has been built; and there are several chapels belonging to the established church, and places of worship for almost every description of the sectaries of the kingdom. By the increase of buildings in both directions, Hackney nearly joins the parish of Shoreditch and of Spitalfields, so as to be in appearance part of the capital. The schools of various kinds, from the classical to those for elementary instruction of the lowest grade, are very numerous. The most remarkable object is a nursery ground botanically arranged upon a large scale, which contains a stupendous building covered with glass and filled with all the forest trees of the tropical climates, in full growth. The population of this parish amounted in 1801 to 12,730, in 1811 to 16,771, in 1821 to 22,494, and in 1831 to 31,047.

HACKNEY Coaches, those exposed in the streets of London, and some other great cities, to be hired at rates fixed by authority. See COACH.

HADDINGTON, a royal burgh of Scotland, and capital of the county of the same name. It is situated on the left bank of the river Tyne, on the great road between Edinburgh and London, about sixteen and a half miles from the former capital. Haddington is a place of considerable antiquity, but the exact date of its origin is unknown. In records which belong to the twelfth century, it comes into notice as a demesne of David I., who occupied it as his burgh, with a church, a mill, and other apurtenants of a manor. Ada, the wife of Henry, son and heir of this monarch, came into possession of the town, and was very attentive to its interests, founding here in 1178 a convent of Cistertian nuns, which she endowed with the lands of Clerkington. Other lands, and several churches, likewise belonged to the nuns of this place; but these were of course confiscated at the reformation. There was also a monastery of Franciscan or Grey Friars at Haddington. The choir of the church, which is now in ruins, was anciently called the Lamp of Lothian (*Lucerna Laudoniæ*), because of its beautiful structure, and from its being kept constantly lighted, and thus rendered visible by night at a considerable distance. On the east of what is called the Nungate are the ruins of a chapel dedicated to St Martin. After the death of Ada above mentioned, the town became the property of her son William the Lion, whose son Alexander II. was born here. For some time Haddington seems to have been exempt from the miseries of war; but in 1216 it was burned by king John of England. In 1244, and again about two hundred years ago, it suffered a similar fate; but these were accidental occurrences. By the overflowings of the Tyne, it has likewise been repeatedly inundated. So late as 1775, the suburb of the Nungate was overwhelmed, and the whole town was submerged beneath the waters of the river, which had risen to seventeen feet above their ordinary level. Haddington was formerly surrounded by strong walls, which were provided with gates and ports, and also fortified. It was taken possession of by the English after the battle of Pinkie, and in the year following endured a siege by the Scotch, which makes some figure in history. Little, however, now remains of the ancient defences of this place; and although, as we have said, it was a royal residence, the only relics which tradition points to as those of a palace or castle, are found at a short distance from the western port of Haddington, within the walls, on the site of which the county buildings or court-house was recently erected. The town at present consists of a main or High Street, which stretches in a direction from east to west, and forms a portion of the road from London to Edinburgh. It is a spacious and handsome street, and possesses some elegant buildings. Parallel to it, on the north, runs the Back Street, having two cross streets at their eastern extremity. The town-house is a respectable fabric, provided with a handsome spire 150 feet in height. Connected with this edifice are the departments used as a jail for the town and county. The town is connected with the ancient suburb of Nungate, by a bridge of four arches thrown over the Tyne. The old Franciscan church is a fine Gothic building, although partly dilapidated. It is 210 feet in length, and is surmounted by a square tower ninety feet in height, and of handsome architecture. Some years ago the chancel, or west end of the cross, was repaired, and now forms a handsome parish church. Haddington, being situated in the midst of a rich and populous agricultural district, serves as the depôt of inland trade, and by this means its prosperity has been greatly advanced. The market, which is held on Friday, is a favourite place of resort for the sale and purchase of grain by the East Lothian farmers, and corn-dealers from different quarters. The town possesses no manufactories of any importance, if we except a few tan-works; and there are two distilleries and two breweries; but a number of extensive trades are also carried on. For facilitating business, branches of two banking establishments are here settled. As a royal burgh, the civic government of Haddington is vested in a provost, two merchant-bailies, a trades-bailie, a dean of guild, a treasurer, and twelve councillors. Since the passing of the burgh reform act, the deacons no longer sit as councillors, the distinction between merchant and trades-councillors having ceased to exist. The county courts of the sheriff are held here every Thursday during session time, and a sheriff small debt court every alternate Thursday. There is also a justice of peace court held at various times during the year. Haddington is the seat of a presbytery; and, besides the parish church, there are several chapels and meeting-houses, where dissenting bodies assemble. There is here an excellent academy, under the patronage of the magistrates, a parochial school, and several private educational establishments. There is also a school of arts institution, connected with which is a library, and a collection of philosophical apparatus. Besides a number of benefit and friendly societies, there have been recently established in Haddington The United Agricultural Society of East Lothian, and the East Lothian Horticultural Society. The population of the burgh and parish of Haddington amounted in 1821 to 5255, and in 1831 to 5883.

HADDINGTONSHIRE, or, as it is frequently called, EAST LOTHIAN, a county in Scotland, situated between 55° 47′ and 56° 5′ north latitude, and between 2° 25′ and 3° 2′ west longitude from Greenwich. Its boundaries are the Frith of Forth and German Ocean on the north and east, Berwickshire on the south, and Edinburghshire or Mid Lothian on the west. From west to east its extreme length is about twenty-five miles, and its greatest breadth from north to south seventeen; but from the irregularity of its boundaries, the area is computed to be only 272 square miles, or 174,080 English acres, of which about four fifths may be in tillage, or fit for cultivation, and the remaining fifth, consisting of hills or moorish ground, in its natural state, covered with heath and the coarser grasses. Of this last description is the greater part of the Lammermuir Hills, which bound the county in a direction from south-west to north-east, where they terminate in the bold promontory of St Abb's Head.

From this range of hills on the south, Haddingtonshire appears, when viewed from some commanding eminence at a distance, to slope gradually to the Frith of Forth and the German Ocean; but, upon a nearer survey, the acclivity from the sea is found to consist of nearly parallel ridges, running from west to east, most of which commence near the western extremity of the county, and run throughout the greater part of its length. At the termination of these ridges on the east, there is a most fertile and extensive plain, which has the Lammermuir Hills on the south, and North Berwick Law on the north. Some of the hills in the low country, though of no great elevation, are very conspicuous objects, owing to their rising suddenly from a flat surface, and being exposed to view on all sides, surrounded by low grounds. North Berwick Law on the coast, 940 feet high, Traprane Law, 700, and the Garleton Hills, almost in the centre, not only themselves hold a prominent place in the landscape, but afford from their heights a view of some of the richest and most beautiful scenery in Britain. The Lammermuir range on the south, which, when viewed from the Garleton Hills, appear to rise in the form of a vast amphitheatre, as if to protect and shelter the lower part of the county, present in their dark and rugged surface a striking contrast with the highly cultivated plains below. Over these plains, from the same station, the eye takes in the ports of Dunbar, North Berwick, Prestonpans, and Cockenzie, with the Bass Rock, the Isle of May, and others on the coast, and the shipping in the Frith of Forth; whilst nearer and all around lies an extensive tract of the most fertile land in the island, covered, if seen in a fine evening early in autumn, with rich crops of every hue, and studded with habitations of great variety, from the princely mansion, indistinctly traced through the variegated foliage of its woods, to the cottage of the peasant, sending up its slender column of smoke in the rays of the setting sun.

Almost every variety of soil known in Britain is to be found here; but it appears from the Agricultural Survey that clay and loam, nearly in equal proportions, though each of various qualities, extend over about two thirds of the county; yet a great deal of both descriptions is not naturally very fertile, much of the clay, in particular, being shallow, and incumbent on a wet bottom. Tracts of moorish soil are also found interspersed among the lower grounds. The climate, though as various as the soil, is, in an agricultural point of view, perhaps the best in Scotland, especially for the growth of corn. In the eastern parts, very little rain falls during the summer months, a circumstance to which is ascribed the superior quality of the grain. Here also harvest commences ten days earlier than upon the coast lands on the north, though on these last it is still earlier by three weeks or a month than upon the hills. In the Lammermuir district, snow in some seasons covers the ground entirely for three months, and lies on the north sides of the hills till after midsummer, though they are only thirteen or fourteen miles from the sea, whilst upon the coast it commonly dissolves as it falls. From December to May, the winds are chiefly from the east and north; in summer, when the weather is dry, from the east; and in autumn, from west to south and south-east, the last often accompanied with rain and fogs. The north-west brings storms in winter; and from the same quarter, and also from the south-west, come the high gales which are sometimes so injurious in autumn.

Haddingtonshire, though it has a number of streams, sufficient, perhaps, for the common purposes of its population, possesses no lakes of any magnitude. There is, however, a beautiful sheet of water at Pressmenon, in the midst of the most beautiful scenery; and also Danskine Loch, which is of much less magnitude and importance, unless for the great number of wild ducks which frequent its waters. The Tyne is the largest river, but it is inconsiderable, and enjoys no internal navigation nor fresh-water fishery. The Tyne, which springs from the Moor of Middleton in Edinburghshire, enters this county on the west, near Ormiston, and flowing nearly due east, passes Haddington, the county town, and falls into the sea beyond Tyningham, the seat of the Earl of Haddington, after receiving Coalstone and a few other rills from the south. Yet it has sometimes swelled to a great height, and occasioned much damage. In 1775 the whole suburb of Haddington called Nungate, and more than half the town, were laid under water. A small stream called the Peffer crosses part of the county from east to west, in a very level swampy district. In one part of its course so flat is the county, that one part of the stream takes a westerly course, and empties itself into Aberlady Bay, whilst another part takes an easterly direction, and discharges itself into the sea about two miles north from the Tyne. A number of brooks and rivulets take their rise amongst the Lammermuir Hills, and run in a south-east direction. The most conspicuous of these are the Dye, the Fasney, the Whitadder, Bothwell Water, and Moneynut Water.

This county is not less fortunate in its mineral productions than in its soil and climate. Coal, which has been wrought here since the beginning of the thirteenth century, is found in great abundance in the western parts of it, from the borders of Lammermuir to the sea; particularly in the parishes of Tranent, Ormiston, Gladsmuir, and Pencaitland. Hardly any part of the district is distant six miles from limestone; several extensive parishes rest on a bed of this rock. Marl is also found in different parts, though, since the use of lime became so general, it is not raised to a great extent. Sandstone or freestone, which prevails very generally throughout the county, is wrought, of an excellent quality, near Barra, and in Pencaitland and Tranent. On the west side of the harbour of Dunbar there is a remarkable promontory, resembling the Giant's Causeway in Ireland, composed of a red stone, apparently a very hard sandstone. It runs out to the north about a hundred yards, and is twenty yards wide, having the sea on each side on the flow of the tide. The diameter of its columns is from one to two feet, and their length at low water thirty, inclining a little to the south. Ironstone has been found in the parishes of Humbie, Keith, Oldhamstocks, and Tranent; and mineral springs at several places, some of which were once much resorted to, but are in little repute at present.

Near the place where the Fasney joins the Whitadder are to be found masses of granite and other primitive rocks, which have afforded much scope for geological speculation. At the termination of the granitic formation a seam of copper has been discovered. Both in the high and low districts of the county, the remains of numerous old encampments may be traced, and also ancient castles and other places of defence or retreat. Amongst the Lammermuir Hills circles are frequently to be seen formed of stones placed on end. It is a curious fact that the number of these stones is either six or nine. Within their enclosure vessels have occasionally been found, which are supposed to be urns containing the ashes of the dead.

The county of Haddington was in 1811 divided into 183 estates, of which twenty-three were above L.2000 Scots of valuation, fifty-two above L.500, and 133 below L.500. The valuation of the whole is L.168,873. 10s. 8d. Scots, of which L.1305. 4s. 3d. belonged to corporations, and L.56,257. 3s. to estates held under entail. And in the same year the real rent of the lands, as returned under the property-tax act, was L.180,654. 5s. 9d. sterling, and of the houses, L.6780. 15s. 2d. sterling. Thus the land-rent of the whole county, the Lammermuir Hills included, was almost a guinea an acre. Since 1811 the rent of land has in many instances been much reduced, and in general it has been converted from money into grain, the quantity of which varies according to the soil, situation, and other circumstances. At present the highest rent in the county is about fifteen bushels three pecks of wheat per acre, calculated at the second fiars, and the lowest is about four bushels, estimated at the same rate. The nobility who have seats in the county are the Duke of Roxburgh, the Marquis of Tweeddale, the Earls of Haddington, Wemyss, Hopetoun, Lauderdale, and Dalhousie; the Lords Sinclair, Blantyre, and Elibank. Several other proprietors have elegant mansions, which tend greatly to ornament the districts in which they are situate.

The farms are not generally what in some other parts of Britain would be called large. Their average size may be from 300 to 500 English acres over the whole of the arable land, but smaller on the best soils, and larger, perhaps, on the inferior. On land of a medium quality, 300 acres are not considered as a small farm. All the farms are held on leases, commonly for nineteen or twenty-one years, which do not often contain any covenants that are not equitable and liberal; except that here, as throughout the rest of Scotland, the tenant is seldom allowed to sublet his farm or assign his lease, or even bequeath it by testament, the heir-at-law succeeding to the farm as a matter of course, though not to the stock or crop upon it. This arrangement has often been complained of by both parties, though in few cases has it been set aside by mutual agreement. The landlord, on the one hand, would wish to oblige the tenant to leave to his heir-at-law a stock sufficient for the cultivation of the farm; and the tenant, on the other, desires that he should be left at liberty to dispose of his lease, and the capital he may have invested in the improvement of his farm, without any other condition than that the possessor shall become bound to the landlord for the performance of all the obligations he had himself come under.

Agriculture is the chief employment of the people of this district, which has long been celebrated for yielding a greater produce and higher rents than perhaps any other tract of corn land of the same extent in any part of Britain; whilst, at the same time, the farmer and the labourer, each in his own condition, have long maintained a high character for knowledge and industry; the one enjoying the fair profits of his skill and capital, and the other the reward of his useful services, in a degree of independence and comfort which is perhaps far from having been so general in other parts of the island. The principal object on the low grounds, in many situations almost the exclusive object, is the growing of corn; the dryness of the climate being thought to be less favourable to grazing and cattle crops. Latterly, however, grazing has been more generally practised, from the land being exhausted by frequent cropping. The farmers have found this a more profitable speculation, whilst at the same time it enriches the soil. The general rule by which the course of cropping is regulated, is not to take two crops of corn successively, but to interpose peas or beans, with cultivated herbage, commonly rye-grass and clover, on the clays; and turnips, with the same sort of herbage, on dry loams and sandy soils. On strong clays, a clean fallow once in four, six, or eight years, is considered as indispensable. In a six years' course on clays, a third of the land is under wheat, which is almost universally taken after the fallow, and also after the beans; the order being fallow, wheat, herbage, oats, beans, and wheat. On inferior clays a fallow is made every fourth year, and only a fourth of the land is usually under wheat. On the best dry loams wheat, in a few instances, may be taken every second year, in the order of turnips, wheat sown in winter and spring, herbage, and wheat. But this severe course, if it be in any case profitable for a number of years, can only be adopted in situations where more manure can be applied than is made from the produce of the farm itself. As there are no towns of any size in the county, and few or no considerable manufactories, an extra supply of manure could only be procured from the lime-works, if it were not that much of the coast land is plentifully supplied with sea-weed. This article, as well as lime, is therefore used to a great and most beneficial extent, and affords a degree of facility in the cultivating of corn, without deteriorating the soil, which does not exist in many other districts. Bone dust is used to a great extent in raising turnips, and is considered as the cheapest manure, particularly in inland districts, on account of the cheapness of the carriage. Tile draining has now been substituted for that effected by stones, and it has been found to answer remarkably well. Spade husbandry, or trenching, has lately been partially introduced. On well-managed soils, though not of the first quality, the produce may be about thirty bushels of wheat, forty-eight of oats, forty of barley, twenty-seven of beans, and from one and a half to two tons of hay at one cutting the English acre.

The farm-servants are, with very few exceptions, married; they live in cottages on the farms, and for a long time were paid altogether, or nearly so, in produce, each having a cow kept for him throughout the year. An attempt, however, has been made to pay the servants with money alone; but this is not likely to succeed, the plan being much opposed by the servants themselves. The occasional labourers reside in the villages which are scattered over the county; a much better situation for men who depend upon several employers, than if they were set down on particular farms. By this arrangement, which is common to several other parts of Scotland, the labouring classes in agriculture possess all the advantages ascribed to cottage farms, without being exposed to those evils which both theory and experience assure us that a general system of cottage farms is calculated to produce.

The breeding of live stock is almost confined to the Lammermuir district, which is stocked chiefly with sheep of the Linton or black-faced breed. On the low grounds, it is thought to be more profitable to buy the animals at a proper age than to rear them; horses from the west of Scotland, cattle from the north, and sheep from the hills of Tweeddale and Roxburghshire. Generally speaking, cattle are kept only in such numbers as to convert the straw into manure, getting a few turnips along with it, and are commonly sold in spring for the pastures of the south; and, in summer, the clovers, excepting that part of them which is wanted for hay, are fed off, as well as their turnips in winter, with sheep. The dairy is nowhere an object of consideration beyond the supply of their own domestic wants.

Haddingtonshire has taken the lead in several important rural improvements. Lords Belhaven and Haddington, early in the last century, wrote useful treatises on husbandry and forests. In 1750 the first turnpike act for Scotland was obtained for repairing the post-road through it. Wight, one of its farmers, who, like Arthur Young, made tours for collecting agricultural information, contributed much, by his publications, to improve the practices of this and other parts of Scotland; and Meigle, an ingenious mechanic, first brought the thrashing-mill into an effective state. Where water-power cannot be obtained, the steam-engine has been introduced, and almost totally superseded the use of horses or windmills. Some defects may be pointed out in the management of agricultural matters; but as improvements are always being introduced, it is likely that the former will soon disappear. The drill system, which is had recourse to in sowing wheat, barley, and oats, is considered as a great improvement, since by this means the soil is more effectually cleared of its annual growth of weeds. In the neighbourhood of Dunbar there is a common consisting of about 4000 acres, which seems condemned to perpetual sterility. It was formerly claimed by the burgesses of Dunbar, but the right being disputed by the neighbouring proprietors, a division took place, by which arrangement a very small part of it fell to the share of the royal burgh.

The principal towns in Haddingtonshire are, the county town of Haddington, Dunbar, and North Berwick. In these places the principal manufactures are carried on. See the articles HADDINGTON and DUNBAR.

The villages are, Tranent, where there is a market for the sale of corn in bulk; Prestonpans, noted for its salt-works and potteries, and formerly for an oyster fishery; Ormiston, Gladsmuir, Gifford, Saltoun, Aberlady, Cockenzie, Linton Bridge, Dirleton, and a few others.

The Bass, Craigleith, Fidra, Lamb, and Idris, are islets on the coast. The most noted of these is the Bass, a rock about a mile from the shore, a mile in circuit, and inaccessible on all sides, except the south-west. It has a spring of fresh water near the summit, affords pasture for a few sheep, and is frequented by great numbers of solan-geese and other sea birds. The situation of this small island occasioned its being at different times a military station, a state prison, and a place of resort for pirates, down to so late a period as the Revolution.

Haddingtonshire has produced men of eminence in various departments, amongst whom the names of Cockburn, Fletcher, Dalrymple, and several members of the Maitland or Lauderdale family, are conspicuous. Dunbar, the poet, was born at Saltoun in the year 1465; Burnet, the historian, was five years rector of the same parish. Blair, author of the *Grave*, and John Home, author of the tragedy of *Douglas*, were both ministers of the parish of Athelstaneford. George Heriot, the founder of the noble hospital in Edinburgh which bears his name, was born in the parish of Gladsmuir; and here Robertson composed his *History of Scotland.* John Knox, the reformer, one of the most extraordinary men whom any age or nation has produced, was born in the suburbs of Haddington, in 1505. The house, the place of his birth, which, with a few acres of land adjoining, belonged, till lately, to a family of his name, is still pointed out to strangers. A very conspicuous monument to the memory of the late Earl of Hopetoun has been erected on Garleton Hills, solely at the expense of the tenants on the Hopetoun estate.

There are twenty-four parishes in this county, of which twenty-three belong to the presbyteries of Haddington and Dunbar, and one to the presbytery of Dalkeith. These presbyteries constitute part of the synod of Lothian and Tweeddale. The poor are for the most part relieved by voluntary contributions; and where assessments have been found necessary, they have seldom exceeded two and a half per cent. on the real rent, and this is paid in equal moieties by the landlord and tenant. There is a charitable establishment for the education of boys at Preston, which was founded by James Schaw, the proprietor of that estate, who died in the year 1784; and another at Saltoun, for the same and other objects, the work of Bishop Burnet, who in 1711 bequeathed 20,000 merks for its support.

The county of Haddington sends one member to parliament, and the three burghs of Haddington, Dunbar, and North Berwick, join with Jedburgh and Lauder in electing another. In 1755, the population, according to the returns made to Dr Webster, was 29,709; and, in 1811, it was 31,164, being an increase of about four and a half per cent. in a period of fifty-six years. The numbers given by the writers of Sir John Sinclair's *Statistical Account of Scotland* denote a decrease, between 1755 and the years 1790–1797, of 743, the population at the latter periods being only 28,966. We annex an abstract of the census taken in 1811, 1821, and 1831. (See Somerville's *Survey of East Lothian; Beauties of Scotland*, vol. i.; *General Report of Scotland;* Playfair's *Description of Scotland*, vol. i.; and Chalmers's *Caledonia*, vol. ii.)

YEAR.	HOUSES.			OCCUPATIONS.			PERSONS.		
	Inhabited.	By how many Families occupied.	Uninhabited.	Families chiefly employed in Agriculture.	Families chiefly employed in Trade, Manufactures, or Handicraft.	All other Families not comprised in the two preceding classes.	Males.	Females.	Total of Persons.
1811	5882	7407	500	3180	2355	1922	14,232	16,932	31,164
1821	6230	7934	379	3009	2947	1978	16,828	18,299	35,127
1831	6561	8080	388	2811	2627	2642	17,397	18,748	36,145

HADELN, a district of the kingdom of Hanover, extending over 232 square miles of rich marsh land, near the mouth of the Elbe. It contains two market-towns and twelve parishes, with 15,670 prosperous inhabitants. It is chiefly remarkable for the privileges it enjoys of a very slight fixed taxation, and a freedom from the quartering of troops, which have been granted on account of the great expenditure incurred by erecting and keeping up dikes, to prevent the irruption of the sea. It produces abundant crops of corn, beans, rapeseed, flax, and garden fruits, and fattens many oxen. The chief town is Altenbruck, which contains 2450 inhabitants.

HADERSLEBEN, a city of Denmark, the capital of the bailiwick of the same name, in the province of Sleswick. The harbour has within a few years been nearly choked up, and cargoes are discharged by boats. It contains 400 houses, with about 3600 inhabitants. Long. 9. 25. E. Lat. 55. 15. N.

HADES, in the Scriptures, is used in a variety of senses. Sometimes it signifies the invisible regions of the dead, sometimes the place of the damned, and sometimes the grave. In the Greek authors it is in general used to signify the regions of the dead.

HADIDA, a town of Syria, on the Euphrates, consisting of 300 houses, surrounded with fruit gardens. It is about thirty miles south-east of Anna.

HADIE, a town of Yemen, in Arabia, situated on an eminence, sixteen miles east of Beit El Fakieh.

HADLEIGH, a market-town of the county of Suffolk, in the hundred of Cosford, sixty-five miles from London. It was formerly a borough and a trading place, but it has lost its charter; and the trade, which was chiefly in spinning, has given way to machinery. It has a market, which is held on Monday. The population amounted in 1801 to 2332, in 1811 to 2592, in 1821 to 2929, and in 1831 to 3425.

HAERLEBEKE, a town of the Netherlands, in the province of West Flanders, and circle of Courtray. It stands on the right bank of the Lys, and on the chaussée from Cambray to Ghent. It contains 3280 inhabitants.

HÆMORRHAGY (compounded of *αἱμα*, *blood*, and *ῥηγνω*, *ῥηγνυμι*, or *ῥησσω*, *to break*, *rend*, or *force asunder*), in medicine, a flux of blood at any part of the body, arising either from a rupture of the vessels, as when they are too full or too much pressed, or from an erosion of the same, as when the blood is too sharp and corrosive. The hæmorrhagy, properly speaking, as understood by the Greeks, was only a flux of blood at the nose; but the moderns extend the name to any kind of bloody flux, whether from the nose, mouth, lungs, stomach, intestines, fundament, matrix, or any other part.

HÆMORRHOIDAL, an appellation given by anatomists to the arteries and veins running to the *intestinum rectum.*

HÆMORRHOIDS, or PILES, an hæmorrhage or issue of blood from the hæmorrhoidal vessels.

HÆMUS, EMINEH DAG, or *Balcan*, a lofty chain of mountains separating Thrace from Mœsia, and running from the sources of the Hebrus towards the east of the Black Sea. From its summit, it was said, the Euxine, the Adriatic, the Danube, and the Alps, could be seen at one view; and it was with the intention of beholding this magnificent prospect that Philip king of Macedon ascended the mountain. (Liv. xl. 21; Polyb. xxxiv. 10, 15; Strab. vii. 313.)

HÆRETICO COMBURENDO, a writ which anciently lay against an heretic, who, having once been convicted of heresy by his bishop, and having abjured it, but afterwards falling into it again, or into some other, is thereupon committed to the secular power.

HAFAR, a considerable river-canal in the province of Irak Arabi. It proceeds from the river Karoon, which, after its confluence with the Abzal at Bandikeel, and before its separation, contains a greater body of waters than either the Tigris or the Euphrates. On its arrival at

Sabla, a ruined village, thirty miles east of Bassora, it disunites, and the largest division, taking the name of Hafar, after a course of fourteen or fifteen miles, again separates. The greater proportion of the waters continue their course in an oblique direction to the east; but the name of Hafar is still given to a canal which flows westward, and joins the Euphrates by an artificial cut three miles in length. This canal is of sufficient depth to admit vessels of any size to pass at high water

HAGARENS, the descendants of Ishmael. They were also called *Ishmaelites* and *Saracens*, and lastly by the general name of *Arabians*. As to the Hagarens, they dwelt in Arabia Felix, according to Pliny. Strabo joins them with the Nabathæans, and Chavlotæans, whose habitation was rather in Arabia Deserta. But others think that their capital was Petra, otherwise Agra, and consequently that they should be placed in Arabia Petræa. The author of the eighty-third psalm joins them with the Moabites; and in the Chronicles (1 Chron. v. 10), it is said that the sons of Reuben, in the time of Saul, made war against the Hagarens, and became masters of their country eastward of the mountains of Gilead. This therefore was the true and ancient country of the Hagarens. When Trajan entered Arabia, he besieged the capital of the Hagarens, but did not succeed in taking it. The sons of Hagar valued themselves of old upon their wisdom, as appears by Baruch

HAGEN, a town of Prussia, the capital of a circle of the same name in the Arensberg division of the province of Westphalia. It contains 329 houses, and 2540 inhabitants, who are employed in making hats, hosiery, linen goods, and small wares.

HAGENAU, a city of the department of the Lower Rhine, in the arrondissement of Strasbourg, in France. It is situated on the navigable river Motter, which near it joins the Rhine. It is fortified, but not strongly, and is well built. It contains 900 houses and 7694 inhabitants. There are many small manufactures carried on, and it is a great corn market. Long. 7. 42. E. Lat. 48. 48. N.

HAGGAI, the tenth of the small prophets, was supposed to have been born at Babylon in the year of the world 3457, and to have returned thence with Zerubbabel. It was this prophet who by the command of God (Ezra, v. 1, 2, &c.) exhorted the Jews, after their return from the captivity, to finish the rebuilding of the temple, which they had intermitted for fourteen years. His remonstrances had the desired effect; and to encourage them to proceed in the work, he assured them from God, that the glory of this latter house should be greater than the glory of the former; which was accordingly fulfilled when Christ honoured it with his presence. We know nothing certain of Haggai's death. The Jews pretend that he died in the last year of the reign of Darius, at the same time with the prophets Zechariah and Malachi, and that thereupon the spirit of prophecy ceased amongst the children of Israel. Epiphanius affirms that he was buried at Jerusalem amongst the priests. The Greeks keep his festival on the 16th of December, and the Latins on the 4th of July.

HAGIOGRAPHA, a name given to part of the books of Scripture, called by the Jews *Ketuvim*. The word is compounded of ἁγιος, *holy*, and γραφω, *I write*. The name is very ancient. St Jerome makes frequent mention of it, and, before him, St Epiphanius called these books simply Γραφεια. The Jews divide the sacred writings into three classes: the Law, which comprehends the five books of Moses; the Prophets, which they call *Neviim;* and the *Ketuvim*, כתובים, called by the Greeks *Hagiographa*, comprehending the books of Psalms, Proverbs, Job, Daniel, Ezra, together with the books of Nehemiah, Chronicles, Canticles, Ruth, the Lamentations, Ecclesiastes, and Esther. The Jews sometimes call the books the *Writings*, by way of eminence, as being written by immediate inspiration of the Holy Spirit. This is stated by Kimchi in his preface to the Psalms, Maimonides in *More Nevoch*, and Elias Levita in his *Thisbi*, under the word כתב. They distinguish the hagiographers, however, from the prophets, in this, that the authors of the former did not receive the matters contained in them by the way called prophecy, which consists in dreams, visions, whispers, ecstacies, and the like, but by the immediate inspiration and direction of the Spirit.

HAGUE, a large city, formerly denominated a village, in the province of Holland, in the Netherlands, about ten miles from Leyden, and thirty from Amsterdam, and three miles from the sea-shore. It is the chief seat of government, the residence of the king, and the place of assembly for the states-general and the several boards of the executive administration. It is situated amongst rich meadows, intersected by canals, used both as roads and for the conveyance of heavy goods. The streets are straight, broad, and clean, the public buildings magnificent, and the private houses commodious and handsome. It has a few squares, and a beautiful park joined to the city, with groves of trees and excellent promenades. Within the town the canals have lime trees on their banks. The royal palace is a handsome old building, and in the stadthouse there is a very fine collection of paintings. It contains fourteen churches, two synagogues, a poor-house and orphan-house, and other institutions of beneficence, with about (in 1831) 56,105 inhabitants. It is not a place of trade beyond the preparation of gold and silver articles and jewellery, and of such other articles as the luxury of a capital requires. Long. 4. 11. 20. E. Lat. 52. 3. 5. N.

HAIL, in *Meteorology*, a meteor generally defined frozen rain, but differing from it in this, that the hailstones are not formed of single pieces of ice, but of many little spherules agglutinated together. Neither are these spherules all of the same consistence; some of them being hard and solid like perfect ice, others soft, and mostly like snow hardened by a severe frost. Sometimes the hailstone has a kind of core of this soft matter; but more frequently the core is solid and hard, whilst the outside is formed of a softer matter. Hailstones assume various figures, being sometimes round, sometimes pyramidal, crenated, angular, thin, and flat, and sometimes stellated, with six radii like the small crystals of snow. See METEOROLOGY.

HAILSHAM, a market-town of the county of Sussex, in the rape of Pevensey, and hundred of Dill, fifty-seven miles from London, with a small market, which is held on Wednesday. The population amounted in 1801 to 897, in 1811 to 1029, in 1821 to 1278, and in 1831 to 1445.

HAINAN, or HAINAM, a large island in the China Sea, situated at the southern extremity of that empire, and subject to its authority. It lies between the eighteenth and twentieth degrees of north latitude, and is about 196 miles in length by seventy in average breadth. Although placed so near the tract of ships bound to Canton, very few particulars respecting this island are known. On the south coast are several fine bays, affording good anchorage and shelter from the north-east monsoon: these have been occasionally visited by ships which have met with disasters in the China Seas. Captain Krusenstern mentions that the Ladrone pirates who infest the China Seas have obtained possession of this island.

HAINBURG, a city of Austria, on the river Danube. It was burnt down in 1827, but has been since rebuilt. It is the seat of the greatest imperial tobacco and snuff manufactory in the empire. The town-house is remarkable for a Roman altar and a Roman tower, which commands a vast and fine prospect over the surrounding country. The city now contains 2700 inhabitants.

HAIR, small filaments issuing out of the pores of the skins of animals, and serving most of them as a tegument or covering.

Though the external surface of the body is the natural place of hairs, we have instances of these being found also on the internal surface. Amatus Lusitanus mentions a person who had hair upon his tongue. Pliny and Valerius Maximus assure us that the heart of Aristomenes the Messenian was hairy. Cælius Rhodiginus relates the same of Hermogenes the rhetorician; and Plutarch, of Leonidas the Spartan. Hippocrates is of opinion, that the glandular parts are the most subject to hair; but bundles of hair have been found in the muscular parts of beef, and in such parts of the human body as are equally firm.

By the Jews the hair was worn naturally long, just as it grew; but the priests had theirs cut every fortnight whilst they were in waiting at the temple; they made use of no razors, however, but of scissors only. The Nazarites, whilst their vow continued, were forbidden to touch their heads with a razor. The hair of both Jewish and Grecian women engaged a principal share of their attention, and the Roman ladies seem to have been no less curious respecting theirs. They generally wore it long, and dressed it in a variety of ways, bedecking it with gold, silver, pearls, and other ornaments. On the contrary, the men amongst the Greeks and Romans, and amongst the Jews at a later period, wore their hair short, as may be collected from books, medals, statues, and other monuments or remains. This formed a principal distinction in dress between the sexes. Amongst the Greeks, both sexes, a few days before marriage, cut off and consecrated their hair as an offering to their favourite deities. It was also customary amongst them to hang the hair of the dead on the doors of their houses previous to interment. They likewise, when mourning for their deceased relations or friends, tore, cut off, and sometimes shaved their hair, which they laid upon the corpse, or threw into the pile, to be consumed along with the body. The ancients imagined that no person could die till a lock of hair was cut off; and this act they supposed was performed by the invisible hand of death, or some other messenger of the gods. The hair, thus cut off, it was supposed, consecrated the person to the infernal deities, under whose jurisdiction the dead were supposed to be placed. It was a sort of first fruits, which sanctified the whole. Whatever was the fashion with respect to the hair in the Grecian states, slaves were forbidden to imitate the freemen. The hair of the slaves was always cut in a particular manner, which they no longer retained after they procured their freedom.

It was esteemed a distinguished honour amongst the ancient Gauls to have long hair, and hence came the appellation *Gallia Comata*. For this reason Julius Cæsar, upon subduing the Gauls, made them cut off their hair as a token of submission. It was with a view to this, that those who afterwards quitted the world to go and live in cloisters had their hair shaven off, to show that they bade adieu to all earthly ornaments, and made a vow of perpetual subjection to their superiors.

Gregory of Tours assures us, that in the royal family of France it was a long time the peculiar mark and privilege of kings and princes of the blood to wear long hair, artfully dressed and curled, every body else being obliged to be polled, or cut round, in token of inferiority and obedience. Some writers assure us, that there were different cuts for all the different qualities and conditions; from the prince who wore it at full length, to the slave or villein who was quite cropt. To cut off the hair of a son of France, under the first race of kings, was to declare him excluded from the right of succeeding to the crown, and reduced to the condition of a subject.

In the eighth century it was the custom of people of quality to have their children's hair cut the first time by persons they had a particular honour and esteem for, and who, in virtue of this ceremony, were reputed as a sort of spiritual parents or godfathers. This practice appears to have been more ancient, inasmuch as we read that Constantine sent to the pope the hair of his son Heraclius, as a token that he desired him to be his adoptive father.

The parade of long hair became still more and more obnoxious in the progress of Christianity, as something utterly inconsistent with the profession of persons who bore the cross. Hence numerous injunctions and canons to the contrary were published. Pope Anicetus is commonly supposed to have been the first who forbade the clergy to wear long hair; but the prohibition is of older standing in the churches of the East, and the letter in which the decree in question is written is of a much later date than this pope. The clerical tonsure is, according to Isidore, of apostolical institution.

Long hair was anciently held so odious, that there is a canon still extant of the year 1096, importing, that such as wore long hair should be excluded from church whilst living, and not be prayed for when dead. There is a furious declamation of Luitprand against the Emperor Phocas, for wearing long hair, after the manner of the emperors of the East; excepting Theophilas, who being bald, enjoined all his subjects to shave their heads.

The French historians and antiquaries have been very exact in recording the capillary honours of their several kings. Charlemagne wore his hair very short, his son shorter, Charles the Bald had none at all. Under Hugh Capet it began to appear again; but this the ecclesiastics took in dudgeon, and excommunicated all who let their hair grow. Peter Lombard expostulated so warmly with Charles the Young on the subject, that the latter cut off his hair, and his successors for some generations wore it very short. A professor of Utrecht, in 1650, wrote expressly on the question, whether it be lawful for men to wear long hair; and concluded in favour of the negative. Another divine, named Reves, who had written in support of the affirmative, replied to him.

The ancient Britons were extremely proud of the length and beauty of their hair, and they were at much pains in dressing and adorning their heads. Some of them carried their fondness for and admiration of their hair to an extravagant height. It is said to have been the last and most earnest request of a young warrior, who had been taken prisoner and condemned to be beheaded, that no slave might be permitted to touch his hair, which was remarkably long and beautiful, and that it might not be stained with his blood. Not contented with the natural colour of their hair, which was commonly fair or yellow, they made use of certain washes to render it still brighter. One of these washes was a composition of lime, the ashes of certain vegetables, and tallow. They also employed various arts to make the hair of their heads grow thick and long; which last was not only esteemed a great beauty, but was considered as a mark of dignity and noble birth. Boadicea, queen of the Iceni, is described by Dio as having long hair, flowing over her shoulders, and reaching down below the middle of her back. The Britons shaved all their beards except their upper lips; the hair of which they, as well as the Gauls, allowed to grow to a very inconvenient length.

In after times the Anglo-Saxons and Danes also considered fine hair as one of the greatest beauties and ornaments of their persons, and were at no small pains in dressing it to advantage. Young ladies before marriage wore their hair uncovered and untied, flowing in ringlets over their shoulders; but as soon as they were married

Hair.

Hair || Hajypoor.

they cut it shorter, tied it up, and put on a head-dress of some kind or other, according to the prevailing fashion. To have the hair entirely cut off was so great a disgrace, that it formed one of the most severe punishments inflicted on those women who had been guilty of adultery. The Danish soldiers who were quartered upon the English, in the reigns of Edgar the Peaceable and of Ethelred the Unready, were the beaux of those times, and were particularly attentive to the dressing of the hair, which they combed at least once every day, and thereby captivated the affections of the English ladies. The clergy, both secular and regular, were obliged to shave the crowns of their heads, and keep their hair short, which distinguished them from the laity; and several canons were made against their concealing their tonsure, or allowing their hair to grow long. The shape of this clerical tonsure was the subject of long and violent debates between the English clergy on the one hand, and those of the Scots and Picts on the other; amongst the former it was circular, amongst the latter only semicircular. It appears, indeed, that long flowing hair was universally esteemed a great ornament; and the tonsure of the clergy was considered as an act of mortification and self-denial, which many of them submitted to with reluctance, and endeavoured as much as possible to conceal. Some of them who affected the reputation of superior sanctity inveighed with great bitterness against the long hair of the laity; and laboured earnestly to persuade them to cut it short, in imitation of the clergy. Thus the famous St Wulstan, bishop of Worcester, is said to have declaimed with great vehemence against luxury of all kinds, but chiefly against long hair as the most criminal and most universal. "The English," says William of Malmsbury in his life of St Wulstan, "were very vicious in their manners, and plunged in luxury, through the long peace which they had enjoyed in the reign of Edward the Confessor. The holy prelate Wulstan reproved the wicked of all ranks with great boldness; but he rebuked those with the greatest severity who were proud of their long hair. When any of those vain people bowed their heads before him to receive his blessing, before he gave it, he cut a lock of their hair with a little sharp knife, which he carried about him for that purpose; and commanded them, by way of penance for their sins, to cut all the rest of their hair in the same manner. If any of them refused to comply with this command, he denounced the most dreadful judgments upon them, reproached them for their effeminacy, and foretold, that as they imitated women in the length of their hair, they would imitate them in their cowardice when their country was invaded, which was accomplished at the landing of the Normans."

This continued long to be a topic of declamation amongst the clergy, who even represented it as one of the greatest crimes, and most certain marks of reprobation. Anselm, archbishop of Canterbury, went so far as to pronounce the sentence of excommunication against all who wore long hair; and for this pious zeal he was very much commended. Serlo, a Norman bishop, acquired great honour by a sermon which he preached before Henry I. in the year 1104, against long and curled hair, with which the king and all his courtiers were so much affected that they consented to resign their flowing ringlets, of which they had been so vain. The prudent prelate gave them no time to change their minds, but immediately pulled a pair of shears out of his sleeve, and performed the operation with his own hand. Another incident happened about twenty-five years thereafter, which gave a temporary check to the prevailing fondness for long hair. It is thus related by a contemporary historian: "An event happened in the year 1129, which seemed very wonderful to our young gallants; who, forgetting that they were men, had transformed themselves into women by the length of their hair. A certain knight, who was very proud of his long luxuriant hair, dreamed that a person suffocated him with its curls. As soon as he awoke from his sleep, he cut his hair to a decent length. The report of this spread over all England, and almost all the knights reduced their hair to the proper standard. But this reformation was not of long continuance; for in less than a year all who wished to appear fashionable returned to their former wickedness, and contended with the ladies in length of hair. Those to whom nature had denied that ornament supplied the defect by art."

Hair, or *Down*, of plants, a general term expressive of all the hairy and glandular appearances on the surface of plants, to which these are supposed by naturalists to serve the double purpose of defensive weapons and vessels of secretion.

These hairs are minute threads of greater or less length and solidity; some of them being visible to the naked eye, whilst others are rendered so only by the help of glasses. Examined by a microscope, almost all the parts of plants, particularly the young stalks or stems, appear covered with hairs.

Hairs on the surface of plants present themselves under various forms; in the leguminous plants, they are generally cylindric; in the mallow tribe, they terminate in a point; in agrimony, they are shaped like a fish-hook; in nettle, they are awl-shaped and jointed; and in some compound flowers with hollow or funnel-shaped florets, they terminate in two crooked points.

Probable as some experiments have rendered it, that the hairs on the surface of plants contribute to some organical secretion, their principal use seems to be to preserve the parts in which they are lodged from the effect of violent friction, from winds, from extremes of heat and cold, and such like external injuries.

M. Guettard, who, from the form, situation, and other circumstances of the hairy and glandular appearances on the surface of plants, established a botanical method, has demonstrated, that these appearances are generally constant and uniform in all the plants of the same genus. The same uniformity seems likewise to characterise all the different genera of the same natural order.

The different sorts of hairs which form the down upon the surface of plants were imperfectly distinguished by Grew in 1682, and by Malpighi in 1686. M. Guettard was the first who examined the subject both as a botanist and a philosopher. His observations were published in 1747.

HAJYGUNGE, a town of Hindustan, in the province of Bengal, pleasantly situated on the south bank of the Ganges, which is here a mile broad, and in the rainy season runs with great rapidity. It is twenty-nine miles southwest of Dacca. Long. 89. 53. E. Lat. 23. 31. N. The name Hajji is the Arabic for pilgrim, and is prefixed to a number of towns in Mahommedan countries.

HAJYKAN, a large district within the Afghan territories, situated along the western bank of the Indus, between the 29th and 31st degrees of north latitude. It is chiefly a stripe of land, bounded by the Indus on the east, and a ridge of mountains on the west. Under a regular government it might be rendered fertile and productive; but it is chiefly inhabited by predatory tribes of Afghans and Balvoches, who neglect agriculture. The country has been imperfectly explored, and its limits have never been very distinctly defined. The great majority of the inhabitants are of the Soonee sect of Mahommedans.

HAJYPOOR, a district of Hindustan, in the province of Bahar, situated principally between the 25th and 26th degrees of north latitude. It is fertile and well cultivated, and produces a quantity of opium and saltpetre; the greater part of the company's investment being manufactured in this country, and in the adjacent territory of Sarun. The farmers breed a number of horses; and at Hajypoor, or Hurryhurchitter, an annual fair is held for the sale of these animals, the breed of which has been much improved by the English. The principal towns are, Hajypoor, Singhea, and Mowah. Hajypoor is the principal town, situated on the north-east side of the Ganges, at its confluence with the Gunduck, nearly opposite to Patna. It was founded by Hias Hajy, the second independent Mahommedan king of Bengal. In 1574 it was taken by the troops of the Emperor Akbar, after a gallant resistance. Long. 85. 21. E. Lat. 25. 41. N. Hajypoor is also the name of a small town in the Sikk territories, in the province of Lahore, situated on the north side of the Beyah river, which is here a hundred yards broad. Sixty-five miles south-east from Lahore. Long. 74. 51. E. Lat. 26. 20. N.

HAKE, the English name of a fish, common in the English and some other seas, and called by authors the *merlucius*, or *lucius marinus*. This fish was used of old dried and salted. Hence the proverb in Kent, *As dry as a hake.*

HAKLUYT, Richard, a celebrated naval historian, descended from an ancient family at Eton or Yetton, in Herefordshire, is supposed to have been born in London about the year 1553. He was educated at Westminster School; and thence, in 1570, he removed to Christ Church College, Oxford, where he applied himself particularly to the study of cosmography, and read public lectures in that science. When Sir Edward Stafford was sent ambassador to France in 1583, Mr Hakluyt attended him, probably in the capacity of chaplain. He was at this time master of arts and professor of divinity. In 1585 he obtained the royal mandate for the next vacant prebend of Bristol, to which preferment he succeeded during his residence at Paris. Constantly attentive to his favourite cosmographical inquiries, Hakluyt, in searching the French libraries, found a valuable manuscript history of Florida, which had been discovered about twenty years before by Captain Loudonière and others; and this he caused to be published in the French language, at his own expense. Soon afterwards he revised and republished Peter Martyr's book *De Orbe Novo*, with marginal notes, a commodious index, and a map of New England and America. After five years residence in France, Hakluyt returned to England in 1588; and in 1605 he was appointed prebendary of Westminster, which, with the rectory of Wetheringset in the county of Suffolk, seems to have been the summit of his preferment. He died in 1616, and was buried in Westminster Abbey. Hakluyt was an indefatigable and faithful historian, and his various collections are equally curious, instructive, and interesting. His works are, 1. A collection of Voyages and Discoveries, in one small volume; 2. History of Florida; 3. The principal Navigations, Voyages, and Discoveries of the English Nation, made by Sea or over Land to the farthest distant Quarters of the Earth, at any time within the compass of these 1500 years, in three vols. folio; 4. The Discoveries of the World, from the first Original to the year 1555, written in the Portugal tongue by Antonio Galvano, corrected, much amended, and translated into English, by Richard Hakluyt; 5. Virginia richly valued, by the Description of the Main Land of Florida, her next neighbour, written by a Portugal gentleman of Elvas, and translated by Richard Hakluyt. Besides these, he left several manuscripts, which were printed in Purchas's collection.

HAL, or Halle, a city of the Netherlands, in the province of South Brabant. It is situated on the river Senne, ten miles from Brussels; and has extensive breweries, distilleries, salt-refineries, paper-mills, and tanneries, with 700 houses, and 4612 inhabitants.

HALBERSTADT, a city, the capital of a circle of the same name, of the province of Saxony, in Prussia, and situated on the river Holzemmte. It is walled, and contains nine churches, six hospitals, 1861 houses, and 14,670 inhabitants, with some establishments for education. It was formerly a manufacturing place, but has for some years been gradually on the decline. Long. 10. 58. 11. E. Lat. 51. 53. 55. N.

HALBERT, or Halbard, in war, a well-known weapon, formerly carried by the serjeants of foot and dragoons. It was a sort of spear, the shaft of which was about five feet long, and made of ash or other wood. Its head was armed with a steel point, not unlike the point of a two-edged sword. Besides this sharp point, which was in a line with the shaft, there was a cross piece of steel, flat, and pointed at both ends, but generally with a cutting edge at one extremity, and a bent sharp point at the other; so that it served equally to cut down or to push withal. It was also useful in determining the ground between the ranks, and adjusting the files of a battalion. The word is formed from the German *hal*, hall, and *bard*, an hatchet. Vossius derives it from the German *hallebaert*, a compound of *hel*, clarus, splendens, and *baert*, axe. The halbert was anciently a common weapon in the army, where there were companies of halberdiers. It is said to have been used by the Amazons, and afterwards by the Rhætians and Vindelicians about the year 570. It was called the *Danish axe*, because the Danes carried a halbert on the left shoulder. From the Danes it passed to the Scotch, from the Scotch to the English Saxons, and from them to the French.

HALCYON, the ancient name of the alcedo or king's fisher.

Halcyon Days, in *Antiquity*, a name given to seven days before and as many after the winter solstice; because, at this season, the halcyon, invited by the calmness of the weather, laid its eggs in nests built in the rocks, close by the brink of the sea; and hence *halcyon days* is a phrase expressive of times of peace and tranquillity.

HALDE, John Baptist du, was born at Paris on the 1st of February 1674, and having entered into the society of Jesus, he was at length appointed to succeed Father Legobien, who had been intrusted with the duty of collecting and arranging the letters which they received from different quarters of the globe. He was also for some time secretary to the famous Father Letellier, confessor to the king of France. Towards the close of his life he was attacked with acute spasms, which he endured with exemplary resignation, and died on the 18th of August 1743. Duhalde is represented as a man of mild and amiable character, and as remarkable alike for his unaffected piety and unwearied industry. He was the author of some Latin poems, which do not evince any superior degree of excellence; but the productions for which he is principally distinguished are, 1. Lettres Edifiantes et Curieuses écrites des Missions Etrangères, which he edited with great ability from the ninth to the twenty-sixth volume inclusively, and which have been translated into English and German; 2. Description Géographique, Historique, Chronologique, Politique, et Physique, de l'Empire de la Chine et de la Tartarie Chinoise, Paris, 1735, in four volumes large folio, with figures and an atlas by D'Anville. This work, the first in which China is described with so much exactness and detail, is at the same time a beautiful monument of French typography. The description contained in this work and in the *Lettres Edifiantes* has furnished materials to almost all the modern writers who have treated of that vast empire, and has contributed materially to advance the science of geography. (A.)

HALDUBARRY, a town of Hindustan, in the district of Purneah, Bengal, situated on the east bank of the Mahanuddy river, fifty-five miles north-east from Purneah. Long. 87. 59. E. Lat. 26. 20. N.

HALE, Sir Matthew, the lord chief justice of the King's Bench in the reign of Charles II., was the son of

Hale.

Robert Hale, Esq. a barrister of Lincoln's Inn, and was born in 1609. He was educated at Oxford, where he made considerable progress in learning; but he was afterwards diverted from his studies by the levities of youth. From these, however, he was recalled by Mr John Glanvill, serjeant-at-law; and having applied to the study of the law, he entered himself of Lincoln's Inn. Noy the attorney-general took early notice of him, and directed him in his studies. Selden also distinguished him; and it was this acquaintance which first led Hale to a more enlarged pursuit of learning, having before confined his studies to his own profession. During the civil wars he behaved so well as to gain the esteem of both parties. He was employed in practice by all the king's party; and he was also appointed by the parliament as one of the commissioners to treat with the king. The murder of King Charles gave him very sensible regret. However, he took the engagement, and was appointed, with several others, to consider of the reformation of the law. In 1653 he was by writ made serjeant-at-law, and soon afterwards appointed one of the justices of the Common Pleas. Upon the death of Oliver Cromwell, he refused to accept of the new commission offered him by Richard, his successor. He was returned as one of the knights of Gloucestershire in the parliament which recalled Charles II. Soon afterwards he was made lord chief baron of the Exchequer; but he declined the honour of knighthood, till Lord Chancellor Hyde, sending for him upon business when the king was at his house, told his majesty that there was his modest chief baron; upon which he was unexpectedly knighted. He was one of the principal judges who sat in Clifford's Inn about settling the difference between landlord and tenant, after the fire of London; in which capacity he behaved to the satisfaction of all parties concerned. As chief baron he likewise acted with inflexible integrity. A peer of the highest rank went once upon a time to his chamber, and told him, that having a suit in law to be tried before him, he was then to acquaint him with it, that he might the better understand it when it should come to be tried in court. Upon this the lord chief baron interrupted him, and said that his grace (for he was a duke) did not deal fairly to come to his chambers about such affairs, for he never received information of such causes but in open court, where both parties were to be heard alike. His grace then went away not a little dissatisfied, and complained of it to the king as a rudeness which was not to be endured; but his majesty bid him content himself that he was not worse used, adding, that he verily believed Hale would have used him no better if he had gone to solicit him in any of his own causes. Another remarkable incident happened in one of his circuits. A gentleman who had a trial at the assizes had sent him a buck for his table. When Judge Hale heard his name, he asked if he was not the same person who had sent him the venison; and being answered in the affirmative, told him that he could not suffer the trial to go on till he had paid him for his buck. The gentleman answered, that he never sold his venison, and that he had done nothing to him which he did not do to every judge who had gone that circuit; which was confirmed by several gentlemen present. The lord chief baron, however, would not suffer the trial to proceed till he had paid for the present, upon which the gentleman withdrew the record. This upright judge was in 1671 advanced to be lord chief justice of the King's Bench; but about four years after this promotion his health declined, and he resigned his high office in February 1676, and died in December following. This excellent man, who was an ornament to the bench, to his country, and to human nature, was the author of, 1. An Essay touching the Gravitation or Non-Gravitation of Fluid Bodies; 2. *Difficiles Nugæ*, or Observations on the Torricellian Experiment; 3. Observations on the Principles of Natural Motion; 4. Contemplations Moral and Divine; 5. An English Translation of Nepos's Life of Pomponius Atticus; and, 6. The Primitive Origination of Mankind. At the time of his decease he also left other works, which were afterwards published, viz. 1. Judgment of the Nature of True Religion; 2. Several Tracts, including a Discourse of Religion, under three heads; 3. A Letter to his Children; 4. A Letter to one of his Sons on his recovery from the small-pox; 5. A Discourse of the Knowledge of God and of Ourselves, first, by the Light of Nature, and secondly, by the Sacred Scriptures. All these, under the title of Hale's Moral and Religious Works, were published by Thirlwall in 1805, in two volumes 8vo, with a life of the author by Bishop Burnet. Of his Law Tracts one only appeared in his lifetime, viz. London Liberty, or an argument of Law and Reason, 1650, reprinted in 1682. After his death were published, 1. Pleas of the Crown, or a Methodical Summary, 1678, in 8vo, continued by Jacob, and reprinted in 1716; 2. Treatise on the enrolling and registering of all Conveyances of Land, 1694, in 4to, reprinted with additions in 1756; 3. *Tractatus de successionibus apud Anglos*, or a Treatise on Hereditary Descents, 1700 and 1735, in 8vo; 4. A Treatise on the original Institution of Parliaments, 1707, republished by Hargrave in 1796, 4to; 5. Analysis of the Law, without date; 6. History of the Common Law of England, in twelve chapters, 1713, in 8vo; 7. *Historia Placitorum Coronæ*, or History of the Pleas of the Crown, 1739, in two volumes folio, edited by Emelyn. There are a few other tracts and opinions of his, which have been published by Hargrave and succeeding writers on law in their collections. Sir Matthew Hale, by his will, bequeathed to the society of Lincoln's Inn his collection of manuscripts, which he had been nearly forty years in making, and on which he had spared neither labour nor expense.

Hale

HALES, Stephen, a celebrated divine and philosopher, was born in the year 1677. He was the sixth son of Thomas Hales, the eldest son of Sir Robert Hales, created a baronet by King Charles II., and Mary, the heiress of Richard Langley of Abbotswood in Hertfordshire. In 1696 he was entered as a pensioner at Bennet College, Cambridge, was admitted a fellow in 1703, and became bachelor of divinity in 1711. He soon discovered a genius for natural philosophy; but botany was his first study; and he used frequently to make excursions among Gogmagog Hills, in company with Dr Stukely, with a view of prosecuting that study. In these expeditions he likewise collected fossils and insects, having contrived a curious instrument for catching such of the latter as had wings. In conjunction with this friend he also applied himself to the study of anatomy, and invented a curious method of obtaining a representation of the lungs in lead. They next applied themselves to the study of chemistry; but in this science they did not make any remarkable discoveries. In the study of astronomy Mr Hales was equally assiduous. Having made himself acquainted with the Newtonian system, he contrived a machine for showing the phenomena, on much the same principles with that afterwards constructed by Rowley, and, from the name of his patron, called an *Orrery*.

About the year 1710 he was presented to the perpetual cure of Teddington, near Twickenham, in Middlesex; and he afterwards accepted the living of Porlock in Somersetshire, which vacated his fellowship in the college, and which he exchanged for the living of Faringdon in Hampshire. Soon afterwards he married Mary, the daughter and heiress of Dr Newce, who was rector of Halisham in Sussex, but resided at Much-Haddam in Hertfordshire. On the 13th of March 1718, he was elected a member of the Royal Society; and on the 5th of March in the year following, he exhibited an account of some experiments which he had recently made on the effect of solar heat in raising the sap in trees. This procured him the thanks of the society, who also requested him to prosecute the subject. With this request he complied; and on the 14th of June 1725 exhibited a treatise, in which he gave an account of his progress. This production being highly applauded by the society, he further enlarged and improved it; and in April 1727 he published it, under the title of *Vegetable Statics*. He dedicated the work to his majesty King George II. who was then Prince of Wales; and he was the same year appointed one of the council of the Royal Society, Sir Hans Sloane being at the same annual election chosen their president. His book being well received, there was published in 1731 a second edition, in which Mr Hales promised a sequel to the work, which he accordingly published in 1733, under the title of *Statical Essays*. In 1732 he was appointed one of the trustees for establishing a new colony in Georgia. On the 5th of July 1733 the university of Oxford honoured him with a diploma, conferring the degree of doctor in divinity; a mark of distinction the more honourable, as it was not usual for one university to confer academical honours upon those who had been educated at another. In 1734, when the health and morals of the lower and middling class of people were subverted by the excessive drinking of gin, he published, though without his name, *A Friendly Admonition to the Drinkers of Brandy and other Spirituous Liquors*, which was twice reprinted. Towards the close of the same year, he published a sermon which he preached at St Bride's before the rest of the trustees for establishing a new colony in Georgia. In 1739 he printed a volume in octavo, entitled *Philosophical Experiments on Sea-water, Corn, Flesh, and other Substances.* This work, which contained many useful instructions for voyagers, was dedicated to the lords of the admiralty. The same year he exhibited to the Royal Society an account of some further experiments towards the discovery of medicines for dissolving the stone in the kidneys and bladder, and preserving meat in long voyages; and for this he received the gold medal of Sir Godfrey Copley's donation. The year following he published some account of experiments and observations on Stephen's *Medicines for dissolving the Stone*, in which their dissolvent power is inquired into and demonstrated.

In 1741 he read before the Royal Society an account of an instrument which he had invented, and called a *ventilator*, for conveying fresh air into mines, hospitals, prisons, and the confined parts of ships. He had communicated it to his particular friends some months before; and it is very remarkable, that a machine of the same kind, for the same purpose, was in the spring of the same year invented by one Martin Triewald, an officer in the service of the king of Sweden, for which the king and senate granted him a privilege in October following, and ordered every ship of war in the service of that country to be furnished with one of them. A model of this machine was also sent into France, and all the ships in the French navy were in consequence ordered to have a ventilator of the same sort. It happened likewise, that about the same time one Sutton, who kept a coffee-house in Aldersgate Street, invented a ventilator of another construction, to draw off the foul air from ships by means of the cook-room fire; but poor Sutton had not interest enough to make mankind accept the benefit he offered them, though its superiority to Dr Hales's contrivance was evident, and though Dr Mead and Mr Benjamin Robins gave their testimony in its favour. The public, however, is not less indebted to the ingenuity and benevolence of Dr Hales, whose ventilators came more easily into use for many purposes of the greatest importance, particularly for keeping corn sweet, by blowing through it currents of fresh air; a practice very soon adopted by France, where a large granary was constructed, under the direction of Duhamel, for the preservation of corn in this manner, with a view to render the practice general.

In 1743, Dr Hales read before the Royal Society a description of a method of conveying liquors into the abdomen during the operation of tapping; and it was afterwards printed in their Transactions. In 1745, he published some experiments and observations on tar-water, which he had been induced to make in consequence of the publication of a work called *Siris*, in which Dr Berkeley, bishop of Cloyne, had recommended tar water as an universal medicine. On this occasion several letters passed between them on the subject, particularly with respect to the use of tar-water in the disease of the horned cattle. In the same year he communicated to the public, in a letter addressed to the editor of the *Gentleman's Magazine*, a description of a *back-heaver*, calculated to winnow and clean corn much sooner and better than can be done by the common method. He also, at the same time, and by the same channel, communicated to the public a cheap and easy way to preserve corn sweet in sacks; an invention of great benefit to farmers, especially to poor lessees, who want to keep small quantities of corn for some time, but have no proper granary or repository for the purpose. He likewise the same year took the same method to publish directions how to keep corn sweet in heaps without turning it, and to sweeten it when musty. He published a long paper, containing an account of several methods to preserve corn by ventilators; with a particular description of several sorts of ventilators, illustrated by a cut, so that the whole mechanism of them might be easily known, and the machine constructed by a common carpenter. He published also in the same volume, but without his name, a detection of the fallacious boasts concerning the efficacy of the liquid shell in dissolving the stone in the bladder. In 1746 he communicated to the Royal Society a proposal for bringing small passable stones soon, and with ease, out of the bladder; and this was also printed in the Transactions of that body. In the *Gentleman's Magazine* for July 1747 he published an account of an improvement of his back-heaver, by which it was rendered capable of clearing corn of the small grain, seeds, blacks, smut-balls, and other impurities, to such perfection, as to make it fit for seed-corn. In 1748 he communicated to the Royal Society a proposal for checking, in some degree, the progress of fires, occasioned by the great fire which happened that year in Cornhill; and the substance of this proposal was printed in the Transactions of the society. In the same year he also communicated to the society two memoirs, which are printed in their Transactions; one on the great benefit of ventilators, and the other on some experiments in electricity. In 1749 his ventilators were fixed in the Savoy prison, by order of Henry Fox, then secretary at war, and afterwards Lord Holland; and the benefit proved so great, that though previously fifty or a hundred in a year often died of the jail distemper, yet from the year 1749 till the year 1752 inclusive, not more than four persons died, though in the year 1750 the number of prisoners was two hundred and forty; and of those four, one died of the small-pox, and another of intemperance. In the year 1750 he published some considerations on the causes of earthquakes, occasioned by the slight shocks felt that year in London. The substance of this work was also printed in the *Philosophical Transactions.* The same year he exhibited an examination of the strength of several purging waters, especially of the water of Jessop's Well, which is printed in the *Philosophical Transactions.*

Dr Hales had been several years honoured with the esteem and friendship of Frederick prince of Wales, who frequently visited him at Teddington, from his neighbouring palace at Kew, and took pleasure in surprising him in the midst of those curious researches which almost incessantly employed him. Upon the prince's death, which happened this year, and the settlement of the household of the princess-dowager, he was, without his solicitation, or even knowledge, appointed clerk of the closet, or almoner, to her royal highness. In 1751 he was appointed by the College of Physicians to preach the annual sermon called Crowne's Lecture; Dr William Crowne having left a legacy for a sermon to be annually preached on "the wisdom and goodness of God displayed in the formation of man." Dr Hales's text was, *With the ancient is wisdom, and in length of days understanding* (Job, xii. 12). This sermon, as usual, was published at the request of the college. In the latter end of the year 1752, his ventilators, worked by a windmill, were fixed in Newgate, with branching trunks to twenty-four wards; and it appeared that the disproportion of those who died in the jail before and after this establishment was as sixteen to seven. He published also a further account of their success, and some observations on the great danger arising from foul air, exemplified by a narrative of several persons seized with the jail-fever by working in Newgate.

Upon the death of Sir Hans Sloane, which happened in the year 1753, Dr Hales was elected a member of the Academy of Sciences at Paris in his room. The same year he published some further considerations about the means of expelling foul air from the sick-rooms of occasional army hospitals, and private houses in town. He also published many other curious particulars relative to the use and success of ventilators. The same year a description of a sea-gage, which he had invented to measure unfathomable depths, was communicated to the public. This paper was drawn up about the year 1732 or 1733, for Mr Colin Campbell; and the latter employed Mr Hawksbee to make the machine it describes, which was tried in various depths, and answered with great exactness. It was however lost near Bermuda. In 1754 he communicated to the Royal Society some experiments for keeping water and fish sweet with lime-water, an account of which was published in the *Philosophical Transactions*. He also continued from this time till his death to enrich their memoirs with many useful articles, particularly a method of forwarding the distillation of fresh from salt water, by blowing showers of fresh air up through the latter during the operation. In 1757 he communicated to the editor of the *Gentleman's Magazine* an easy method of purifying the air, and regulating its heat, in melon-frames and green-houses; also further improvements in his method of distilling sea-water.

His reputation and the interest of his family and friends might easily have procured him further preferment; but of this he was not desirous; for being nominated by his majesty to a canonry of Windsor, he engaged the princess to request his majesty to recall his nomination. That a man so devoted to philosophical studies and employments, and so conscientious in the discharge of his duty, should not desire any preferment which might reduce him to the dilemma of either neglecting his duty, or foregoing his amusement, is not strange; but that he would refuse an honourable and profitable appointment, for which no duty was to be done that could interrupt his habits of life, can scarcely be imputed to his temperance and humility, without impeaching his benevolence. If he had no desire of any thing more for himself, a liberal mind would surely have been highly gratified by the distribution of so considerable a sum as a canonry of Windsor would have put in his power, in the reward of industry, the alleviation of distress, and the support of helpless indigence. He was, however, remarkable for the social virtues and sweetness of temper; his life was not only blameless, but exemplary in a high degree; he was happy in himself, and beneficial to others, as appears by this account of his attainments and pursuits; whilst the constant serenity and cheerfulness of his mind, and the temperance and regularity of his life, concurred, with a good constitution, to preserve him in health and vigour to the uncommon age of fourscore and four years. He died at Teddington in 1761, and was buried under the tower of the parish church, which he had built at his own expense not long before his death. Her royal highness the Princess of Wales erected a monument to his memory in Westminster Abbey.

HALESOWEN, a market-town of the county of Salop, in the hundred of Brimstrey, but partly in the county of Worcester, 127 miles from London. The market is held on Monday, but it is thinly attended. There are in the town some inferior branches of the iron manufacture. It is chiefly remarkable for the grounds of the house of the Leasowes, once the residence of the poet Shenstone, to whom a monument has been erected in the parish church, which was formerly an ancient monastery. The inhabitants amounted in 1811 to 6888, in 1821 to 8187, and in 1831 to 9765.

HALESWORTH, a town of the county of Suffolk, in the hundred of Blything. It is situated on the river Blyth, 101 miles from London, and has a good market for corn on Tuesday, and a navigable canal to the sea at Southwold, about nine miles distant. Near to it is a mineral spring frequented by patients afflicted with diseases of the eyes. Halesworth had some trade in spinning wool, which has nearly disappeared. It is a place of considerable antiquity, but of unknown date. The population amounted in 1801 to 1676, in 1811 to 1810, in 1821 to 2166, and in 1831 to 2473.

HALF-WAY-ISLAND, a small island in the South Pacific Ocean, in Torres Strait, about a mile in circumference, and surrounded with coral reefs. It suffers from a want of fresh water. Long. 143. 18. E. Lat. 10. 8. S.

HALFPENNY, a copper coin, the value of which is expressed by its name, in reference to the penny.

HALI-BEIGH, first dragoman or interpreter at the Grand Signior's court in the seventeenth century, was born of Christian parents in Poland; but having been taken by the Tartars when young, they sold him to the Turks, who brought him up in the Mahommedan religion in the seraglio. His name, in his native country, was Bobowski. He learned many languages, and Sir Paul Ricaut owns that he was indebted to him for several things which he relates in his *Present State of the Ottoman Empire*. He maintained a correspondence with the English, who persuaded him to translate some books into the Turkish language; and he proposed to return into the bosom of the Christian church, but died before he could accomplish the design. Dr Hyde published his book *Of the Liturgy of the Turks, their Pilgrimages to Mecca, their Circumcision and Visiting of the Sick*. He translated the catechism of the church of England and the bible into the Turkish language. The manuscript is lodged in the library of Leyden. He wrote likewise a Turkish grammar and dictionary.

HALICARNASSUS, a city of Caria, on the coast of Asia Minor, opposite to the island of Cos, founded by a colony of Trœzenians (Strab.), who were joined by a party of Argeians under the command of Melas and Arvanias (Vitruv. ii. 8). We are told by Herodotus (i. 144), that it originally belonged to the Dorian confederacy, which consisted of six cities, and that it lost this privilege because Agasicles, one of its citizens, carried off the tripod, which had been adjudged to him in the games in honour of the Triopian Apollo, instead of dedicating it to the god, as had always been the custom. The other cities, indignant at this breach of the law, met and declared Halicarnassus unworthy of participating in their privileges;

and from that time the Dorian confederacy consisted of five cities, and was called Pentapolis. We have no means of discovering at what period this event took place; but about the year 500 B. C. we find it subject to Lygdamis, whose daughter, Artemisia, commanded a squadron of ships in the fleet of Xerxes, and behaved so nobly in the battle of Salamis, 480 B. C. (Herod. viii. 87.) It was probably during the reign of her son, called Lygdamis, that Herodotus, unwilling to witness the tyrannical acts of a despot, abandoned his native city and retired to Samos. (Suid.) A considerable period now elapses, in which we know nothing of the history of Halicarnassus; but about 350 B. C. we find it under princes of Carian extraction. Hecatomnus is mentioned by Strabo (xiv. 656) as king of the Carians; and he left three sons, Mausolus, Hidrieus, and Pixodarus, and two daughters, Artemisia and Ada, who were married to the two elder brothers. On the death of Mausolus, his wife and sister became queen, and is best known in history as the builder of that celebrated tomb to her husband, which she called from him mausoleum, (see Mausoleum), and which was reckoned one of the seven wonders of the world. She was succeeded by her second brother Hidrieus, whose sister and wife, Ada, was driven from the kingdom by her brother Pixodarus. At this period Alexander the Great arrived with his forces in Caria, and having razed Halicarnassus to the ground, restored Ada to the sovereignty of Caria. It seems to have been rebuilt, but never regained its former degree of splendour. Cicero speaks of his brother restoring Halicarnassus (ad Q. Fr. i. 8), and Tacitus (Ann. iv. 55) tells us that the people of this place were anxious to erect a temple to Tiberius. It was the birthplace of Herodotus, and of Dionysius, author of the Roman Antiquities. Its ruins are still found at Bondroun, and are thus described by Captain Beaufort:—“ The spot where Halicarnassus was placed rises gently from a deep bay, and commands a view of the island of Cos and the southern shore of the Ceramic Gulf as far as Cape *Krio*. In front of the town a broad square rock projects into the bay, on which stands the citadel. The walls of the ancient city may be here and there discerned; and several fragments of columns, mutilated sculpture, and broken inscriptions, are scattered in different parts of the bazaar and streets. Above the town are the remains of a theatre.” (*Karamania*, p. 95–98.)

HALICZ, a town of the circle Strey, in the Austrian kingdom of Gallicia, situated on the river Dniester. It contains a Catholic and a Greek church, and two synagogues, with 357 houses, and 3120 inhabitants, the greater part of whom are Jews of the Caramite sect. It has a considerable internal trade.

HALIEUTICS, Halieutica, 'Αλιευτικα, formed from ἁλιευς, *fisherman*, which again is derived from ἁλς, *the sea*, mean books treating of fishes, or the art of fishing. We have still extant the halieutics of Oppian.

HALIFAX, a town and large parish in the wapentake of Morley, of the west riding of the county of York, 196 miles from London. The town is situated in a valley, through which the river Calder runs in its course to join the Aire at Wakefield. It is an ancient borough, and once had criminal jurisdiction even in capital offences, the punishment of which was inflicted by a machine called the Maid of Halifax, which was copied in Scotland, and afterwards by Dr Guillotin in France, whose name it has since borne. As the town is the centre of the woollen trade of the whole extensive parish, a magnificent building, called the Piece Hall, for the sale of goods, has been erected, covering more than 10,000 square yards, and containing upwards of 300 separate rooms, in which individuals deposit and dispose of their goods. This, and a venerable church, distinguished by its size and its numerous monuments, are the only public buildings which merit notice. The streets are narrow, some of them steep, and have rather a gloomy appearance, though the houses, mostly of stone, are large and well built. The population amounted in 1801 to 8886, in 1811 to 9159, in 1821 to 12,628, and in 1831 to 15,382.

The parish is nearly sixty miles in length, and has a medium breadth of seven miles. It contains twenty-three townships, whose population amounts to upwards of 100,000 persons, by whom are carried on extensive manufactures of woollen, and, latterly, of cotton goods, which commerce disperses over every country of the globe; and the extent and value of the machinery by which the operations are executed are beyond calculation. By the law of 1832 Halifax was erected a borough, and elects two members. The number of voters is about 530. The population of the parish amounted in 1821 to 92,050, and in 1831 to 109,899.

Halifax, the capital of Nova Scotia, in North America, and also of a county of the same name. It is situated on a peninsula near the centre of the eastern coast, and possesses one of the finest harbours in the world, originally called Chebucto, on a bay sixteen miles in length. It was founded in 1749, by General Cornwallis, and has since carried on nearly the whole trade of the country. Halifax stands on the west side of the harbour, upon the declivity of a hill, and is laid out in oblong squares, the streets running parallel to each other at right angles. The government-house is one of the most splendid edifices in North America. There is here a splendid royal dock-yard, which, during war, is an important naval station, being particularly well calculated for the shelter, repair, and outfit of fleets cruising on the American coast and in the West Indies. The harbour is at all times accessible, and is rarely impeded by ice. Ships generally anchor abreast of the town, where the harbour is rather more than a mile in width. After narrowing to about one fourth of that width, it suddenly expands into a noble sheet of water called Bedford Basin, completely land-locked, with deep water throughout, and capable of containing the whole navy of Great Britain. There is a considerable fishery at Halifax; but the colonists are neither so enterprising nor so successful as the New Englanders. The principal trade of the town and province is with the West Indies, Great Britain, and the United States. To the former are exported dried and pickled fish, lumber, coals, grindstones, cattle, flour, butter, cheese, oats, potatoes, and other produce. The same articles are exported to the southern parts of the United States, and gypsum to the eastern parts of New England. To Great Britain, are sent timber deals, whale, cod, and seal oil, furs, and other articles. The imports consist chiefly of colonial produce from the West Indies, all sorts of manufactured articles from Great Britain, and of flour, lumber, and other kinds of goods from the United States, principally for re-exportation to the West Indies. Government packets sail regularly once a month from Halifax to Falmouth; and recently packets to Liverpool have been established. There are two private banking companies in this town. About one hundred large square-rigged vessels, and about the same number of large schooners, with several smaller craft, belong to Halifax. A canal across the country from this town to the basin of Minas, which unites with the bottom of the Bay of Fundy, has been commenced. It is expected, that when completed, this work will be of essential service to the trade of Halifax. The population, exclusive of the military, amount to about 18,000. Long. 63. 28. W. Lat. 44. 36. N.

Halifax, Earl of. See Saville.

HALL, a city of the Austrian province of Tyrol. It is situated on the river Inn, which is thus far navigable for large vessels. It has a provincial mint, and a mining college. Near to it is worked a large mine of rock-salt, which, when melted and refined, yields annually about 300,000 quintals of salt. It contains 460 houses, with 4290 inhabitants.

Hall, or *Suabian Hall*, a city of the kingdom of Wirtemberg, in the circle of the Jaxt, the capital of a bailiwick of the same name, which extends over 153 square miles, and contains a population of about 24,000 inhabitants. The city is built on both banks of the river Kocher, and, including its suburbs, is surrounded with strong walls, defended by lofty towers and ditches. It has a beautiful town-hall, a Gothic cathedral, and six other churches, and contains 740 houses and 6950 inhabitants. There is a gymnasium with nine professors and a good library. It is celebrated for its saline springs, from which, by thirty-two pans, nearly 100,000 quintals of culinary salt is annually made. Its chief trade consists in corn, wood, soap, starch, and cattle.

Hall, a city of the Austrian province of the Tyrol, in the circle of the Valley of the Lower Inn, on the left bank of which river it stands, and by which it has the benefit of a water communication with Vienna. It is situated between two picturesque mountains, and is surrounded with walls and adorned by a fine old Gothic church. In the city there is a very extensive salt work; the salt is made from a natural spring of brine, which is also used for salt-water bathing. The population consists of 4270 persons, some of whom are employed in spinning cotton, and in knitting hosiery goods.

Hall, in *Architecture*, a large room at the entrance of a fine house and palace. Vitruvius mentions three kinds of halls; the tetrastyle, with four columns supporting the platfond or ceiling; the Corinthian, with columns all round let into the wall, and vaulted over; and the Egyptian, which had a peristyle of insulated Corinthian columns, bearing a second order with a ceiling.

Hall is also particularly used to signify a court of justice, or an edifice in which there is one or more tribunals. In Westminster Hall are held the great courts of England, viz. the King's Bench, Chancery, Common Pleas, and Exchequer. In adjoining apartments is likewise held the high court of parliament.

Hall, *Joseph*, an eminent prelate of the church of England, was born in 1574, and educated at Cambridge. He became professor of rhetoric in that university, and was then successively made rector of Halsted in Suffolk, presented to the living of Waltham in Essex, made prebendary of Wolverhampton, dean of Worcester, bishop of Exeter, and, lastly, bishop of Norwich. His works testify his zeal against Catholicism, and are much esteemed. He lamented the divisions of the Protestants, and wrote concerning the means of putting an end to these schisms. In 1616, he accompanied the embassy of Lord Doncaster into France, and upon his return was appointed by his majesty one of the divines who should attend him into Scotland. In 1618 he was sent, with other divines, to the synod of Dort, and pitched upon to preach a Latin sermon before that assembly. But being obliged to return before the synod broke up, on account of his health, he was by the states presented with a gold medal. His works, consisting of Miscellaneous Epistles, *Mundus alter et idem*, a just Censure of Travellers, the Christian Seneca, Satires, a Century of Meditations, and many other productions, were published at various periods in folio, quarto, and duodecimo. They have, however, been collected in a handsome, correct, and well-arranged edition, by the Reverend Josias Pratt, in ten vols. 8vo. As a moralist, Bishop Hall has been entitled the Christian Seneca. His knowledge of the world, depth of thought, and elegance of expression, place him nearer our own times than many of his contemporaries; whilst he adorned his own age by his learning, piety, and uniform exercise of all the Christian graces. He died on the 8th of September 1656, in the eighty-second year of his age.

Hall, *Robert*, a distinguished writer and preacher, was born at Arnsby, a small village about eight miles from Leicester, on the 2d of May 1764. His father, who had the pastoral charge of a Baptist congregation in this place, was a man of talents and piety, as well as an eloquent and successful preacher. Robert was the youngest of fourteen children; and, whilst an infant, his health was so delicate that slender hopes were entertained of his ever reaching manhood. A nurse was employed, whose duty it was to carry him about in the open air; but in the discharge of her duty she used to loiter in a burying-ground which lay in the vicinity of his father's house. It is worthy of notice, that amidst the memorials reared to commemorate the dead, and which, by reminding man of his mortality, tend to fill the mind with sentiments of religious awe, the future orator should have learned to articulate that language in which he was afterwards, with the most powerful eloquence, to bring home to the heart a conviction of the frail tenure by which we hold this life, and the certainty of that which is to come. The nurse, judging from the peculiar character and habits of the child, that he was desirous of knowing the meaning of the inscriptions and carved figures upon the tombstones, by their aid taught him the letters, and finally to speak and to read. This occurred before he had completed his third year; and being naturally of an inquisitive disposition, he was continually putting questions, and soon became a rapid talker, which he always continued to be. After receiving regular instructions from two female teachers, he was at six years of age placed under the master of a village school situated about four miles from Arnsby. Previously to this arrangement, he had evinced an extraordinary thirst for knowledge, and had become a collector of books. He was in the habit of retiring to the church-yard with some favourite volume, spreading it out before him, and poring over it until the shades of evening reminded him of home. The course of instruction pursued at the village school was by no means extensive; and the ardent scholar found ample leisure to gratify his passion for reading. The books which he selected were not those of mere amusement, but such as required the exercise of deep and long-continued reflection. His favourite works were those of Jonathan Edwards on the Affections and on the Will, and Butler's Analogy. Before he was nine years of age, he had repeatedly perused these productions, had written several essays upon religious subjects, and was in the habit of calling together a juvenile congregation to hear him preach. Such indications as these are not to be mistaken; they indubitably presage future eminence. At eleven years of age, he was placed as a boarder at a school in the neighbouring town of Northampton, where he remained about a year and a half, and, according to his father's account, made great progress in Latin and Greek. After having for some time studied divinity and other collateral subjects, principally under the guidance of his father, he was, in his fifteenth year, sent to the Bristol Education Society, or academy for the instruction of young men preparing for the ministerial office amongst the Baptists. The system of tuition at this seminary comprehended not merely the learned languages and the rudiments of science, but a specific course of preparation for the ministerial office, including the writing of essays and the habit of public speaking. That the progress which young Hall made in his studies was rapid, is sufficiently attested by the fact, that on the 13th of August 1780, he was solemnly "set apart to public employ" as a preacher of the gospel, in connection with the body of dissenters to which his father belonged. In about a year after this event, he was sent to King's College, Aberdeen, where, amongst other friendships, he made that of Mr, afterwards Sir James, Mackintosh. When these eminent individuals became first acquainted, Sir James was in his eighteenth year, and Mr Hall about a year older. Notwithstanding some differences of taste as well as of intellectual pursuits, a strong and mutual friendship commenced between the two students. They were almost inseparable, and read together much of Xenophon, Herodotus, and Plato; but the arena in which they most frequently met was that of morals and metaphysics, subjects which afforded ample opportunities for disputation. Many years afterwards, Sir James Mackintosh, in a letter to Mr Hall, thus alludes to their early attachment: "On the most impartial survey of my early life, I could see nothing which tended so much to excite and invigorate my understanding, and to direct it towards high, though perhaps scarcely accessible objects, as my intimacy with you. Five-and-twenty years are now past (the letter is dated Bombay, 1805) since first we met, yet hardly anything has occurred since which has left a deeper or more agreeable impression on my mind. I now remember the extraordinary union of brilliant fancy with acute intellect, which would have excited more admiration than it has done, if it had been dedicated to the amusement of the great and the learned, instead of being consecrated to the far more noble office of consoling, instructing, and reforming the poor and the forgotten." These distinguished individuals entertained a mutual esteem and veneration, which continued unabated till the close of life.

In 1783, Mr Hall received an invitation from the church at Broadmead in Bristol, to associate himself with Dr Evans, as assistant pastor. This offer he accepted after much hesitation; and it was finally arranged, that during the interval between the college sessions of 1784 and 1785, Mr Hall should reside at Bristol, and then return to Aberdeen to complete his studies. In the course of his last session he applied himself with much assiduity, especially to the study of the Greek language, moral philosophy, and metaphysics in general, as well as to other branches of learning more immediately connected with theology. After completing his academical career, which was a bright one, and calculated to raise the highest expectations, Mr Hall entered upon his pastoral avocations. The life of a divine situated as Mr Hall was, is little distinguished by those incidents which give attraction to biography. The events are in general few in number, and possess a sameness which deprives them of interest. From the commencement of his ministrations, Mr Hall's preaching attracted an unusual degree of attention; and if he was not listened to by such multitudes as surrounded Whitfield and Wesley, he found fit audience though few in the great and distinguished men of the day. His eloquence, remarkable alike for its brilliancy and its force, was a general theme of praise; and by his instructive and fascinating conversation in private he called forth equal admiration. Besides his clerical duties, he had to perform those of classical tutor in the Bristol Academy; an appointment which was conferred upon him shortly after his arrival in the place, and which he held for more than five years, labouring with active zeal and with commensurate success. At this period of his life, Mr Hall was distinguished for the dexterity with which he wielded the weapons of wit and raillery; and it would appear that the religious opinions he entertained, and which in private, though never in the pulpit, he professed to hold, were considered as somewhat latetudinarian by individuals of the persuasion to which he belonged. Certain it is, indeed, that it was not until many years afterwards that his mind became fairly settled with regard to some of the most important doctrines of Christianity. On several momentous points he was considered as deviating considerably from the accredited standards of even moderate orthodoxy. In 1790, when he was on the eve of dissolving his connection with the church in Bristol, he addressed to his congregation a frank exposition of his opinions; and, amongst other startling notions, he confessed that he held that of materialism. In a letter to his congregation, there is the following passage: "My opinion however upon this head is, that the nature of man is simple and uniform; that the thinking powers and faculties are the result of a certain organization of matter; and that after death *he ceases to be conscious until the resurrection*." To those who are acquainted with the general character of English dissenters, and their strict adherence to what are denominated the evangelical doctrines of Christianity, it will not be matter of surprise, that the individual who entertained such notions, and who could support them with such metaphysical acumen and powerful eloquence, was a pastor rather to be admired for his genius than implicitly relied on as a spiritual guide. It is not however to be inferred from this that he promulgated error from the pulpit; on the contrary, he was careful to exclude such doubtful speculations from his discourses: but it seems certain that they gave rise to vexations and perplexities, which, with other circumstances, induced him to accept of an invitation to take the pastoral charge of a church at Cambridge. He entered on the new scene of his labours in 1791. In the same year he lost his father, an event which made a deep impression upon his mind, and wrought a considerable change in him relative to some of his doctrinal sentiments. Amongst other things, he renounced materialism, which he often afterwards declared he had buried in his father's grave.

The congregation with which Mr Hall was now associated had considerably declined from the orthodox standard of their church with reference to some important doctrines of Christianity. Their former pastor, from the profession of orthodox opinions, had become more lax in his views, which gradually degenerated into Socinianism, if not for a time into infidelity itself. The contagion was communicated to the members of the church, not a few of whom adopted the opinions of their spiritual guide. The faithfulness with which Mr Hall discharged his ministerial duties under such disadvantages, is sufficiently attested by the fact, that in a short time he succeeded in reclaiming from their errors the greater proportion of his flock. About this period Mr Hall published a pamphlet entitled An Apology for the Freedom of the Press. The author's object was a vindication of the principles maintained by the friends of liberty, especially by those who avowed evangelical sentiments; and although, in a spirit of self-depreciation, in which Mr Hall always indulged with regard to his own writings, he did not place a very high value upon this production, it was received with marked favour by the public. Several editions were rapidly sold off, and it was largely quoted by the periodicals of the day. The celebrity which Mr Hall now enjoyed gave rise to inconveniences which interfered with the more solemn duties of his calling. It withdrew him from study, and induced individuals whose conduct and character he could not approve, to intrude on his retirement. He therefore resolved, without retracting his principles, to embark no more on the stormy element of political debate. His next publication was in more perfect keeping with the sacred office which he held, being a sermon, entitled Modern Infidelity considered with respect to its Influence on Society. It appeared in the year 1800, and was at once acknowledged as a masterpiece of eloquence and reasoning. It is a rare felicity of circumstances that a work which has excited unusual attention is allowed to enjoy popular favour without censure or interruption. The sermon on Modern Infidelity formed no exception to the general rule; and a controversy ensued, in which insidious attempts were made to misinterpret the motives of the author, and even to depreciate his character. Detraction, however, originating with such individuals as now attacked him had little effect, and the petty clamour was drowned in the general applause. The critical journals of the day were lavish of their praise, and some of the most distinguished men of the time paid their tribute of approbation to the author. The reputation of Mr Hall as a profound thinker and eloquent writer was now completely established; and his church became a place of frequent resort to many members of the university. His next production was a sermon entitled Reflections on War, which was preached on the occasion of a general thanksgiving for the peace of Amiens, celebrated on the 1st of June 1802. This suspension of arms, as is well known, was of short duration; and war having been again declared in the following year, Mr Hall evinced his patriotism and love of country by publishing a sermon entitled The Sentiments proper to the Present Crisis. It was preached on the 19th of October 1803, being the day appointed for a general fast. This sermon perhaps excited still more universal admiration than any of the author's previous productions; and the latter part of it was considered by the most competent judges, amongst whom was Mr Pitt, as fully equal in genuine eloquence to any passage of the same length in ancient or modern orations.

Mr Hall had been for some time afflicted with a pain in his back, and in 1803 it had increased to such a degree, that, in order to enjoy exercise, it was found advisable to remove to a place a few miles distant from Cambridge. This arrangement was not ultimately productive of beneficial results; on the contrary, a severe calamity which overtook him may in part be attributed to it. He had always been remarkable for his love of solitary study, and frequently remained for more than twelve hours together wrapt in abstract thought. The effects of this violent infringement of the physical laws of our nature were in some measure alleviated at Cambridge, by the pretty regular habit which he had of spending his evenings in the society of the intelligent classes of his congregation. Such a source of relief from severe study was denied him in the place to which he had removed; and he was likewise cut off from the tender sympathies of his flock, by whom he was much beloved. The consequence was, that being left too much alone, and exposed to the morbid influences of a diseased body and an overwrought mind, the latter lost its equilibrium; and he who had so long been the theme of universal admiration now became the object of as extensive sympathy. This afflicting event occurred in November 1804; but it was of short duration; for, by the assiduous care of his medical adviser, he was in about two months restored to mental and bodily health. About twelve months afterwards a recurrence of the same malady again laid him aside from public duty. He soon, however, recovered; but it was deemed essential to his complete restoration to health and vigour that he should resign his pastoral charge at Cambridge, abstain from preaching, and avoid as far as possible all strong excitement.

It may be well believed that two visitations of a calamity so humiliating were calculated to make a powerful impression upon a mind so alive to religious influences as that of Mr Hall. Without dwelling upon this theme, it is sufficient to state in what light they were regarded by the sufferer himself. He was persuaded that, however strong his religious convictions, and however correct his doctrinal sentiments had hitherto been, yet that he had not undergone a thorough transformation of character until the first of these attacks. The permanent impression upon his character was hence exclusively religious. His piety assumed a more exalted tone, his habits became more strictly devotional, and his exercises more fervent and elevated, than they had ever hitherto been; and he watched with jealous care over the whole tenor of his conduct, as well as every movement of his heart.

For some time Mr Hall enjoyed in his native village, and other places, an exemption from active duty, during which period his attention was engaged in biblical study, and in other pious and literary occupations, which could be abandoned or resumed at pleasure. He also preached occasionally, especially at Leicester; and from a church in this place he accepted of an invitation to become its stated pastor. Over this congregation he presided twenty years; a period undistinguished by any incident of particular moment excepting his marriage, which took place in March 1808. This was a fortunate event for Mr Hall; for, whilst it called into livelier activity those sympathies with which his mind was richly fraught, and thus gave greater variety to the exercise of his mental powers, it likewise reclaimed him from those habits of abstract speculation, the indulgence in which had already proved so pernicious, and rendered him more familiar with the everyday events of life, and the common feelings, aims, and pursuits of human nature. The endearments of domestic life also served to compensate the physical pain to which he was doomed to be a martyr till the close of his career, whilst they deepened his impressions of tenderness, benevolence, and sympathy. In proof of this, his biographer, Dr Olinthus Gregory, produces a beautiful instance. "Not long after his marriage," says he, "when his own pecuniary resources were much restricted, he proposed to fast on certain days, that he might have it in his power to distribute more among the needy; and he thought it wrong to have more than two coats, when so many persons around him were clothed in rags." During his residence at Leicester, Mr Hall gave to the world several valuable productions, which extended his fame and his influence over society. He occasionally appeared as a critic in the Eclectic Review and other periodicals, and published various sermons, of which that on the death of the Princess Charlotte in 1817 is allowed to surpass all that were produced upon the occasion, if not to stand unrivalled as a model of pulpit eloquence. A controversy on what is called The Terms of Communion, engaged some share of his attention. The Baptists as a body were, and still are, very strict in their administration of the Lord's Supper. Mr Hall, with his usual energy and eloquence, and with considerable success, advocated the principle of more open communion. In the year 1823 he engaged in a controversy of another description, with a Unitarian preacher, who had provoked him to the contest by delivering what are usually denominated challenge lectures. Mr Hall preached twelve lectures, which were serviceable in checking the diffusion of Socinianism. These compositions, however, were not published, although he was strongly urged to take this step; but a concise outline of them has been given in his works. By his constitutional complaint Mr Hall was subjected to severe suffering, which increased so much with his growing years, that, to alleviate the pain, he was compelled to take copious draughts of laudanum. His mental vigour, however, was but slightly impaired; yet a little difference was discernible in his conversation, which had always been remarkable for its brilliancy and vivacity.

In 1825 Mr Hall received an invitation to assume the pastoral charge of the church at Broadmead, Bristol. This he accepted; and after taking a touching farewell of his Leicester friends, he removed in 1826 to Bristol, the place where his ministerial career began, and where it was destined soon to come to a close. Reading and study, which had always been at once his bane and antidote, suffered no abatement on account of his increasing infirmities. His opinion was, that every species of knowledge might be rendered subservient to religion; and works of almost every description he laid under contribution. When above sixty years of age he commenced the study of the Italian language, of which he had been before ignorant, in order to settle a point of interest relative to the Divina Comedia of Dante. His pastoral duties were discharged with his usual faithfulness; but the decay of locomotive power, which age brought in the train of its infirmities, was a source of much uneasiness to his mind, as it prevented him from associating privately with his flock. Besides his old disease, indications of a plethoric habit of body became more and more apparent, until in 1830 he was compelled to try a change of air and scene. No ultimate benefit was derived from this treatment, and after suffering severely from a complication of disorders, he departed this life on the 21st of February 1831. By his marriage Mr Hall had five children, of whom four, with their mother, survived him.

Mr Hall was not only the most distinguished ornament of the Christian body to which he belonged, but as a preacher his claims to pre-eminence were acknowledged by the ablest judges of every creed. Dr Parr has drawn his character in language strong, concise, and comprehensive. "Mr Hall," says he, "has, like Bishop Taylor, the eloquence of an orator, the fancy of a poet, the acuteness of a schoolman, the profoundness of a philosopher, and the piety of a saint." "As a preacher," says Mr John Foster, who knew him intimately, "none of those contemporaries who have not seen him in the pulpit, or of his readers in another age, will be able to conceive an adequate idea of Mr Hall. His personal appearance was in striking conformity to the structure and temper of his mind. A large-built, robust figure, was in perfect keeping with a countenance formed as if on purpose for the most declared manifestation of internal power; a power impregnable in its own strength, as in a fortress, and constantly, without an effort, in a state for action. That countenance was usually of a cool unmoved mien at the beginning of the public service; and sometimes, when he was not greatly excited by his subject, or was repressed by pain, would not acquire a great degree of temporary expression during the whole discourse. At other times it would kindle into an ardent aspect as he went on, and toward the conclusion become lighted up almost into a glare."

His voice was somewhat feeble, but his articulation was distinct, although he spoke with great rapidity. At the commencement of his discourse attention was secured by the simplicity and solemnity of the speaker's deportment; and as he advanced and became animated with his subject, such was the impression which he produced, that his auditors one by one rose from their seats, "until," says Dr Gregory, "long before the close of the sermon, it often happened that a considerable portion of the congregation were seen standing." His mental endowments were of the highest order, and his excellency consisted not in the predominance of one, but in the exquisite proportion and harmony of all his powers. A mind naturally of great capacity had been enriched by a course of reading which extended nearly to the limits of human investigation, and he was thus enabled to draw his illustrations from an infinite variety of sources. He also possessed a wonderful ability for comprehensive reasoning; whilst his quickness of apprehension, his powers of analysing a subject, and seizing on the most essential points, and of placing in a clear, intelligible light, what was before obscure or perplexed, were of the very highest order. His oratory was brilliant, but not unnecessarily showy, or encumbered with poetical images. The works of this great preacher display a union of elevation with elegance, to which it will be difficult to find a parallel amongst the works of divines. With high excursive powers of imagination, and an equal talent for close reasoning and metaphysical speculation, he neither indulged in meretricious ornament or rhetorical flourishes, nor perplexed his hearers with subtile distinctions. No writer ever displayed more taste and discrimination in the choice of language, and he formed for himself an ideal standard of excellence which could not be reached. His style is at once clear and simple; and the construction of his sentences is characterised by ease, united with strength and compactness. There is no pomp of words in his most magnificent excursions of fancy, and he rises to the summit of eloquence without the least effort or appearance of straining after greatness. He is elaborately correct, yet perfectly inartificial, and free from antithesis; pregnant with weighty meaning, yet easily understood. In him are united richness with simplicity, transparency with depth, and symmetry with strength. The reader of his works frequently meets with passages of extraordinary beauty; but these will in no instance be found to have been introduced simply for effect; they are inseparably connected with the subject, and, seeming to grow out of it, appear with all the appropriateness of a natural relation. "He displayed in a most eminent degree," says Mr Foster, "the rare excellence of a perfect conception and expression of every thought, however rapid the succession. There were no half-formed ideas, no misty semblances of a meaning, no momentary lapses of intellect into an utterance at hazard, no sentences without a distinct object, and serving merely for the contiguity of speaking; every sentiment had at once a palpable shape, and an appropriateness to the immediate purpose." If such was a characteristic of his preaching, part of which was extemporaneous, it is almost unnecessary to say that the same excellence distinguishes the sermons which he prepared for the press. He surpasses perhaps all preachers of modern times in having always a definite purpose, a distinct assignable object in view in his discourses. Hence each of them affords a fine specimen of a comprehensive and perfect whole. The piety of Mr Hall was pure, sincere, exalted, and untainted by bigotry or intolerance. As a pastor he was zealous, affectionate, and indefatigable in the discharge of his duties. His fame as an orator receives additional lustre from the excellence of his moral nature. In him benevolence and humility were conspicuous, and his affections were as warm as his intellect was strong. In social life he was open, communicative, sincere, unostentatious. His conversation was on a level with his preaching, and displayed the same varied excellences. He had, however, an inclination to sarcasm, which in some of his earlier productions he allowed to poison the edge of his polemical weapon. Occasionally, also, he argued more perhaps for victory than for truth; but he never voluntarily chose the wrong side of a question, or allowed himself to tamper with the sanctities of religion. Mr Hall took the degree of A. M. at King's College, Aberdeen; and that of doctor in divinity was conferred on him unsolicited by Marischal College; but, either from his humility, or from some scruples as to propriety, he never assumed the title.

Mr Hall's works consist of, 1. Christianity consistent with the Love of Freedom, being an Answer to a Sermon by the Rev. John Clayton, 1791, 8vo; 2. Apology for the Freedom of the Press, and for general Liberty, with Remarks on Bishop Horsley's Sermon, preached 13th January 1793, 8vo; 3. Modern Infidelity considered with respect to its Influence on Society; a Sermon preached at Cambridge, 1800, 8vo; 4. Reflections on War, a Sermon on June 1, 1802, being the Day of Thanksgiving for a General Peace; 5. The Sentiments proper to the present Crisis, a Fast Sermon at Bristol, October 19, 1803; 6. The Effects of Civilization on the People in European States, 1805; 7. The Advantages of Knowledge to the Lower Classes, a Sermon at Leicester, 1810; 8. The Discouragements and Supports of the Christian Minister, an Ordination Sermon, 1812; 9. The Character of the late Rev. Thomas Robinson, Vicar of St Mary's, Leicester, 1813; 10. Address to the Public on an important Subject connected with the Renewal of the Charter of the East India Company, 1813;

11. An Address to the Rev. Eustace Carey, January 19, 1814, on his Designation as a Christian Missionary to India; 12. On Terms of Communion, with a particular view to the Case of the Baptists and the Pædo-Baptists, 1815; 13. The essential Difference between Christian Baptism and the Baptism of John more fully stated and confirmed; 14. A Sermon occasioned by the Death of the Princess Charlotte of Wales, preached at Leicester, 1817; 15. A Sermon on the Death of Dr Ryland, 1826. His collected works, with various posthumous productions, and a memoir of his life by Dr Gregory, were published in 1832, in six volumes 8vo. (R. R. R.)

HALLAGE, a fee or toll paid for cloth brought to be sold in Blackwell Hall, London.

HALLAMAS, in our old writers, the day of all-hallows, or all-saints, viz. the 1st of November. It is one of the cross quarters of the year, which was computed, in ancient writings, from Hallamas or Candlemas.

HALLE, a city, the capital of a district of the same name, in the province of Saxony in Prussia. It is situated on the river Saale, which divides above the town into several streams, and these form a number of islands, on which it is built, and which are connected by several bridges. It contains 2212 houses, and 21,570 inhabitants, including the university and the suburbs. The university is an ancient institution, with a great number of professors, and about five hundred pupils. It has a botanical garden, a chemical laboratory, and an observatory, with a library of 50,000 volumes. It is highly esteemed as a school of surgery, medicine, and midwifery. There is also an orphan-house with two hundred children. It is a manufacturing town for coarse cloths, flannels, and friezes, and for hats and hosiery. Long. 11. 53. 40. E. Lat. 51. 29. 5. N.

HALLEIN, a city of the circle of Salzach or Salzburg, in the Austrian province of the Upper Ens. It is situated on the river Salza, and is celebrated for its extensive salt-works, which employ upwards of two thousand workmen, partly in drawing the rock-salt from the mines, and partly in the subsequent process of refining it. As this place is close to the Bavarian frontier, that kingdom draws from thence 13,000 tons of culinary salt, and about 10,000 are furnished to the Austrian dominions. There are some manufactures of hosiery and of cotton goods. It contains three churches, 320 houses, and 4640 inhabitants.

HALLELUJAH, a term of rejoicing, sometimes sung rehearsed at the end of verses on such occasions. The word is Hebrew, or rather it is composed of two Hebrew words; one of them הללו, *hallelu*, and the other יה, *jah*, an abridgment of the name of God יהוה, *Jehovah*. The first signifies *laudate*, praise ye, and the other, *Dominum*, the Lord. St Jerome first introduced the word hallelujah into the church service. For a considerable time it was only used once a year in the Latin church, viz. at Easter; but in the Greek church it was much more frequently employed. St Jerome mentions its being sung at the interments of the dead, which still continues to be done in that church, as also on some occasions in the Latin church, especially Lent. In the time of Gregory the Great, it was appointed to be sung all the year round in the Latin church, which raised some complaints against that pontiff, as giving too much in to the Greek form, and introducing the ceremonies of the church of Constantinople into that of Rome. But he excused himself by alleging that this had been the ancient usage of Rome, and that it had been brought from Constantinople at the time when the word hallelujah was first introduced under Pope Damascus.

HALLER, ALBERT VAN, an eminent physician, was born at Berne, on the 16th of October 1708. He was the son of an advocate of considerable eminence in his profession. His father had a numerous family, and Albert was the youngest of five sons. From the first period of his education he showed a great genius for almost every kind of literature. To forward the progress of his studies, his father took into his family a private tutor, named Abraham Billodz; and such was the discipline exerted by this pedagogue, that the accidental sight of him at any future period of life excited in Haller great uneasiness, and renewed all his former terrors. According to the accounts which are given us, the progress of Haller's studies, at the earliest periods of life, was rapid almost beyond belief. When other children were beginning only to read, he was studying Bayle and Moreri; and at nine years of age he was able to translate Greek, and beginning the study of Hebrew. Not long after this, however, the course of his education was somewhat interrupted by the death of his father, an event which happened when he was in the thirteenth year of his age. After this he was sent to the public school at Berne, where he exhibited many specimens of early and uncommon genius. He was distinguished for his knowledge of the Greek and Latin languages; but he was chiefly remarkable for his poetical genius; and his essays in verse, published in the German language, were read and admired throughout the whole empire. In the sixteenth year of his age he began the study of medicine at Tubingen, under Duvernoy and Camerarius; and continued there for the space of two years, when the great reputation of Boerhaave attracted him to Leyden. Nor was this distinguished teacher the only man by whose superior abilities he had there an opportunity of profiting. Ruysch was still alive, and Albinus was rising into fame. Animated by such examples, he spent all the day, and the greater part of the night, in the most intense study; and the proficiency which he made gained him universal esteem both amongst his teachers and his fellow students. From Holland he, in the year 1727, proceeded to England, where, however, his stay was but short; and, in fact, it was rather his intention to visit the illustrious men of that period, than to prosecute his studies in London. But he formed connections with some of the most eminent persons of the time. He was honoured with the friendship of Douglas and Cheselden; and he met with a reception proportioned to his merit from Sir Hans Sloane, president of the Royal Society. After his visit to Britain he proceeded to France, and there, under Winslow and Le Dran, with the latter of whom he resided during his stay in Paris, he had opportunities of prosecuting anatomy, which he had not before enjoyed. But the zeal of the young anatomist was greater than the prejudices of the people at that period, even in the enlightened city of Paris, could tolerate. An information being lodged against him to the police for dissecting dead bodies, he was obliged to cut short his anatomical investigations, and effect a precipitate retreat. Still, however, intent on the further prosecution of his studies, he went to Basil, where he became a pupil of the celebrated Bernoulli.

Thus improved and instructed by the lectures of the most distinguished teachers of that period, by uncommon natural abilities, and by unremitting industry, he returned to the place of his nativity in the twenty-sixth year of his age. Not long after this he offered himself as a candidate, first for the office of physician to an hospital, and afterwards for a professorship. But neither the character which he possessed before he left his native country, nor the fame which he had acquired and supported whilst abroad, were sufficient to combat the interest opposed to him. He was disappointed in both; and it was even with difficulty that he obtained, in the following year, the appointment of keeper of a public library at Berne. The exercise of this office was indeed by no means suited to his great abilities; but it was agreeable to him, as it afforded him an opportunity for indulging that extensive reading by

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which he has been so justly distinguished. The neglect of his merit which marked his first outset, neither diminished his ardour for medical pursuits, nor detracted from his reputation either at home or abroad. Soon afterwards he was nominated by King George II. a professor in the university of Göttingen. The duties of this important office he discharged with no less honour to himself than advantage to the public, for the space of seventeen years, and it afforded him an ample field for the exertion of those great talents which he possessed. Extensively acquainted with the sentiments of others respecting the economy of the human body, struck with the diversity of opinions which they held, and sensible that the only means of investigating truth was by careful and candid experiment, he undertook the arduous task of exploring the phenomena of human nature from the original source, viz. life. In these pursuits he was no less industrious than successful, and there was hardly any function of the body on which his experiments did not reflect either a new or a stronger light. Nor was it long necessary for him, in this arduous undertaking, to labour alone. The example of the preceptor inspired his pupils with the same spirit of industrious exertion. Zinn, Zimmerman, Caldani, and many others, animated by a generous emulation, laboured with indefatigable industry to prosecute and to perfect the discoveries of their master. The mutual exertion of the teacher and his students not only tended to forward the progress of medical science, but placed the philosophy of the human body upon a surer and almost entirely new basis. But the labours of Dr Haller, during his residence at Göttingen, were by no means confined to any one department of science. He was not more anxious to be an improver himself, than to instigate others to similar pursuits. To him the anatomical theatre, the school of midwifery, the chirurgical society, and the royal academy of sciences at Göttingen, owe their origin. Such distinguished merit could not fail to meet with a suitable reward from the sovereign under whose protection he then taught. The king of Great Britain not only honoured him with every mark of attention which he himself could bestow, but also procured him letters of nobility from the emperor. On the death of Dillenius, he had an offer of the professorship of botany at Oxford; the states of Holland invited him to fill the chair of the younger Albinus; and the king of Prussia was anxious that he should become the successor of Maupertuis at Berlin. Marshal Keith wrote to him in the name of his sovereign, offering him the chancellorship of the university of Halle, vacant by the death of the celebrated Wolff. Count Orloff invited him to Russia, in the name of his mistress the empress, offering him a distinguished place at St Petersburg. The king of Sweden conferred on him an unsolicited honour, by raising him to the rank of knight of the order of the polar star; and the emperor of Germany did him the honour of a personal visit, during which he passed some time with him in the most familiar conversation.

Thus honoured by sovereigns, revered by men of learning, and esteemed by all Europe, he had it in his power to have held the highest rank in the republic of letters. Yet, declining all the tempting offers which were made to him, he continued at Göttingen, anxiously endeavouring to extend the rising fame of that medical school. But after seventeen years residence in that university, an ill state of health having rendered him less fit for the duties of the important office which he held, he solicited and obtained permission from the regency of Hanover to return to his native city of Berne. His fellow-citizens, who might at first have fixed him amongst themselves, with no less honour than advantage to their city, were now as sensible as others of his superior merit. A pension was settled upon him for life, and he was nominated at different times to fill the most important offices in the state. These occupations, however, did not diminish his ardour for useful improvements. He was the first president, as well as the greatest promoter, of the Economical Society at Berne; and he may be considered as the father and founder of the orphan hospital of that city. Declining health, however, restrained his exertions in the more active scenes of life, and for many years he was confined entirely to his own house. Even this, however, could not put a period to his utility; for, with indefatigable industry, he continued his favourite employment of writing till within a few days of his death, which happened on the 12th of December 1777, in the seventieth year of his age. The works of Haller are, 1. Opuscula Botanica, Göttingen, 1749, in 4to; 2. Historia Stirpium Helvetiæ indigenarum incoata, Berne, 1768, in three vols. folio; 3. Opera Minora, Lausanne, 1762–1768, in three vols. 4to; 4. Elementa Physiologiæ, Lausanne, 1757–1766, in eight vols. 4to; 5. Four *Bibliothecæ*, containing chronological lists of every book of every age, country, and language, which had come to his knowledge, respecting medicine, with brief analyses and opinions subjoined. Of these he published the Bibliotheca Botanica, Zurich, 1771; Bibliotheca Chirurgica, Berne, 1774; Bibliotheca Anatomica, Zurich, 1774 and 1777, each in two vols. 4to; and the Bibliotheca Medicinæ Practicæ, Bâle, 1776, in three vols. 4to. One of his earliest, and, in his opinion, one of his best works, was his *Icones Anatomicæ*, which he began to publish in 1743, in fasciculi or numbers, and which principally related to the blood-vessels *in situ naturali*. But the reputation of Haller rests chiefly on his *Elementa Physiologiæ;* a work which astonished the learned world by the excellence of its arrangement, the precision of the style, the immense detail into which the author enters on the structure of the parts, the profound discussion of all the opinions previously delivered as to their functions and uses, the exact and prodigiously numerous references to all those passages in authors where allusion was made to the smallest matters connected with the science, and the revolution it almost instantaneously effected in physiology, owing to the substitution of induction for hypothesis. The principle which pervades the work, and which is also the great discovery of the author, is that of irritability, considered as a force peculiar to the fleshy fibre, independently of sensibility properly so called, and distributed in a manner altogether different.

Halley.

HALLEY, DR EDMUND, an eminent astronomer, was the only son of a soap-boiler in London, and was born in 1656. He first applied himself to the study of the languages and sciences, but at length gave himself up wholly to that of astronomy. In 1676 he went to the island of St Helena to complete the catalogue of fixed stars, by the addition of those situated near the south pole; and having delineated a planisphere, in which he laid them all down in their exact places, he returned to England in 1678. In the year 1680 he performed what is called the grand tour, accompanied by his friend Mr Nelson. About half way between Calais and Paris, Halley obtained a sight of a remarkable comet, as it then appeared a second time that year, in its return from the sun. In the preceding November he had seen it in its descent; and now hastened to complete his observations by viewing it from the royal observatory of France. His design in this part of his tour was to establish a friendly correspondence between the two astronomers royal of Greenwich and Paris, and in the mean time to improve himself under so great a master as Cassini. From France he proceeded to Italy, where he spent the greater part of the year 1681, and then returned to England. In 1683 he published his *Theory of the Variation of the Magnetical Compass*, in which he supposes the whole globe of the earth to be a great magnet, with four magnetical poles or points of attraction; but afterwards conceiving that this theory was liable to great exceptions, he caused an application to be made to King William, who appointed him commander of the *Paramour*, with orders to seek by observations the discovery of the rule of variations, and to lay down the longitudes and latitudes of his majesty's settlements in America. He set out on this attempt on the 24th of November 1698; but on crossing the line his men grew sickly, and his lieutenant having mutinied, he returned home in June 1699. Having got the lieutenant tried and cashiered, he set sail a second time in September following, with the same ship, and another of less size, of which he had also the command. He now traversed the Atlantic Ocean from one hemisphere to the other; and having made his observations at St Helena, Brazil, Cape Verd, Barbadoes, Madeira, the Canaries, the coast of Barbary, and in many other latitudes, he returned in September 1700, and the next year published a general chart, showing at one view the variation of the compass in all those places. Captain Halley, as he was now called, had been at home little more than half a year, when he was sent by the king to observe the course of the tides, with the longitude and latitude of the principal headlands in the British Channel; and having executed this task with his usual expedition and accuracy, he published a large map of the British Channel. Soon afterwards the emperor of Germany having resolved to construct a harbour for shipping in the Adriatic, Captain Halley was sent by Queen Anne to survey the different ports on the coast of Dalmatia. He embarked on the 22d of November 1702, passed over to Holland, and travelling through Germany to Vienna, proceeded to Istria; but as the Dutch opposed the design, it was laid aside. The emperor, however, made him a present of a rich diamond ring from his finger, and honoured him with a letter of recommendation, written with his own hand, to Queen Anne. Soon after his return he was again dispatched on the same business. Upon his arrival at Vienna he was the same evening presented to the emperor, who sent his chief engineer to attend him to Istria, where they repaired and added new fortifications to those of Trieste. Mr Halley returned to England in 1703; and the same year he was appointed professor of geometry in the university of Oxford, in the room of Dr Wallis, and had the degree of doctor of laws conferred on him by that university. He is said to have lost the professorship of astronomy in that university because he would not profess his belief of the Christian religion. He was scarcely settled at Oxford, when he began to translate into Latin from the Arabic, *Apollonius de Sectione Rationis*, and to restore the two books of the same author, *De Sectione Spatii*, which are lost, from the account given of them by Pappus; and he published the whole in 1706. He had afterwards a share in preparing for the press the Conics of Apollonius, and he ventured to supply the whole of the eighth book, the original of which is also lost. He likewise added Serenus on the section of the cylinder and cone, printed from the original Greek, with a Latin translation, and published the whole in folio. In 1713 he was made secretary of the Royal Society; in 1720 he was appointed the king's astronomer at the royal observatory at Greenwich, in the room of Mr Flamsteed; and in 1729 he was chosen as foreign member of the Academy of Sciences at Paris. He died at Greenwich in 1742. His principal works are, 1. *Catalogus Stellarum Australium*; 2. *Tabulæ Astronomicæ*; 3. An Abridgment of the Astronomy of Comets. We are also indebted to Halley for the publication of several of the works of Sir Isaac Newton, who had a particular friendship for him, and to whom he frequently communicated his discoveries.

HALLIAR, a district of Hindustan, in the province of Gujerat, extending along the eastern shore of the Gulf of Cutch. The general characteristic of this district is barrenness, with particular spots in a high state of cultivation. The ruler of the country has lately given orders to the zemindars to plant annually a certain number of mango and other trees, in order to improve the appearance of the country. The princes themselves breed a number of horses and camels. The inhabitants never shoe their horses, yet they gallop at full speed over the worst ground; and by such training their hoofs become as hard as the rocks over which they tread. The natives of this country have a practice of suspending rags on trees, which example being followed by others, the tree, according to the popular superstition, becomes consecrated, and is styled the Chintra Peer, or Ragged Saint. The country is possessed by independent native chiefs, who claim descent from Rawul, the youngest son of Rai Humeer, the sovereign of Cutch. This prince usurped the throne of his father, but was afterwards compelled to resign it to his brother, and leave the country. He crossed the Runn at Mallia, and finally established his headquarters at a village where Noanagur now stands. His followers in the course of a few years added to their possession two villages, which received the name of Halliar, an appellation it still retains.

HALMOTE, or HALIMOTE, is identical with what is now called a *court-baron*, the word implying a meeting of the tenants of the same hall or manor. The name is still retained at Luston, and other places in Herefordshire.

HALMSTAD, a province in the south of Sweden, bounded by Gottenburg, Elfsborg, Jonkoping, and Kronsburg. It is mountainous in the eastern part, but to the west level and sandy. The soil is poor, stony, and ill cultivated, so that it is necessary to import one third of the corn required for food. The inhabitants subsist either by their dairies, or by the fisheries, which employ a great proportion of them. It is divided into four bailiwicks, in which are four towns and 3556 farming establishments, with 71,500 inhabitants. The capital is the city Halmstad, situated at the mouth of the river Nissa, by which it trades in deals, pitch, and tar. It contains a church, a stadthouse, 199 dwellings, and 1634 inhabitants. Long. 12. 46. 40. E. Lat. 56. 39. 45. N.

HALO, or CORONA, in *Natural History*, a coloured circle appearing round the body of the sun, moon, or any of the large stars.

HALSTEAD, a market-town of the county of Essex, in the hundred of Hinchford, forty-six miles from London. The river Colne runs at the bottom of the town, from which the streets gently rise. It has a good corn-market on Friday, and once employed many persons in the woollen manufacture, which is now nearly extinct. There is a good foundation grammar-school, and the county bridewell is established in the town. The population amounted in 1801 to 3380, in 1811 to 3379, in 1821 to 3858, and in 1831 to 4637.

HALTERISTÆ, in *Antiquity*, a kind of players at discus, who were so denominated from a peculiar kind of discus, called by the Greeks ἁλτηρ, and by the Latins *halter*. (See DISCUS.) Some conceive the discus to have been a leaden weight or ball which the vaulters bore in their hands, to secure and keep themselves the more steady in their leaping. Others think that the halter was a lump or mass of lead or stone, with a hole or handle fixed to it, by which it might be carried; and that the halteristæ were those who exercised themselves in removing these masses from place to place. Mercurialis, in his treatise *De Arte Gymnastica* (l. ii. c. 12), distinguishes two kinds of halteristæ (for though there was but one halter, there were two ways of applying it); the one was to throw or pitch it in a certain manner; the other only to hold it out at arm's-end, and in this posture to perform different motions, swinging the hand backwards and forwards, according to the figures given by Mercurialis. The halter was of a cylindrical figure, smaller in the middle, where it was held, by one diameter, than at the two ends. It was above a foot long, there was one for each hand, and it was either of iron, stone, or lead. Galen (*De Tuend. Valetud.* lib. i. v. and vi.) speaks of this exercise, and shows of what use it is in purging the body of peccant humours.

HALYMOTE, properly signifies a holy or ecclesiastical court. See HALMOTE.

HALYS, the largest river of Asia Minor, which, according to Herodotus (i. 72), rose in the mountains of Armenia, and after flowing through that part of Cappadocia called Cilicia, separated the Matieni from the Phrygians, and then the Syrians of Cappadocia from the Paphlagonians. Strabo (xii. 546) says that it rises in Great Cappadocia, but towards Pontica, and the vicinity of the district Camisene; it runs a great way from east to west, then turning to the north, traverses the country of the Galatæ and Paphlagonians. Pliny (vi. 2) makes it rise in Mount Taurus, and flow through Cataonia and Cappadocia. Both of these accounts are correct; for the Halys, now *Kizil-Ermak*, has two main branches, the one rising in the mountains of Taurus, and the other in those of Lesser Armenia. This river derived its name from some salt mines near which it flowed (Strab.), and, forming the boundary of the Median and Lydian empires in the times of Crœsus, is connected with the ambiguous oracle which led to the destruction of that prince. Tournefort describes it near its mouth as being as wide as the Seine at Paris. It has only one mouth, though modern maps give it several.

HALYWERCFOLK, in old writers, were persons who enjoyed land, by the pious service of repairing some church, or defending a sepulchre. This word also signified such persons in the diocese of Durham as held their lands by the tenure of defending the corpse of St Cuthbert, and who thence claimed the privilege of not being forced to go out of the bishopric.

HAM, or CHAM, in *Ancient Geography*, the country of the Zuzims (Gen. xiv. 5), the situation of which is not known.

HAM, the youngest son of Noah, was the father of Cush, Mizraim, Phut, and Canaan, each of whom had the several countries peopled by them. With respect to Ham, it is believed that he had all Africa for his inheritance, and that he peopled it with his children. As for himself, it is thought by some that he dwelt in Egypt; but Basnage is of opinion that neither Ham nor Mizraim ever were in Egypt, but that their posterity settled in that country, and called it by the name of their ancestors. And as to Ham's being worshipped as a god, and called *Jupiter Hammon*, he thinks people may have been led into this mistake by the similitude of names; and that Jupiter Hammon or Ammon was the sun, to which divine honours were at all times paid in Egypt. However this may be, Africa is called the land of Ham in several places of the Psalms (Psal. lxxvii. 51, civ. 23, cv. 22). In Plutarch, Egypt is called *Chemia;* and there are some traces of the name of *Ham* or *Cham* observed in Psochemmis and Psittachemmis, which are cantons of Egypt.

HAM, a Saxon word, used to signify a place of dwelling, a village or town; and hence the termination of some of our towns, *Nottingham*, *Buckingham*, and the like. A home, close, or little narrow meadow, is also denominated a *ham*.

HAM is likewise part of the leg of an animal, being the inner or hind part of the knee, or the ply or angle in which the leg and thigh, when bent, incline to each other.

HAM, in *Commerce*, means a leg or thigh of pork, dried, seasoned, and prepared, to make it keep, and to give it a brisk agreeable flavour.

HAMADAN, or AMADAN, a city of Persia, in the province of Irak, which stands upon the site of the ancient Ecbatana. It was taken and destroyed by Timour or Tamerlane, and has never recovered its former splendour. The wall, with the citadel, was entirely pulled down by order of the conqueror, and has never since been rebuilt. It was long one of the most flourishing and prosperous cities of the East, but had been for many years on the decline, when it received its final blow from Timour the Tartar, who sacked and pillaged it, destroyed its walls and finest buildings, and reduced it from being a great and opulent city to a heap of ruins. In that dismantled state it remained a mere clay-built suburb of what it had been; but it possessed its iron gates, until within the last fifty years, when, by the orders of Aga Mahommed Khan, every vestige of its ancient greatness was destroyed. The mud alleys, which now occupy the site of ancient streets or squares, are narrow, interrupted by large hollows, and heaps of fallen crumbled walls of deserted dwellings. A miserable bazar is to be seen here and there in traversing the town; and large lonely spots, marked by broken low mounds, cover more ancient ruins. It is still a considerable place, however, and a known mart of trade between Ispahan and Bagdad, and between the latter place and Teheran, and is famed for the manufacture of leather, in which it carries on an extensive trade. Kinneir mentions that when he was in this place he was shown the tomb of Mordecai and Esther, a circumstance which he considers as a proof of the antiquity of the place. The Persians themselves say that it was the favourite summer residence of most of their sovereigns, from the days of Darius to those of Ghengis Khan. The situation is fine. During eight months of the year the climate is delightful. But in winter the cold is excessive, and fuel is with difficulty procured. The surrounding plain is intersected by innumerable little streams, covered with gardens and villages, and the vegetation is most luxuriant. It contains at present ten thousand meanly-built houses, and about forty or forty-five thousand inhabitants, amongst whom are about six hundred Jewish families, and nearly the same number of Armenians. Long. 40. E. Lat. 34. 53. N.

HAMADRYADES (formed of ἁμα, *together*, and δρυας, *dryad*, from δρυς, *oak*), in *Antiquity*, certain fabulous deities revered amongst the ancient heathens, and believed to preside over woods and forests, and to be enclosed under the bark of oaks. The Hamadryades were supposed to live and die with the trees which they were attached to, as is observed by Servius on Virgil (*Eclog.* x. ver. 62), after Mnesimachus, the scholiast of Apollonius, who mentions other traditions relating to the same subject. The poets, however, frequently confound the Hamadryades with the Naiads, Napææ, and rural nymphs in general. (See Catullus, *Carm.* lxviii. ver. 23; Ovid, *Fast.* iv. 229; Met. i. ver. 695, xiv. ver. 628; Propertius, *Eleg.* xx. 32; Virg. *Ecl.* x. ver. 64; *Georg.* iv. ver. 382, 383.) Festus calls them *Querquetulanæ*, as having issued or sprung from oaks. An ancient poet, Pherenicus (Athenæus, lib. iii.), calls the vine, fig-tree, and other fruit-trees, *hamadryades,* from the name of their mother the oak.

HAMAH, a flourishing town of Syria, situated on the Orontes, and generally supposed by some to be the ancient Apamea; but, according to Dr Pococke, the ancient Epiphania. The celebrated Arabic historian Abulfeda was formerly prince of Hamah. The sheiks of the town still enjoy high consideration, and inhabit a splendid palace. It is the only market for the Arabs, who roam over the desert between it and Tadmor; and it derives great advantage from this trade. It is 62 miles south-south-west of Aleppo. Long. 37. 10. E. Lat. 34. 45. N.

HAMAXOBII, Hamaxobians, in the ancient geography, a people who had no houses, but lived in carriages. The word is formed from ἁμαξα, *a carriage* or *chariot*, and βιος, *life*. The *Hamaxobii*, called also *Hamaxobitæ*, were an ancient people of Sarmatia Europæa, who inhabited the southern part of Muscovy, and instead of houses, had a sort of tents made of leather, and fixed on carriages, to be ready for shifting and travel.

HAMBLEDON, or Hambledown, a town in the county of Hants, in the division of Portsdown, sixty-four miles from London. It has a small market for corn, which is held on Mondays. As it is at the foot of the Southdown hills, the climate is considered as favourable for pulmonary patients. The population amounted in 1801 to 1358, in 1811 to 1495, in 1821 to 1886, and in 1831 to 2026.

HAMBURG, a republican state in Germany, consisting of the city of that name, and of the territory around it, though some portions are encompassed by the dominions of Denmark and of Hanover. It has also, in union with the state of Lubeck, the bailiwick of Bergedorf, with the town of that name, containing 2000 inhabitants. The bailiwick of Ritzebuttel, of which Hamburg is the sovereign, contains the town of that name, and also Cruxhaven, and extends between the mouths of the rivers Elbe and Weser, over about thirty-four square miles, and contains 4000 inhabitants.

The city of Hamburg, one of the greatest emporiums of foreign commerce on the continent of Europe, is situated on the north bank of the river Elbe, about seventy-five miles from its mouth, by which the larger class of merchant vessels can reach it with facility. It was strongly fortified both on the land and the river sides, but during the revolutionary wars its defences were found to require so large a garrison, that since peace has restored it to independence, the walls have been converted into pleasant gardens and promenades. It has two lakes on its eastern side, the Great and Little Alster, on one of which a row of trees forms a pleasant walk, called the Junfersteign or Young Lady's Walk, which is the scene of the recreation of the inhabitants, and on which are the best hotels of the city.

The city, like other ancient towns, consists of narrow and crooked streets, of houses large, lofty, and gloomy, and of canals communicating with the river, by which the craft can convey goods from the ships on the river to the various stores of the merchants. None of the public buildings display remarkable taste. The stadthouse is large and heavy; and under it are those large wine-cellars belonging to the city, which, before the French seized it, were filled with nearly 400 large casks, containing about sixty hogsheads each of Rhenish wine of all ages, from 160 to one year old. There are in Hamburg sixteen Lutheran, two Calvinist, and one Catholic church, besides chapels for the English, and for some small sects. St Michael's church is the most striking, and has a tower 450 feet in height. The bank, the exchange, the admiralty, the house of industry, and other public buildings, are appropriated for their specific purposes, but exhibit nothing peculiar in their architecture. During the French possession, the military commandant compelled the city to construct a bridge across the Elbe, which is near seven miles in breadth, at a vast expense; but upon recovering their independence, it was taken down, and the timber of which it was composed was sold. The intercourse with Harburg on the opposite bank is now maintained by means of barques, steam-boats, and other craft, which pass to and fro almost hourly. The government of Hamburg resides in the senate, which is composed of thirty-six members, four of whom are termed burgomasters, four syndics, one the prothonotary, one the keeper of the archives, and two secretaries. They are chosen by the body of the citizens, who for this purpose are formed into five divisions or classes. The administration of civil as well as of criminal law is confided to three graduated courts, with a power of appeal from the lower to the higher courts. The principles of the Roman law are acted upon in the several courts. The police is well regulated, and maintains what is called a city guard of 400. It maintains a regular military body of 1850 men, besides an organized corps of city militia. The revenue is derived from personal imposts on the different classes of burghers, and from tolls on foreign ships, and slight duties on importation, amounting to about L.150,000 yearly. The debt owing by the state is about L.650,000, but it is annually diminishing. The commerce of the city is carried on with other countries, both by Hamburg and foreign-built ships. The former, constructed in their own ship-yards, are commonly well built, of great strength and burden, and generally proceed to sea well equipped. Many of them repair to the Greenland fishery, and return with blubber, which is converted into oil at appropriate places on the verge of the city. Other Hamburg ships repair to America, Asia, and the Mediterranean. The greater part, however, of the ships that convey cargoes to Hamburg are foreigners; the largest number are British, next to them are the North American, and some are of almost every maritime country, all of whom have consuls to protect their several interests. From the position of Hamburg, near the mouth of a river navigable more than five hundred miles above its embouchure, it enjoys a prodigious internal trade. It is the necessary entrepôt for a great part of Prussia, for the whole of the kingdom of Saxony, for Bohemia, and for several portions of other states in the interior of Germany. As these have no other channel of intercourse with the sea, they obtain their sugar, coffee, rice, tobacco, cotton, wine, rum, fruits, tea, besides articles of clothing, from the stores deposited in Hamburg. They export also through the same channel their corn, flax, linen yarn and cloths, wax, honey, rags, feathers, and the various products of the soil. Thus in Hamburg, as in London, the commodities of every country, and of every climate, may at all times meet both purchasers and sellers.

The manufacturing industry of Hamburg is likewise very considerable. It is exhibited in sugar refineries, in spinning-mills, hat-making, in linen, silk, and velvet weaving, in calico-printing, snuff and tobacco preparing, whalebone cutting, in making gold and silver articles, and in several other ways. The schools are conducted in a beneficial manner for the education and improvement of the inhabitants. A gymnasium or high school, a kind of college, has five professors; and the Johanneum, of the same kind, has one director and seventeen tutors, and both are well regulated, as are also the schools for the rudiments of learning. The institutions for the relief of poverty, sickness, and old age, are benevolently and economically supported. There are both French and German theatres, and the gratifications of music and dancing are amply provided for. This city is situated in longitude 9. 46. 27. east, and latitude 53. 34. 32. north. The total number of the inhabitants amounted, in 1832, to 122,000 within the city.

HAMEL, John Baptiste du, a very learned philosopher and writer, born at Vire in Normandy in 1624, was the son of an advocate esteemed for his knowledge, probity, and conciliating spirit. He commenced his studies at Caen, and completed them at Paris. His progress in philosophy was rapid, and at eighteen he wrote a treatise, in which he explained the *Spherics* of Theodosius, to which was added a tract upon Trigonometry, designed as an introduction to astronomy. Natural philosophy, as then taught, was only a collection of vague, puzzling, and barren questions; but Duhamel undertook to establish it upon right principles, and with this view published his *Astronomia Physica*. In 1666 Colbert having proposed to Louis XIV. a scheme, which was approved of by his majesty, for establishing a Royal Academy of Sciences, Duhamel was appointed perpetual secretary; a situation for which he was eminently qualified, both by his acquirements and by his talent for managing the different parties into which that learned society was divided. Besides, he wrote in Latin with remarkable purity and elegance (a great advantage at a period when the French had not become an European language); and, by reason of this accomplishment, he accompanied Colbert first to the congress of Aix-la-Chapelle, and afterwards to England, when his patron proceeded to that country in the capacity of French ambassador. He subsequently visited Holland, and then returned to France, where, between 1670 and 1673, he gave to the world the results of his observations, in three publications. His next production was a course of philosophy, which he composed for the use of the students in the College of Burgundy; a work in which, if he did not exclude the ancient systems, the weakness and absurdity of which already began to be perceived, he at least combated their grosser errors, and succeeded in recommending new truths, without in any degree involving himself in trouble by doing so. He then published a course of theology, which met with great success, and of which he was required to execute an abridgment for the use of the schools. But all his labours did not prevent him from assiduously attending the sittings of the Academy, of which he was preparing a history: his zeal enabled him to surmount all difficulties; even the very infirmities which announced his approaching dissolution could not abate his ardour for study; and he was still meditating new undertakings, when death surprised him in the midst of his projects, on the 6th of August 1706, at the age of eighty. His principal works are, 1. Astronomia Physica, Paris, 1660, in 4to; 2. De Metcoris et Fossilibus, ibid. 1660, in 4to; 3. De Consensu Veteris et Novæ Philosophiæ libri iv. Paris, 1663, in 4to; 4. De Corporum Affectionibus, cum manifestis tum occultis, libri duo, Paris, 1670, in 12mo; 5. De Mente Humana, libri iv. Paris, 1672, in 12mo; 6. De Corpore Animato, libri iv. Paris, 1673, in 12mo; 7. Philosophia Vetus et Nova ad usum Scholæ accommodata, Paris, 1678, in four vols. 12mo; 8. Theologia Speculatrix et Practica, Paris, 1691, in seven vols. 8vo; 9. Regiæ Scientiarum Academiæ Historia, Paris, 1698 and 1701, in 4to. Duhamel also translated into Latin the *Traité des Droits de la Reine sur plusieurs Etats de la Monarchie d'Espagne* of Bilain, Paris, 1667, in 4to.

HAMELN, a city of the kingdom of Hanover, in the province of Kalenberg. It stands on the river Weser, where that stream receives the water of the Hamel. It is surrounded by walls scarcely defensible; and the citadel of Fort George was destroyed by the French in 1806. It contains 674 houses, and 5454 inhabitants. There are some very large breweries, and several tanneries; and some linen goods are also made. The navigation of the Weser was dangerous near this place, but the danger has been removed by the erection of new locks.

HAMESECKEN, or HAMESUCKEN. Burglary, or nocturnal housebreaking, was, by the ancient English law, called *Hamesecken*, as it is in Scotland to this day.

HAMI, a region of Central Asia, in Mongolia, situated in the heart of the great desert of Cobi, and on the great caravan route to China, to whose jurisdiction it is subject. The soil is barren, and it contains only one city and a few villages. It produces, however, melons of an exquisite flavour. The inhabitants are Mohammedans.

HAMILCAR BARCAS, a Carthaginian general, the father of Hannibal, of a family which pretended to trace its descent to the ancient kings of Tyre, and which, from the warlike nature of its policy, was a favourite with the people. It was the eighteenth year of the first Punic war (247 B. C.), when Hamilcar was appointed to the command of the Carthaginian forces in Sicily, from which they were nearly expelled. With his fleet he plundered the land of the Bruttii and Locrians, and then took up his station near Eryx, from which no power of the Romans could dislodge him. For five years he continued to desolate the coast of Italy, and to dispute the possession of Sicily, but his exertions were destined to prove of no avail. The fate of the war was decided without his intervention, in the naval engagement off the Insulæ Œgates, and he had nothing but the humiliating duty to perform of arranging with the Romans the terms on which peace would be granted.

The Carthaginians were no sooner relieved from this critical position than they were threatened with a war of a still more alarming character. Their own mercenaries having assembled at Carthage to receive their arrears of pay, became clamorous and unreasonable in their demands, and at last proceeded to make open war on the country in whose defence they had been hitherto employed. Hamilcar was again called into active service, and soon relieved his country from all fear of these leagued banditti. The insulting conduct of the Romans was keenly felt by Hamilcar, and the whole object of his life was now directed to find the means of taking vengeance on his proud foe. For this purpose he procured his appointment to the command of the troops in Spain, with the hope of uniting to his country the whole of the peninsula. Here he expected to find resources which would enable him to make a successful attack on the Romans; and during the course of nearly nine years he continued extending the dominions of the republic, and reducing many nations under the Carthaginian yoke. At last he fell in an engagement with the Vettones, 229 B. C., and his son-in-law Hasdrubal, succeeded to the command. (Polyb. ii. 1.)

HAMILTON, a town of Scotland, in the county of Lanark. It is pleasantly situated upon the banks of the Clyde and Avon, near their confluence, in the midst of a highly fertile and cultivated district. The town originated in the fifteenth century, under the protecting influence of the lords of Hamilton, who constituted a place called the Orchard, between this point and the Clyde, the principal messuage of the barony, and which is still the chief seat of the Hamilton family. There may however have been a hamlet here prior to this transaction. In the vicinity was situated the church of the parish, which in 1451 was elevated to the dignity of a collegiate foundation. In 1732, when a new church was built, the old one was almost entirely pulled down. East from the modern church, which occupies an eminence, and is an elegant structure, the present town of Hamilton has been reared. It consists of several streets of well-built houses, somewhat irregularly dispersed, but handsome in appearance. There is a neat town-house and a commodious market-place. Besides the parish church, there are four meeting-houses for dissenters. The weaving of cotton goods is here carried on to a considerable extent; and there is also a good inland trade, Hamilton being the capital of a populous agricultural district. It possesses two academies, three hospitals, and several other charitable institutions. The town is governed by a provost, three bailies, and eight councillors. The justices of peace hold regular courts; and the town has a stamp-office, tax-office, and post-office. In the vicinity are spacious cavalry barracks, which are generally occupied. The great objects of attraction in this quarter are the palace of the Duke of Hamilton, and the surrounding pleasure-grounds. This magnificent mansion, which was rebuilt in the years 1695–1696, is finely situated on a flat expanse of ground between the town and the river Clyde. It has recently been greatly modernized, and increased in size and accommodation. Several of the rooms are large, particularly the gallery, which contains a splendid collection of pictures. Hamilton is situated at the distance of about ten miles and a half from Glasgow, fifteen from Lanark, and thirty-six from Edinburgh. The population amounted in 1821 to 6000, and in 1831 to 9513. Hamilton is attached to the Falkirk district of burghs in sending a member to parliament.

Hamilton, *Anthony*, *Count*, was descended from a younger branch of the great family of Hamilton, and born in Ireland about the year 1646. His mother was sister of the Duke of Ormond, then viceroy of that country. The troubles of that period compelled his family to retire to France whilst he was only an infant, and he was brought up in the language and religion of that country. He made different visits to England in the reign of Charles II., but he was prevented from obtaining any public employment in consequence of his religious opinions, to which he constantly adhered. He received from James II. a regiment of infantry in Ireland; but when that monarch's affairs became ruined, Count Hamilton accompanied him to France, which he never afterwards quitted. He was very much admired on account of his wit and politeness, as well as for the many estimable qualities of his heart. His writings are lively, yet his conversation was serious, and he perhaps indulged too much his propensity to satire. He died in the year 1720 in the seventy-fourth year of his age. The works of the Count, written in the French language, were printed in 1749, in six vols. 12mo., and consist of poems, fairy tales, and the Memoires de Grammont, the best of all his compositions. Of this production Voltaire remarked, "It is of all books that in which the most slender groundwork is set off with the gayest, most lively, and agreeable style." A splendid edition, adorned with fine engravings from original portraits, was published by Lord Orford, at his own private press.

Hamilton, *George*, Earl of Orkney, and a brave warrior, was the fifth son of William earl of Selkirk, and early betook himself to the profession of arms. Being made colonel in 1689–1690, he distinguished himself by his bravery at the battle of the Boyne; and soon afterwards at those of Aghrim, Steinkirk, and Landen, and at the sieges of Athlone, Limerick, and Namur. His eminent services in Ireland and Flanders, through the whole course of the war, recommended him so highly to King William III. that, in 1696, he advanced him to the dignity of peer of Scotland, by the title of Earl of Orkney; and his lady, the sister of Edward Viscount Villiers, afterwards Earl of Jersey, had a grant made to her, under the great seal of Ireland, of almost all the private estates of King James, which were of any considerable value. Upon the accession of Queen Anne to the throne, he was promoted to the rank of major-general, and, in the year 1703, to that of lieutenant-general, and was likewise made knight of the Thistle. His lordship afterwards served under John duke of Marlborough, and contributed by his bravery and conduct to the glorious victories of Blenheim and Malplaquet, and to the taking of several towns in Flanders. In the beginning of 1710, his lordship, as one of the sixteen peers of Scotland, voted for the impeachment of Dr Sacheverel; and the same year he was sworn of the privy council, and made general of infantry in Flanders. In 1712, he was appointed colonel of the royal regiment of fusileers, and served in Flanders under the Duke of Ormond. In 1714, he was made gentleman-extraordinary of the bed-chamber to King George I. and afterwards governor of Virginia. At length he was appointed constable, governor, and captain of Edinburgh Castle, lord-lieutenant of the county of Clydesdale, and field-marshal. He died at his house in Albemarle Street in the year 1737.

Hamilton, *John*, the twenty-fourth bishop of St Andrews, to which he had been translated from Dunkeld. He was natural son of James, the first Earl of Arran, and was in great favour at court whilst his friends remained in power. He was one of Queen Mary's privy council, and a steady friend of that unfortunate princess. He performed the ceremony of christening her son, and was at different times lord privy seal and lord treasurer. The queen had reason to lament her not following the advice of this prelate, after the fatal battle of Langside, when he urged her not to trust her person in England. By the Earl of Murray, the regent, he was declared a traitor, and obliged to seek shelter amongst his friends. But being unfortunately in the castle of Dumbarton when that fortress was taken by surprise, he was carried thence to Stirling, where, on the 1st of April 1570, he was executed, with the unceremonious barbarity peculiar to the time.

Hamilton, *Robert*, a distinguished mathematician, and author of several works on finance and political economy, was born at Edinburgh on the 11th of June 1743. Dr Hamilton's family was a branch of that of Preston, the eldest cadet of the ducal house of Hamilton. His grandfather was Dr William Hamilton, professor of divinity, and principal of the University of Edinburgh. His father was Gavin Hamilton, an eminent publisher, and distinguished by his loyalty to the House of Hanover during the rebellion in 1745, at which time he acted as chief magistrate of Edinburgh. His mother was Helen Balfour, daughter of James Balfour, Esq. of Pilrig, and the subject of this notice was the eighth child.

Like many other men who have distinguished themselves by the strength and vigour of their mental powers in after-life, Dr Hamilton was very delicate in his youth; yet though never robust, he lived to a very advanced age. This may in some degree be attributed to the great regularity of his life, and to his moderation in all things, and not a little to the admirable control under which he had brought every inclination and passion, being thus exempted from those violent emotions which wear out our mortal frames.

His education was entirely conducted in Edinburgh; he was an excellent scholar, and gave complete satisfaction to his teachers, applying himself with diligence and success to the various branches of study usually taught in Scotland. He appears to have had from his earliest years an earnest desire after every sort of learning; and even late in life, when his professional duties and his studies in finance and political economy would have seemed more than enough to occupy all his time, he was able to keep himself acquainted not only with all the discoveries of science, but also with the modern literature of his own and other countries.

His habits and inclinations led him to desire to pass his life in literary pursuits; but the circumstances of his father's numerous family obliged him to devote himself to mercantile business. To prepare himself for this, he spent some time in a banking-house in Edinburgh, a circumstance which he doubtless regretted at the time, but which probably proved of the utmost value to him in after-life; for the accurate habits of business he then acquired were never lost, but were most useful to himself and to others on many occasions, and perhaps even laid the foundation of his work on finance. Whilst a clerk in the banking-house he pursued his studies as far as his leisure permitted. He and some of his companions formed themselves into a literary society, which subsisted for several seasons, and eventually gave rise to the Speculative.

Lord Kaimes was at that time the leading literary man in Edinburgh, and Dr Hamilton became personally acquainted with him, in a manner equally creditable to both. He had written an anonymous criticism on one of Lord

Kaimes's works, with which his lordship was so much pleased that he expressed an anxious wish to become acquainted with the author. He was with some difficulty persuaded to reveal himself, and Lord Kaimes expressed much surprise at the youth of his able critic. He gave him a general invitation to his house, then the resort of all the literary characters of the day, which proved to him a source both of pleasure and improvement.

The life of a man devoted to literary pursuits rarely furnishes much matter for the biographer, and that of Dr Hamilton is unusually devoid of incident. In the year 1766 the mathematical chair in Marischal College, Aberdeen, became vacant by the death of Professor Stewart. Although only twenty-three years of age, Dr Hamilton's friends were so well aware of his talents and acquirements, that they prevailed upon him, against his own inclination, to become a candidate. He was not successful; but the appearance which he made at the various examinations did him great credit. Two of his rivals were men of great eminence, viz. Dr Trail, who obtained the chair, but after a short period resigned it, and entered the English church (his high attainments in mathematics appear from his life of Simpson); and Professor Playfair, whose name deservedly ranks amongst the greatest of whom Scotland can boast. An account of the comparative trial has been preserved, by which it appears that the questions embraced almost every branch of mathematics; and the sum of the merits of the candidates is thus stated, Trail 126, Hamilton 119, Playfair 90, Fullarton 58, Stewart 47, Douglas 16. The talent he displayed on this occasion was not forgotten, and eventually led to his obtaining the situation of which he was at this time disappointed.

On his return from Aberdeen he entered into partnership with his father in a paper-mill near Edinburgh; but his father died soon afterwards, and as the management of this concern was wholly foreign to his habits and inclinations, he took the first opportunity of placing himself in a more congenial situation, and in 1769 obtained the rectorship of the academy of Perth. In 1771 he married Anne, daughter of Alexander Mitchell, Esq. of Ladath, who died in 1778, leaving him three daughters, who still survive. In 1779 he was appointed by the crown to the chair of Natural Philosophy in Marischal College, Aberdeen. At the same time that Dr Hamilton received this appointment, Dr Copland obtained that of professor of Mathematics. They taught their respective classes for one session; but each feeling the subject allotted to the other to be more congenial to his talents, they agreed to exchange classes; and in future Dr Hamilton taught mathematics, and Dr Copland natural philosophy; an arrangement which was as beneficial to the students, and acceptable to the University, as it was agreeable to the two professors.

In this situation Dr Hamilton remained till the close of his life, although much pressed by some of his friends, at least on one occasion, to remove to what they considered a wider field of usefulness, by accepting a chair in another university. In 1782 he married Jane, daughter of James Morison, Esq. of Elsick. In 1814, finding the duty of teaching his three mathematical classes rather too much for him, he was allowed by the Senatus to employ an assistant. His choice fell on Mr, now Professor Cruickshank, who was soon afterwards appointed by the patrons to be also his successor; Dr Hamilton himself at the same time being regularly inducted into the chair of mathematics, the classes of which he had so long taught. In 1825 he had the misfortune to lose his second wife, by whom he had no family, and from that period he withdrew very much from his active employments and from general society, and spent most of his time at his country house, where he expired on the 14th of July 1829, in the eighty-seventh year of his age.

The first work which Dr Hamilton gave to the public was his Merchandise, the first edition of which appeared in 1777. It has gone through many editions, the last of which, not long before his death, was, with the author's approbation, edited by Mr E. Johnstone of Edinburgh. In 1790, he printed, for the use of his pupils, a set of mathematical tables, which were reprinted with great accuracy and care in 1807. The labour of preparing and correcting such tables for the press is most irksome, and every student of mathematics can well appreciate their value. In 1796 he published his Arithmetic, which has gone through several editions; and in 1800 he published, for the use of his pupils, Heads of a Course of Mathematics. These are his published works on what may be called professional subjects. It is known that he also prepared a work of considerable extent on Practical Astronomy; but no trace of it was found among his papers after his decease.

In 1790 he published anonymously, an Essay on Peace and War. The object of this work was to show the trifling grounds on which wars are often undertaken, and how seldom, at least comparatively speaking, the avowed object for which they were undertaken has been attained, even by their successful termination; and the inadequacy of the advantages which are obtained to compensate for the expenditure of blood and treasure necessarily incurred. But Dr Hamilton's most important work, the publication of which places him amongst the greatest benefactors to his country, appeared in 1813, under the title of an Inquiry concerning the Rise and Progress, the Redemption and Present State, and the Management, of the National Debt of Great Britain. Up to the period of the appearance of this work, the efficacy of the Sinking Fund system was received by all parties almost as an axiom. It was brought forward for the public advantage by Mr Pitt, with perfect good faith; and it continued to be acted upon by his successors, without being called in question even by political antagonists. Dr Hamilton's work at once showed the unsoundness of the whole system, and that so clearly, that soon after its publication it would have been difficult to find any one who would defend the plans so long pursued. The work immediately attracted notice in all quarters, and though the readers of such books are not very numerous, it passed through three editions in a few years. But to the author the most satisfactory approval was that which he received from the gradual but complete adoption of his principles by the British government. It is not a little remarkable, that no one ever attempted fairly to refute his work, although many able men had every inducement to do so if they could. Every thing connected with the fund was so enveloped in technical jargon, that, to all but the initiated, they were an unintelligible mystery. Dr Hamilton divested the subject of this encumbrance; he gave a distinct detail of the progress of our debt, explaining the origin and nature of the different stocks in plain and simple language.

He commences his work by laying down twelve general principles of finance, each of which is so incontrovertible, as hardly to require the support of argument. The second part of it is occupied by the history of our debt, and the different plans proposed or adopted for its discharge, and their operation; and the third part is devoted to the application of the twelve principles to these schemes, and an examination of the different methods adopted in conducting our financial concerns. The scope of the whole work may be summed up in two plain statements: first, that, as with private individuals, so with nations, the only really effectual sinking fund is a surplus of income over expenditure, and therefore that no nation whose finances are managed on opposite principles can avoid ruin in the end, however skilfully its affairs may be conducted; secondly, that to raise money at a low nominal rate of interest, by promising to repay a larger sum than is received, is a trifling advantage at first, but incurs a large certain loss on redemption of the debt. These appear so self-evident that it might have been thought a waste of time to prove them, had not long and fatal experience shown that they were neither believed nor acted upon by those men who conducted the finances of the nation. Now, however, they are universally admitted, and no financier of the present day is found bold enough to propose the redemption of our national debt by any other means than keeping the income above the expenditure.

In 1822, Dr Hamilton published a small pamphlet on the Poor Laws; a subject by which he was deeply interested. This pamphlet contains a brief but distinct exposition of the principles on which relief to the poor ought to be afforded in a Christian country. It had probably little circulation beyond the town of Aberdeen, as great part of it is occupied by local details; but the publication of it may fairly be considered as having at least for a number of years delayed the infliction of poor-rates on that city. The last work of Dr Hamilton's which was given to the public is entitled The Progress of Society; this was left by the author ready for the press. He had been occupied in the preparation of it for many years, and continued to correct it till within a few days of his death. It consists of twenty-one essays on different branches of political economy, published at a time (1830) when the minds of all thinking men in this country were directed to those most momentous political changes which absorbed the public attention, to the almost total exclusion of every other subject.

This work attracted less attention than his National Debt. It is written in his usual plain and perspicuous style, and his deductions from admitted facts appear to be in general incontrovertible, though they lead at times to conclusions widely different indeed from those of most modern writers on political economy. But when the time shall come that a greater number of fixed principles on political economy shall be established, and the subject shall thus be brought in truth to be a science, then it is expected that this work will be found to contain more sound doctrine than most of its precursors. Much of the author's benevolence appears in its pages, and of his desire for the general good, and not that of particular classes of society. The whole is pervaded by his favourite doctrine, that the object of government should be the moral good, and not the wealth or the grandeur, of a people. In 1831 Dr Hamilton's family reprinted privately his Essay on Peace and War, which had become very scarce, as well as that on the Poor Laws, omitting the local details; and to these were added an unfinished fragment of an essay on Government. It cannot now be ascertained at what time it was written; but probably it was during the progress of the French Revolution, of which Dr Hamilton always spoke in terms of the strongest reprobation. In 1814 Dr Hamilton was elected one of the three judges for awarding the Burnet prize, for the best essay on the Being of a God. The large amount of the prizes (L.1200 and L.400) attracted many competitors, and rendered the duty of the judges laborious. Dr Hamilton applied himself to the work with his wonted care, and wrote out a full abstract of each of the fifty treatises, to enable him to come to a right decision on their respective merits; a labour which occupied many hours a day for several months.

His work of finance brought him into correspondence with several of the leading members of both houses of parliament, and also with some foreign economists who were interested in the subject, particularly J. B. Say, who notices the Inquiry in terms of strong commendation, in his *Traité de l'Economie Politique* (vol. ii. p. 381).

He was also frequently consulted on mathematical questions by his former pupils; and as he never ceased to feel an interest in their progress through life, so he had much pleasure in assisting them when in his power, as many still remember with gratitude. In like manner, his advice was sought and obtained as to the various schemes for equalizing weights and measures, for supplying the town of Aberdeen with water, for calculating the invaluable fund for the widows of the clergy of the church of Scotland, and a similar institution for the widows of advocates in Aberdeen. To the management of the poor's funds, and the various charitable institutions in Aberdeen, and of the funds of the college of which he was a member, much of his time and attention were devoted. He was never idle, and all his talents were ever ready to be employed for the service of those who required them.

Dr Hamilton's personal appearance was striking: he was naturally tall and thin, but with a considerable stoop, which increased with his years: his countenance was mild and very intelligent, often with a certain air of abstraction; but when animated, as it often was, particularly in conversation, it was remarkably expressive. His habits and pleasures were completely domestic, and he enjoyed the society of his friends with the keenest relish. For many years he made annually a tour to some part or other of Britain, and at the age of seventy-eight visited the Low Countries and the north of France. From these tours he acquired much information of immediate use to his studies on political economy, and he was in the habit of noting down every day whatever came before him worthy of remembrance.

In pursuing his studies he followed a similar plan, rarely reading a work of importance without committing to writing his remarks upon it; and the result was, that he possessed a fund of solid information rarely to be met with. His natural diffidence prevented his displaying his resources in general society, where he was more anxious to hear than to speak; but in the circle of his intimate friends his conversation was in the highest degree pleasing and instructive. His favourite relaxation was the cultivation of flowers, a taste in perfect unison with the simplicity of his whole character. Dr Hamilton was no party man, although he was often unjustly regarded as such. He used his strong powers of mind to judge of public measures by their own merits, without regard to party; and it is pleasing to remark the gentleness and candour with which in his works he animadverts on those from whose opinions and principles he dissents.

It is not necessary to add much on his private character; he was full of benevolence, active as well as speculative. Amongst his papers were found "Regulations for his future conduct," drawn up at the early age of twenty-two; and on reviewing the long course of his subsequent life, it is clear that he never lost sight of the high standard which he had then proposed for himself. His piety was always sincere, though unostentatious; it became more and more fervent as his earthly career approached its termination; and for some time previous to his decease, it was his practice to retire to his closet three times a day for private devotion. His faculties continued unimpaired to the last, and his end was perfect peace. Soon after his death a subscription was proposed, to erect a monument to his memory; and so general was the respect entertained for him, that a large sum was immediately raised. The monument has been lately erected in the burying-ground of St Nicholas, Aberdeen, not far from his grave. It consists of a solid basement, six feet high, on which are placed four fluted Doric columns, each of one block of granite, supporting an entablature of the same order, above which rises a low roof. Under this roof stands an urn, and on the last side of the basement is a tablet with the following inscription:

Memoriæ Sacrum
Roberti Hamilton, LL.D.
In Academia Mariscallana

Mathesis Professoris,
Qui XIV. die Julii A. D. MDCCCXXIX.
et ætatis suæ LXXXVII. obiit.
Cives, Amici, et Discipuli,
Hoc Monumentum posuere.

The height of the whole structure is twenty-one feet six inches. The design is correctly classical, and the execution of it is the best specimen we have seen of any modern work in granite.

HAMLET, Hamel, or *Hampsel* (from the Saxon ham, *domus*, and the German let, *membrum*), signifies a little village, or part of a village or parish. According to Spelman, there is a difference between *villam integram*, *villam dimidiam*, and *hamletam*, which, according to Stow, means the seat of a freeholder. Several county-towns have hamlets, as there may be several hamlets in a parish; and some particular places may be out of a town or hamlet, though not out of the county.

Hamlet, a prince celebrated in the annals of Denmark, and whose name has been rendered familiar in this country, by forming the subject of one of the noblest tragedies of Shakspeare. Adjoining to a royal palace, which stands about half a mile from that of Cronberg, in Elsineur, is a garden, which, Mr Coxe informs us, is called Hamlet's Garden, and, according to tradition, is the very spot where the murder of his father was perpetrated. The house is of modern date, and is situated at the foot of a sandy ridge near the sea. The garden occupies the side of the hill, and is laid out in terraces rising one above another. Elsineur is the scene of Shakspeare's Hamlet; and the original history from which our poet derived the principal incidents of his play is founded upon facts, but so deeply buried in remote antiquity, that it is difficult to discriminate truth from fable. Saxo Grammaticus, who flourished in the twelfth century, is the earliest historian of Denmark who relates the adventures of Hamlet. His account is extracted, and much altered, by Belleforest, a French author, an English translation of whose romance was published under the title of the *Historye of Hamblet;* and from this translation Shakspeare formed the groundwork of his play, though with many alterations and additions.

HAMMER, a well-known tool used by mechanics, consisting of an iron head fixed crosswise upon a handle of wood. There are several sorts of hammers used by blacksmiths; as, first, the hand-hammer, which is of such weight that it may be wielded or governed with one hand at the anvil; second, the up-hand sledge, used with both hands, and seldom lifted above the head; third, the about-sledge, which is the biggest hammer of all, and held by both hands at the farthest end of the handle, and being swung at arms' length over the head, is made to fall upon the work with as heavy a blow as possible. There is also another hammer used by smiths, called a *riveting hammer*, which is the smallest of all, and is seldom used at the forge unless upon small work. Carpenters and joiners have likewise hammers accommodated to their several purposes.

HAMMERING, the act of beating or extending and fashioning a body under the hammer. When this operation is performed on iron heated for the purpose, it is usually called *forging.*

Hammering, in coining. A piece of money or a medal is said to be hammered when struck, and the impression given, with a hammer, and not with a mill.

HAMMERSMITH, a large village, a part of the parish of Fulham, in the hundred of Ossulton, in the county of Middlesex. It is about three or four miles from the capital; but from thence to the end of it are continued streets, which make it a kind of prolongation of the metropolis. It stands on the Thames, on whose banks, within this district, are many beautiful villas and splendid houses. There is an establishment for the education of young ladies of the Roman Catholic church, amongst whom are some professed nuns. There are also a great number of other boarding schools of various classes. There is a chapel in the centre of the village, of the established religion, and several for both Catholic and Protestant dissenters. The population amounted in 1801 to 5600, in 1811 to 7393, in 1821 to 8809, and in 1831 to 10,222.

HAMMOCK, or Hamac, a kind of hanging bed, suspended between two trees, posts, hooks, or the like, and much used throughout the West Indies, as also on board of ships.

HAMMOND, Henry, one of the most learned English divines of the seventeenth century, was born in 1605. He studied at Oxford, in 1629 entered into holy orders, and in 1633 was inducted into the rectory of Penshurst in Kent. In 1643 he was made archdeacon of Chichester; and in the beginning of 1645 he was appointed one of the canons of Christ Church, Oxford, and chaplain in ordinary to King Charles I. who was then in that city. He was also chosen public orator of the university. In 1647 he attended the king in his confinement at Woodburn, Cavesham, Hampton-Court, and the Isle of Wight, where he continued till his majesty's attendants were again dismissed. He then returned to Oxford, where he was chosen sub-dean; and continued there till the parliamentary visitors first ejected him, and then imprisoned him for several weeks in a private house in Oxford. During this confinement he began his Annotations on the New Testament. At the beginning of the year 1660, when every thing visibly tended towards the restoration of the royal family, Dr Hammond was desired by the bishops to repair to London to assist there in composing the breaches of the church, his station in which was designed to be that of Bishop of Worcester; but on the 4th of April he was seized with a fit of the stone, of which he died on the 25th of that month, at the age of fifty-five. Besides the above work, he wrote many others; all of which have been published together in four volumes folio.

Hammond, *Anthony*, an English poet, descended from a good family of Somersham Place, in Huntingdonshire, was born in 1668. After having received a liberal education at St John's College, Cambridge, he was chosen member of parliament, soon distinguished himself as a fine speaker, and became a commissioner of the royal navy, which place, however, he quitted in 1712. He published a miscellany of original poems by the most eminent hands, in which himself, as appears by the poems marked with his own name, had no inconsiderable share. He also wrote the life of Walter Moyle, prefixed to his works, and died about the year 1726.

Hammond, *James*, known to the world by the Love-Elegies, which, some years after his death, were published by the Earl of Chesterfield, was the son of Anthony Hammond above mentioned, and was preferred to a place about the person of the late Prince of Wales, which he held till an unfortunate accident deprived him of his senses. The cause of this calamity was a passion he entertained for a lady, who did not return it; upon which he wrote those love-elegies that have been so much celebrated for their tenderness. The editor observes, that he composed them before he was twenty-one years of age; a period when fancy and imagination are apt to run riot at the expense of judgment and correctness. He was as sincere in his love as in his friendship; and wrote to his mistress, as he spoke to his friends, nothing but the genuine sentiments of his heart. Tibullus seems to have been the model our author judiciously preferred to Ovid; the former wrote directly from the heart to the heart, the latter too often addressed himself to the imagination. Mr Hammond died in the year 1743, at Stow, the seat of Lord Cobham, who, as well as the Earl of Chesterfield, honoured him with a particular intimacy.

Hammond's *Islands*, several small islands in the South Pacific Ocean, forming part of Solomon's Islands. Long. 157. 5. E. Lat. 8. 46. S.

HAMPDEN, John, a celebrated patriot, descended of the ancient family of Hampden in Buckinghamshire, was born in 1594. On leaving the university he entered the inns of court, where he made considerable progress in the study of the law. He was chosen to serve in the parliament which assembled at Westminster on the 5th of February 1626, and served in all the succeeding parliaments in the reign of Charles I. In 1636 he became universally known by his intrepid refusal to pay ship-money, as an illegal tax. Upon this he was prosecuted, and his conduct throughout the transaction gained him great reputation. When the Long Parliament began, the eyes of all men were fixed on him as the father of his country. On the 3d of January 1642, the king ordered articles of high treason and other misdemeanours to be prepared against Lord Kimbolton, Mr Hampden, and four other members of the House of Commons, and went to that house to seize them; but they had retired. Mr Hampden afterwards made a speech in the house to clear himself of the charge brought against him. In the beginning of the civil war he commanded a regiment of foot, and did good service to the parliament at the battle of Edgehill. But he received a mortal wound in an engagement with Prince Rupert, in Chalgrave-field in Oxfordshire, and died in 1643. He is said to have possessed in a high degree the Socratic art of interrogating, and, under the notion of doubts, insinuating objections, so that he infused his own opinions into those from whom he pretended to learn and receive them. According to his panegyrists, he was a very wise man, and had the greatest talents for gaining popular influence that were ever possessed by any man. He was master of all his appetites and passions, and had thereby a very great ascendency over other men. He was also of an industry and vigilance never to be tired out, of parts not to be imposed upon by the most subtile, and of courage equal to his talents. (See *Life of Hampden*, by Lord Nugent, and more particularly the critique on that work in the *Edinburgh Review.*)

HAMPSHIRE, or, as it is sometimes called, the county of Southampton, or of Hants, a shire of England, on the British Channel. It is bounded on the east by Surrey and Sussex, on the north by Berkshire, on the west by Wiltshire and Dorsetshire, and on the south by the sea. Its extreme length is fifty-five miles, but, owing to a projection at its south-west extremity, its mean length is not more than forty-four miles, and its breadth thirty-nine miles. Its area, including the Isle of Wight, which is at the extreme points twenty-three miles long and thirteen broad, is 1645 square miles, or 1,052,800 statute acres.

The whole population amounted in 1801 to 219,656, in 1811 to 245,080, in 1821 to 283,208, and in 1831 to 314,700. It appears, by the registers of burials, that the deaths between 1801 and 1811, were one in forty-six of the whole number of inhabitants, that from 1811 to 1821 they were one in fifty-four, and from 1821 to 1831, notwithstanding an increase of mortality by the cholera, they were only one in fifty-six; thus a great and regular increase of the longevity of the population has become apparent. The occupations, at the last census, were as follow: Occupiers of land employing labourers, 2774; occupiers of land not employing labourers, 1234; labourers employed in agriculture, 24,675; persons employed in manufactures, 292; employed in retail trade or handicraft, 23,164; capitalists, bankers, and others, 3784; labourers not agricultural, 10,348; other males twenty years of age, 10,348; male servants, 3295; female servants, 12,724.

As a whole, few counties in England are superior to this, or have a less proportion of uncultivated land. But at the western extremity, bordering on Dorsetshire, a small portion of sandy heath is scarcely productive of any thing but pasture for sheep, or honey. A considerable tract, extending from Winchester to the northern extremity of the county, is down land, principally used for sheep-pasture, but, when brought under the plough, is very fertile in barley, turnips, clover, and sainfoin. Another portion is forest land, including the *New Forest* of about 92,000 acres, but within whose boundary a great part of the land is highly cultivated, and very fertile. The abundance of timber trees of large dimensions, the open glades between, and the variety of foliage, as well of the trees as of the underwood, render the scenery of the district highly delightful. The oaks are the principal beauty of this forest; they do not grow to a great height, but swell to large dimensions in the trunk, and shoot out strong crooked branches, which give them a very picturesque appearance, and add to their value as naval timber, by being well adapted to be used as knees for ships of the largest size. The beech trees also grow to a very great size, and contribute to the beauty as well as the profits of the forest. The other forests are Alice, Holt, and Woolmer, extending over about 15,500 acres, of which nearly one half belongs to the crown, and affords excellent oak timber; and Bere Forest, of 16,000 acres, whose timber has been much neglected. In these forests there are abundance of deer belonging to the crown, some of which are annually killed, and distributed, according to ancient prescription, to the various officers of the government and the royal household. The greater part of the county is enclosed, and even the down lands are so in a great measure.

The principal rivers are the Itchen, which forms a part of the estuary of Southampton Water; the Avon, which falls into the sea at Christchurch Bay; the Boldre, which empties itself at Lymington. The Anton, which falls into the Tees, receives many small brooks before it reaches Southampton, where it is lost in that arm of the sea. The canals of the county are but two. The Bassingstoke was begun in 1778, to communicate between that town and London. It is thirty-seven miles in length, and terminates near Guildford, in the river Wey, which falls into the Thames. It passes through a tunnel, near three quarters of a mile in length, under Grewell Hill, near Odiham. This canal was not completed till 1794, when it had cost L.100,000; and the tolls are not yet sufficient to pay the interest. The Andover Canal was begun in 1789 at that town, and terminates at Redbridge; and is useful to convey coals and other heavy commodities to the centre of the county.

The soil of this county is very various, but, in almost every part, it rests on a calcareous subsoil. The uplands are generally appropriated to breeding sheep, and hence the culture of turnips has been much extended. After the turnips are fed on the land, barley is usually sown, and with it clover, or other artificial grass-seeds. To the clover succeeds sometimes wheat or oats, and, when the land is somewhat heavier in texture, occasionally beans; but in few parts of England are the rotations of crops more diversified. The average produce of corn on these high lands is not more than sixteen bushels of wheat, twenty-two of barley, and twenty-four of oats to the acre. The ploughing is almost universally performed by horses, which are of a very excellent race. On much of the stiffer lands four of these strong horses are thought necessary; but on lighter lands, and with a single-wheeled plough, sometimes two or three are used, and very rarely are harnessed abreast of each other. On the higher lands, the hay for winter consumption is generally made from sainfoin, a plant which peculiarly flourishes when the subsoil is calcareous. It is laid down with much care in extirpating all weeds, and every other description of grasses, and will usually continue for ten years to be fit for mowing; and on some soils it has been found to last even twenty years, and yield abundant crops of hay. There is no part of England in which this valuable grass is so well or so extensively cultivated.

The corn lands on the lower levels of the county are much more productive; but on those districts they have no occasion for sainfoin, and scarcely for clover, as their rich water meadows supply them with a sufficiency of hay. Some of these meadows are perhaps the most valuable of any lands in this island, and are managed with great skill and attention. Where a rapid stream of water can be passed over them during the whole winter, it seldom becomes frozen; and the grasses grow during the cold weather, so as to be fit for pasture at an early period in the spring, before any traces of vegetation appear in the surrounding fields. This young grass is a provision for the sheep, when no other green food is to be found, and supplies them to the beginning of May, when it is laid up, and in six or eight weeks it is fit to be mowed, and yields most abundant quantities of hay. There is much of this valuable description of land in the fertile valley that extends from Overton to Redbridge, by Stockbridge.

In the eastern part of the county, bordering on Surrey, there are extensive hop plantations, the produce of which is equal in flavour to those in the adjoining villages of that country near Farnham.

The original race of Hampshire sheep were white faced, with horns; but these have been so often crossed with other races, that few of an unmixed breed are left. Most of the flocks now are of the Southdown kind; they are found to be more beneficial, both on account of the superior quality of their wool, and the tendency to fatten with a less quantity of food than any others. The cows are not much attended to, and are not generally of the best kind. The introduction of the Welsh breed has made some improvement, but there is room for much more.

The breeding and fattening of pigs has long been a most important part of Hampshire husbandry. The bacon from them is the principal animal food of the rural inhabitants. In the vicinity of the forests they are fed on acorns and beech-mast; and those so fattened are considered as the best, either as pickled pork, or when converted into bacon. The average weight of these animals, when deemed fit for slaughter, is about 440 or 450 pounds, but many of them weigh 800 pounds.

The manufactures of this county are neither numerous nor extensive, except those carried on at Portsmouth, for warlike purposes. Besides the ship-building in the royal yard, there are many vessels, both for war and trade, built on the river Itchen at Buckler's Hard, on the river Boldre, and on the banks of Southampton Water. The manufacturing of their woollen goods upon a small scale is carried on at Andover, Romsey, Alton, and Basingstoke. Paper is made at Romsey and at Overton. The mills at the latter place have supplied the whole of the thin paper used by the Bank of England for their notes, ever since the reign of George I. Ringwood has been long celebrated for the excellence of the strong beer brewed there, but the quantity has declined of late years. On the sea-shore at Lymington, and on the island of Hayling, near Havant, some salt is made by the evaporation of sea-water. The quantity depends on the degree of heat which prevails during the summer season, as the first part of the process of evaporation is performed by the heat of the sun alone; the brine is afterwards conveyed to iron pans, and the process completed by artificial heat, which, as coals, the only fuel, are dear, makes the whole expensive, and prevents the proprietors from competing with the northern manufacturers of salt.

Hampshire.

The foreign commerce of the county is inconsiderable. Many merchant ships repair to Portsmouth with stores for the naval arsenal; and, in time of war, many prizes are carried thither for sale, which creates some extensive trade. Southampton imports much wine from Portugal, which, before the introduction of the bonding system, used to be deposited in the islands of Guernsey and Jersey, to save the interest upon the amount of the duties. At Christ-church there are a few vessels fitted for the Newfoundland fishery.

The most populous town in the county is Portsmouth, which, with its adjuncts, Portsea and Gosport, with the adjacent villages, contains between fifty and sixty thousand inhabitants. The far greater part of these are the families of officers of the navy, army, and marines, and of the arsenal, with the various artificers.

The harbour of Portsmouth is perhaps one of the best in the world. Its entrance is narrow, and therefore easily defended. The approach to that entrance is defended by batteries, that can rake any ship before it reaches the fire of the castles, at the two narrowest points. The depth of water is sufficient for the largest ships, and the interior spreads out into an extensive basin of still water, in which there is room for all the British fleet to anchor. The system of building no ships of war in private yards has much increased the number of artificers of every description. The mast-making, anchor-making, cable-making, and particularly the making of blocks, are all conducted within the walls of the arsenal, which, as a whole, is a most astonishing combination of vast powers simply and economically directed to naval purposes. The gun-wharf, victualling office, the king's mill, and many other public buildings, merit rather a detailed description than such brief notices as our limits allow. One of the finest objects depending on the naval establishment is the hospital for sick and wounded seamen at Haslar. It is 567 feet in length. It is divided into 100 wards, each sixty feet long and twenty-four broad, calculated to receive twenty patients, with apartments adjoining for nurses and attendants.

Southampton is celebrated for the beauty of its environs, the elegance of the streets and buildings, and the purity and salubrity of its air; and it is much frequented for salt-water bathing, as well as on account of a chalybeate spring of considerable repute. In the summer season it is a place of fashionable resort to those who wish to enjoy rides amongst the pleasing scenery of the New Forest.

Winchester, a city of ancient date, has fallen into decay, and now depends on its being the county town, the see of the bishop of an extensive diocese, the station of his courts, and a collegiate place, in which many youths of the first families in the kingdom receive their classical education. The cathedral and the castle are venerable piles of antiquity, though the former was much damaged and the latter blown up by the soldiers of Cromwell, after his capture of the city.

The antiquities of this county are very numerous, and may be contemplated in the ruins of numerous castles, abbeys, and shattered towers, which add not a little to the beauty of the scenery. The most remarkable of these are Calshot Castle, Netley Abbey, Hurst Castle, Porchester Castle, and Beaulieu Abbey. Antiquities of more early date, of ancient British or of Roman origin, are scattered over the county. The numerous barrows are ascribed to the former, and many vestiges of intrenched camps and castles to the latter.

The beauty of the country has attracted to it a greater number of families of rank and fortune than almost any other county can enumerate, the bare list of which would fill a page.

The most considerable towns, with their population, according to the census of 1831, were,

Portsmouth and Portsea	50,389
Southampton	19,324
Gosport, with Alverstoke	12,636
Winchester	9,012
Romsey	5,432
Fareham	4,402
Andover	4,843
Ringwood	3,434
Titchfield	3,712
Basingstoke	3,581
Lymington	3,361
Alton	2,742
Fordingbridge	2,611

By the law of 1832 this county has, for election purposes, been divided into the northern and southern parts, each of which returns two members to the House of Commons. The northern division contains about 2400 voters. The place of election is Winchester, and the other polling places are, Alton, Andover, Basingstoke, Kingsclere, Droxford, Odiham, and Petersfield. The southern division has about 3150 voters; the election is held at Southampton, and the other polling places are Fareham, Lymington, Ringwood, and Romsey. By the same law the boroughs of Whitchurch, Stockbridge, Yarmouth, and Newton have been disfranchised, and the boroughs of Petersfield and Christ-church, which used to elect two members, now choose only one each. The towns which now return two members each are, Winchester, Southampton, Andover, Lymington, Newport, and Portsmouth, with which has been incorporated the adjacent large town of Portsea.

See Brayley and Britton's *Beauties of England and Wales;* Driver's *Reports to the Board of Agriculture;* Milner's *Winchester; Hampshire Repository;* Warner's *Walks through Southampton;* Worsley's *Isle of Wight.*

HAMPSTEAD, a large parish of the hundred of Ossulton, in the county of Middlesex, four miles from London. It stands on one of those hills which command a view of the metropolis from the north. From its situation the air is deemed remarkably pure, and convalescents in great numbers repair to it to recruit their strength. It is chiefly composed of respectable houses, the owners of which are engaged in active pursuits during the busy part of the day, and repair to their families after their fatigue is ended. There are in the vicinity, however, several magnificent houses, especially that of Lord Mansfield, called Caen Wood. There are two churches, and several chapels for the various classes of dissenters. The population amounted in 1801 to 4343, in 1811 to 5483, in 1821 to 7263, and in 1831 to 8588.

HAMPTON, a village of the hundred of Spelthorne, in the county of Middlesex, twelve miles from London. It is situated on the north bank of the Thames, opposite to where the river Mole pours its stream into that river. It is the residence of many families of distinction, but chiefly remarkable for the royal palace of Hampton Court, its gardens, and Bushy Park adjoining. The palace consists of two parts, the elder built by Cardinal Wolsey, the later by William III. after a design by Sir Christopher Wren. It is a heavy pile of building, excepting the front to the river, which is 330 feet in length, and relieved by a noble portico. The interior contains a valuable collection of paintings from the best ancient masters, but especially the cartoons of Raphael. This palace was occupied by Charles I., and of late years by the father of the present king of Holland, then Prince of Orange. The gardens are laid out magnificently, but rather too much in the Dutch style. The graping is a very striking object, on account of the vast quantity of fruit produced from a single vine. The population of the parish amounted in 1801 to 1722, in 1811 to 1984, in 1821 to 2288, and in 1831 to 2529.

HANAPER, or HAMPER, an office in chancery, under the direction of a master, his deputy and clerks, and answering, in some measure, to the *fiscus* among the Romans.

HANAPER, *Clerk of the,* sometimes styled *warden of the hanaper,* an officer who receives all monies due to the king for seals of charters, patents, commissions, and writs, and attends the keeper of the seal daily in term time, and at all times of sealing, and takes into his custody all sealed charters, patents, and the like, which he receives into bags, but anciently, it is supposed, into hampers, which gave to the office the denomination it still retains. There is also an officer who is comptroller of the hanaper.

HANAU, one of the provinces of the principality of Hesse-Cassel. It was anciently a sovereignty of two branches, which, becoming extinct in 1736, devolved on the then landgrave of Hesse. It extends over 452 square miles, and comprehends sixteen cities and towns, 101 villages and hamlets, with 9608 houses, and 61,700 inhabitants. It is divided into nine bailiwicks, besides the capital. It is a district of better agriculture than any other of the principality, and especially for the growth of edible vegetables and fruit, with which it chiefly supplies the city of Frankfort. It yields some wine; and there are within it some salt springs, and some iron mines in active work. The capital is in part a well-built city, which stands near the river Maine, about twelve miles from Frankfort, on a well-cultivated plain. It contains 1460 houses, and 12,750 inhabitants. There is a high school belonging to the Lutherans. It is divided into the old and new town, each of which has its distinct municipality. It contains several manufactories, especially of carriages, of hats, gloves, linen, and other articles. Long. 8. 46. E. Lat. 50. 31. N.

HANCES, HANCHES, HAUNCHES, or HANSES, in *Architecture,* certain small intermediate parts of arches between the crown and the spring at the bottom, being probably about one third of the arch, and placed nearer to the bottom than the top, which are likewise denominated the *spandrels.*

HAND, a part or member of the body of man, forming the extremity of the arm. The mechanism of the hand is very curious, indeed excellently contrived to fit it for the various uses and occasions we have for it, and the great number of arts and manufactures it is to be employed in. It consists of a compages of nerves, and little bones joined into each other, which give it a great degree of strength, and at the same time an unusual flexibility, to enable it to handle adjacent bodies, lay hold of them, and grasp them, in order either to draw them towards us or thrust them off.

In Scripture the word *hand* is variously applied. To pour water upon any one's hand signifies to serve him. To wash the hands was a ceremony made use of to denote innocence of murder or manslaughter. To kiss the hand was an act of adoration. To fill the hand signifies taking possession of the priesthood, and performing its functions. To lean upon any one's hand was a mark of familiarity and superiority. To give the hand signifies to grant peace, swear friendship, promise security, or make alliance. The right hand was the emblem of honour and respect. Amongst the Greeks and Romans it was customary for inferiors to walk on the left hand of superiors, that their right hand might be ready to afford protection and defence to their left side, which was, on account of the awkwardness of the left hand, more exposed to danger.

Imposition, or laying on of HANDS, signifies the conferring of holy orders; a ceremony in which the hands are laid on the head of a person as a sign of a mission, or of a power given him to exercise the functions of the ministry belonging to the order. The apostles began to appoint missionaries by the imposition of hands.

Hand, in falconry, is used to indicate the foot of the hawk. To have a clean, strong, slender, glutinous hand, well clawed, is amongst the good qualities of a hawk or falcon.

Hand, in the manège, sometimes stands for the forefoot of a horse. It is also used to signify a division of the horse into two parts with respect to the rider's hand. The fore-hand includes the head, neck, and fore-quarters; the hind-hand is all the rest of the horse.

Hand is likewise used for a measure of four inches, or of a clenched fist, by which the height of a horse is computed.

Hands are borne in coat-armour, *dexter* and *sinister*, that is, right and left, expanded or open; and also in other manners. A bloody hand in the centre of the escutcheon is the badge of a baronet of Great Britain.

Handel.

HANDEL, George Frederick, the most illustrious of all musical composers, was born at Halle, in Upper Saxony, on the 24th of February 1684. His father was an eminent physician of the same place, and upwards of sixty years old when this son, the issue of a second marriage, was born. From his very childhood Handel discovered a passion for music which could not be subdued by the commands of his father, who intended him for the profession of the law. Notwithstanding that he was forbidden to touch a musical instrument, the boy found means to get a little clavichord conveyed secretly into one of the attics of the house. To this room he constantly repaired when the family had retired to rest, and, by his assiduous labours at the midnight hour, made considerable progress in his favourite pursuit.

It happened, when Handel was about seven years old, that his father had occasion to pay a visit to a son by a former wife, who was then serving as attendant to the Duke of Saxe-Weissenfells. Handel implored that he might be permitted to accompany him; and, on being refused, he followed the carriage some way on the road, till he overtook it. His father at first chid him for his disobedience; but, yielding to his solicitations, at last took him into the carriage. During his stay at the ducal residence, he continued to show the same irresistible inclination for music. He could not be kept away from harpsichords, and he contrived to gain admission into the organ gallery at church, and to play when the service was over. Upon one of these occasions, the duke happening to leave the chapel later than usual, was attracted by the uncommon style in which the instrument was touched. Inquiring who played, he heard to his astonishment that it was a boy of seven years of age. The duke immediately desired to see young Handel, and was so much pleased with his precocious genius, that he prevailed upon his father to allow him to follow the bent of his inclinations. He made the boy a present, and told him that if he was attentive to his studies he should not want encouragement.

On his return to Halle, Handel was placed by his father under Zachau, organist of the cathedral church of that city; a man of considerable abilities, and proud of his pupil. By the time he was nine years old, our young musician was not only able to supply his master's place at the organ, but began to study composition. At this early period of his life, he wrote a service, or *spiritual cantata*, every week, for voices and instruments, and continued this labour for three years successively. He also composed sonatas for the oboe, which was his favourite instrument.

Handel appears to have studied in his native city till he was about the age of fourteen. He then, as Zachau himself acknowledged, far excelled his master; and it was recommended to his father to send him to Berlin. Thither he accordingly went in 1698. The opera at Berlin was then in a very flourishing state, under the direction of Buononcini and Attilio. Handel distinguished himself in this city as an astonishing musician for his years, and gave earnest of such great talents, that the elector of Brandenburg offered to take him into his service, and send him to Italy to complete his studies. But his father declining this honour, from a spirit of independence, Handel returned to Halle. Not long after this, his father died, and Handel not being able to go to Italy on account of the expense, removed to Hamburg, in order, by his musical talents, to procure a subsistence.

Mattheson, an able musician and voluminous writer on the subject of music, who resided at Hamburg, tells us that Handel arrived there in the summer of 1703. "Here," says Mattheson, "almost his first acquaintance was myself, as I met him at the organ of St Mary Magdalen's Church, July the 30th, whence I conducted him to my father's house, where he was treated with all possible kindness as well as hospitality; and I afterwards not only attended him to organs, choirs, operas, and concerts, but recommended him to several scholars. At first he only played a *ripieno* violin in the opera orchestra; and being naturally inclined to indulge in a kind of dry humour, pretended unusual ignorance, in a manner that made the most serious people laugh, though he preserved his own gravity. But his superior abilities were soon discovered; for the harpsichord player of the opera having been absent for a time, Handel was persuaded to take his place, and on this occasion showed himself to be a great master, to the astonishment of every one, except myself, who had frequent opportunities of knowing his abilities on keyed instruments."

Mattheson and Handel became intimate acquaintances, and did not allow any professional rivalship to interfere with their friendship, until the occurrence of the following adventure. Mattheson had composed an opera called *Cleopatra*, which was performed in Hamburg, and in which he acted the part of Antony himself, and Handel played the harpsichord. Mattheson was accustomed, upon the death of Antony, which happened early in the piece, to preside at the harpsichord, in the character of composer; but one evening Handel refused to indulge his vanity by relinquishing this post to him. This occasioned so violent a quarrel between them, that, on going out of the house, Mattheson gave him a blow on the face; upon which both immediately drew their swords, and a duel ensued in the market-place, before the opera-house. Luckily the sword of Mattheson broke against a metal button on Handel's coat, or, as some allege, a score of music which he carried under it, which put an end to the fight.

This rencontre happened upon the 5th of December, 1704; but, as a proof of a speedy reconciliation, Mattheson mentions, that on the 30th of the same month, he accompanied the young composer to the rehearsal of his first opera of *Almira*, at the theatre, and performed the principal part in it; and that afterwards they became greater friends than ever. Whilst he remained at Hamburg, Handel composed his opera of *Nero, oder die durch Blut und Mord erlangte liebe*, which was very successful. He also produced two operas entitled *Florinda*, and *Dafne*, and wrote innumerable songs, cantatas, and pieces, for the harpsichord. His style, Mattheson allows, was greatly improved by his constant attendance at the opera; and he was esteemed a more powerful player on the organ than the famous Kuhnau of Leipsic, who was at this time regarded as a prodigy.

Handel having now acquired, by his operas at Hamburg, a sum sufficient to enable him to visit Italy, he set out for that seat of the muses. He staid some time at Florence, where he composed his opera of *Rodrigo*. From this city he went to Venice, where, in 1709, he produced his *Agrippina*, which was received with acclamation, and ran for thirty nights. Here he met with Domenico Scarletti, Gasparini, and Lotti. He next visited Rome, where he had an opportunity of hearing compositions and performers of the first class. At Cardinal Ottoboni's, by whom Handel was greatly caressed, he had frequently the advantage of hearing the celebrated Corelli perform his own works. During his stay at Rome, our young composer produced a serenata entitled *Il Triunfo del Tempo;* after which he went to Naples, where he set *Acis and Galatea* in Italian.

Handel returned to Germany about the beginning of the year 1710, and was made *Maestro di Capella* to the elector of Hanover, afterwards George I. He does not appear, however, to have remained long in the service of the elector, but bent his course to London, where a passion for dramatic music had already manifested itself in several awkward attempts at operas, and to which place he had received invitations from several of the nobility he had seen in Italy and Hanover. His reception in England was flattering to himself and honourable to the nation, at this time no less successful in war than in the cultivation of the arts of peace. To the wit, poetry, literature, and science, which marked this period of our history, Handel added all the blandishments of a nervous and learned music, which he first brought hither, planted, and lived to see grow to a very flourishing state. The first opera he wrote in England was *Rinaldo,* taken from Tasso's *Gierusalemme,* which at once established his reputation. He afterwards produced his *Pastor Fido, Theseus,* and, in 1715, *Amadis of Gaul.* In all of these, Nicolini and Valentini, the first Italian singers that appeared in England, performed. When the peace of Utrecht was brought to a conclusion, Handel was employed to compose the Hymn of Gratitude and Triumph on the occasion. The grand *Te Deum* and *Jubilate* he produced was composed with such force, regularity, and instrumental effect, as to excite universal delight.

On the arrival of George I. Handel was honoured with the most flattering marks of royal favour from the king and queen, who added largely to the pensions previously conferred on him by Queen Anne.

We now come to the busiest and most glorious period of Handel's life. His great natural powers had been highly improved by cultivation; his genius for composition was unbounded; he stood at the head of his profession, esteemed alike by the sovereign, the nobility, and the public, of a great and powerful nation, at a period of its greatest happiness and prosperity. Such were Handel's circumstances, when the Royal Academy, or an association for the establishment of an Italian opera in England, was formed. Handel was appointed director and composer, engaged singers, and, although he had to contend with several rivals, at length, by the superior grandeur and invention of his operatic music, distanced them all. About this period of his career Handel unfortunately became involved in a quarrel with the vocalist Senesino, the particulars of which we pass over. The result was to break up the academy; and it not only proved injurious to the fortune of our composer, but was the cause of infinite trouble and vexation to him during the rest of his life. From the institution of the academy till its dissolution in 1729, Handel produced about thirty operas. The greater part of these had immense success; yet such was the influence of opposition and neglect, that none of his operas composed subsequently to 1740, although actually his highest achievements in operatic composition, were received with the admiration due to their merit.

Following the narrative of Burney in his sketch of Handel's life, we leave his dramatic transactions, and come now to notice the sacred dramas or *oratorios* of this great musician. The oratorio of *Esther* was the first he composed; and in 1733 *Deborah* was given to the public. It was during these early performances of oratorios that Handel first played his organ concertos, a species of music wholly of his own invention, in which he usually introduced an extempore fugue, a diapason-piece, or an adagio, displaying not only great fertility and readiness of invention, but the most perfect accuracy and neatness of execution. In 1735 he produced *Acis and Galatea,* and *Alexander's Feast;* in 1738, *Israel in Egypt;* and in 1739, *L'Allegro ed il Penseroso.* In 1740 the oratorio of *Saul* was performed at the theatre in Lincoln-Inn Fields; and from this period Handel almost entirely devoted his labours to the service of the church. The profits arising from the performance of his oratorios were not sufficient to indemnify his losses; and it remains a stigma upon the taste of the nation, that the *Messiah* at first proved neither successful, nor remunerative to the composer. Chagrined with repeated disappointments, Handel went to Ireland, in order, as Burney remarks, "to try whether his oratorios would be out of the reach of prejudice and enmity in that kingdom." In allusion to this, Pope wrote his well-known lines, supposed to be addressed by the poet personifying the Italian opera, to the goddess of Dulness.

> Strong in new arms, lo, giant Handel stands,
> Like bold Briareus, with his hundred hands;
> To stir, to rouse, to shake the soul he comes,
> And Jove's own thunders follow Mars' drums,
> Arrest him, empress, or you sleep no more:—
> She heard, and drove him to the Hibernian shore.

After remaining about nine months in Ireland, where his exertions were successful, Handel returned to London, and produced *Samson* and the *Messiah,* which latter work was now received with universal applause. This truly sublime oratorio was performed annually at the laudable and benevolent instigation of the author, and under his direction, for the benefit of the Foundling Hospital; and the produce of these performances, from the year 1749 to the year 1777, amounted to nearly L.10,300. Although the *Messiah* was performed almost always to crowded houses, the other oratorios were but thinly attended. This was owing no less to the capriciousness of public taste than to the extraordinary hostility of some of his powerful adversaries. The king, however, continued his steady patron, and attended his oratorios when they were neglected by the rest of the court.

Towards the close of his life Handel was afflicted with blindness, which, however, did not affect his faculties, as he continued to play to the last with his wonted vigour. "To see him, however," says Burney, "led to the organ after this calamity, at upwards of seventy years of age, and then conducted towards the audience to make his accustomed obeisance, was a sight so truly afflicting and deplorable to persons of sensibility, as greatly diminished their pleasure in hearing him perform." It was remarked, that with many parts of his music he was unusually agitated, particularly with that affecting air in *Samson,* "Total eclipse—no sun, no moon," which so peculiarly applied to his own situation. The last oratorio he attended and superintended was upon the 6th of April, and he expired on Friday the 13th, or Good Friday 1759, the very day he had seriously wished that event should happen, "in hopes," as he said, "of meeting his good God, his sweet Lord and Saviour, on the day of his resurrection," meaning the Easter Sunday following.

The musical powers of Handel can perhaps be best expressed by Arbuthnot's reply to Pope, who seriously asked his opinion of him as a composer. "Conceive," said he, "the highest you can of his abilities, and they are much beyond any thing you can conceive." He excelled in almost every style of composition. The church, the theatre, and the chamber, were equally adorned by his talents. The best of his Italian operas are superior in

Han pike
Har bal.

variety and ingenuity to those of all preceding and contemporary composers throughout Europe. In his full, masterly, and admirable, organ fugues, upon remarkably natural and pleasing subjects, he has surpassed the most renowned writers in this difficult and elaborate species of composition; and every judicious and unprejudiced musician, when he hears or peruses the noble, majestic, and sublime oratorios and anthems of Handel, must allow, with readiness and rapture, that they are unacquainted with any thing equal to them among the works of the greatest masters that have existed since the invention of counterpoint. (z. z.)

HANDSPIKE, a wooden bar used as a lever to heave about the windlass, in order to draw up the anchor from the bottom, particularly in merchant ships. The handle is round and tapering, and the other end is square, to conform to the shape of the holes in the windlass. It is also employed as a lever on many other occasions, as stowing the anchors, provisions, or cargo, in the ship's hold. The gunner's handspike is shorter and flatter than the above, and armed with two claws for managing the artillery.

HANGTCHEOTOU, a large and splendid city of China, in the province of Tchekiang, of which it is the capital. It is situated at the extremity of the great canal which extends southward from Pekin, on the banks of a great river called Tsien-tang, which passes by its walls, and affords extensive means of communication with the southern province. This city is said, in the accounts of the Chinese, to contain a million of inhabitants; and its population seems little if at all inferior to that of Pekin. It is but poorly built, the streets being narrow and the houses low; but the shops and warehouses are large, and well stored with goods. The silk trade is carried on to a great extent, and is supposed to employ about 60,000 persons. This city is celebrated by the Chinese as a terrestrial paradise. It communicates with the sea by means of the river. Europeans are rigorously excluded from it, as from all the other Chinese cities. Long. 119. 46. E. Lat. 30. 20. N.

HANGCLIFF, a remarkable point of land on the east coast of the largest of the Zetland Islands. It is frequently the first land seen by ships in northern voyages. Captain Phipps determined its situation to be in long. 56. 30. W. and lat. 60. 9. N.

HANGWELLE, a town and fortress of the island of Ceylon. It was attacked in 1803 by the king of Candy, who was repulsed by the British garrison. It is eighteen miles east from Columbo. Long. 80. 3. E. Lat. 7. 1. N.

HANLEY, a town of the county of Stafford, in the hundred of Pirehill. It is one of those large places which have grown up with rapidity of late years, from the great extension of the manufacture of earthenware and porcelain. It is only a part of the parish of Stoke-upon-Trent, but has churches, markets, post-office, and all the other appendages of a town. By the census of 1832, it contained 1402 families, with 7121 inhabitants. Of the families, 1120 were occupied in trade or in manufactures, forty-nine in agriculture, and 233 were of neither of these descriptions.

HANNIBAL, a Carthaginian general, son of Hamilcar Barcas, was born 247 B. C. in the eighteenth year of the first Punic war, the same year in which his father first took a prominent part in public affairs. His family was one of the most distinguished in Carthage, and, claiming to be descended from the ancient kings of Tyre, it ruled its native city with almost regal power. The history of Hannibal forms an epoch in the destinies of Rome. We can have little difficulty in forming a true estimate of his character when we know that, almost unaided by his countrymen, he sustained for upwards of sixteen years a struggle for the empire of the world with a nation which had hitherto been victorious in every contest it had undertaken, and had at its disposal the resources of the greater part of Italy. It was the last struggle which the republic of Rome maintained for existence; and there was none which called forth more conspicuously the energies of her mighty warriors, or displayed more fully their unconquerable perseverance and undaunted bearing in the most untoward circumstances. If Hannibal had been properly supported by his countrymen at home, the star of Rome would probably have set for ever, and Carthage would then have stood forth as the conqueror of the world, and the source of civilization. The key to all Hannibal's proceedings is to be found in his hatred of the Romans, a feeling indelibly impressed upon his mind by his father, when he made him swear at the altar of his country that he would pursue the Romans with unrelenting hatred.

Hannibal.

The military education of Hannibal must have commenced from boyhood, but of his early years we have no detailed account. He was eighteen years of age on his father's death (229 B. C.), and probably spent the greater part of the next eight years in the camp of his brother-in-law Hasdrubal, who had succeeded to the command of the troops in Spain on the death of Hamilcar, and who pursued the same line of policy as his predecessor, in trying to obtain entire possession of the resources of Spain as a means of attacking Rome. Private revenge cut off Hasdrubal in the midst of his career (221 B. C.), and the soldiers by acclamation raised Hannibal to the vacant command. The appointment was ratified by the senate at home, and from this moment Hannibal regarded Italy as his province, and war with Rome as the only object worthy of his attention. The conciliatory measures of Hasdrubal had succeeded in uniting the greater part of the nations of Spain to the dominions of Carthage; and those who still maintained independence Hannibal determined to reduce at once by the energy and activity of his proceedings. He led his troops into the country of the Olcades, a people who seem to have been situated in the mountainous district of Cuença, near the sources of the river Xucar; and having taken their chief city, he entirely defeated them. He was equally successful in his attack on the Vaccæi, a people inhabiting the country round Salamanca; and having subdued all the nations south of the river Ebro, except the Saguntines, he was prepared to complete his conquests by the reduction of their city.

The attention of the Romans, which had latterly been much occupied with the affairs of the north of Italy, was now drawn towards Spain, and they became alarmed at the proceedings of Hannibal. An embassy from Saguntum roused them to active measures, and deputies were hurried off to remonstrate with Hannibal for his interference, contrary to treaty, with an ally of the Roman people. Polybius enters into a discussion whether we ought to consider this attack on Saguntum as the real cause of the second Punic war, and wisely, we think, decides that it was merely the pretext. We must go farther back, and search more deeply, to discover the real motives which induced the Carthaginians to support Hannibal in his attack on Rome. It was the unfair advantage that had been taken to wrest from them Sardinia, that had made an indelible impression on the minds of the Carthaginians; and the Barcine faction, which was now headed by Hannibal, used all its influence to keep alive the national feeling of hatred to Rome. There was indeed a party for peace, headed by Hanno, but the still small voice was drowned amidst the din of warlike preparations. Hannibal was already busily engaged in the siege of Saguntum, a city situated on the east of Spain, about one mile from the sea, and the ruins of which are still to be seen near Murviedro (*Muri Veteres*), when the Roman deputies made their appearance, and demanded an audience. This was refused by Hannibal, under pretence that he could not guarantee their personal safety in the midst of so many barbarous nations; and the deputies found themselves obliged to continue their journey to Carthage.

Hannibal.

Here they were not more successful, and immediately returned to Rome to hasten the preparations for war. Meanwhile Hannibal continued the siege of Saguntum, which was defended with all the obstinacy for which the Spaniards have ever been distinguished; but it was at last taken, after a brave resistance of eight months, and delivered over to all the horrors of a captured city. Thus the way was cleared for an attack on Italy; and though the Romans had evidently never imagined it possible that such a daring measure would for a moment be entertained, it is quite clear that Hannibal, from the first day of his command, had resolved to put it into execution without delay. The Romans intended that Spain should be the scene of action; but Hannibal boldly determined to attack them in the very centre of their power, on the plains of Italy.

Hannibal spent the winter of 219 B. C. in preparations for his gigantic undertaking, and omitted nothing which he thought likely to forward his object. He allowed many of his soldiers to visit their homes, as it might be their last opportunity; he drew up instructions for the use of his brother Hasdrubal, whom he intended to govern Spain in his absence; and prudently secured the maintenance of peace in both Africa and Spain, by an exchange of the troops of the two countries. Neither did he neglect to make himself acquainted with the feelings of the people through whose territory he must pass in his way to Italy, and sent secretly to Cisalpine Gaul to secure the co-operation of the disaffected tribes as soon as he should make his appearance amongst them. He discovered also that the passage across the Alps was practicable, though it might be attended with great difficulty.

Having thus made his preparations, Hannibal began his march from Carthago Nova, now Carthagena, in the beginning of spring 218 B. C. with an army of ninety thousand foot and twelve thousand horse. As the river Ebro had been made by treaty the boundary between the Roman and Carthaginian portion of Spain, he found all the tribes at the foot of the Pyrenees ready to dispute his passage, and, he did not reduce them without a considerable diminution of his forces. He found, besides, many of his Spanish soldiers frightened at the dangers which lay before them, and, making a virtue of necessity, he sent a considerable portion of them back. The troops that passed the Pyrenees were thus reduced to fifty thousand foot and nine thousand horse; but they were mostly men whose bodies were inured to hardships by a long course of war. Hannibal had reached the banks of the Rhone before the Romans were aware that he had moved from Carthagena; and Publius Scipio, who had been dispatched with sixty ships towards Spain, was much surprised to find, on reaching the mouths of the Rhone, that Hannibal was in that neighbourhood. He landed his troops, and prepared to attack Hannibal; but the energy of that general had anticipated his intention, and the first slopes of the Alps were already ascended before Scipio moved from his position. The road which Hannibal pursued across the Alps is a much disputed point, but this is not the place to enter at any length into such a subject. We feel more confidence in the statements of Polybius, who tells us (iii. 48) that he had examined the passages of the Alps with great care, than in those of Livy, who, though admirable for the beauty of his style, has no pretensions to geographical accuracy. Yet, even from Polybius, all that we can gather with certainty is, that Hannibal passed the Alps to the north of the river Isara (Isère), and descended into the Insubrian territory in Italy. It was therefore across the Alpes Graiæ (Little St Bernard), that he passed, and not the Alpes Cottiæ (Mount Genevre), as Livy, and Strabo (iv. 209), evidently think. But be this as it may, Hannibal succeeded in crossing the Alps in fifteen days, though not without great difficulty, and the loss of many of his troops. He found on examination that he had not more than 20,000 infantry and 6000 cavalry. The whole journey from Carthago Nova had occupied five months.

Scipio had no sooner convinced himself that Hannibal was serious in his intention of crossing into Italy, than he hurried back with part of his troops, and, to the astonishment of Hannibal, was ready on the banks of the Po to oppose his progress. It was necessary for Hannibal that a conflict should immediately take place, to confirm the wavering minds of the Gauls; and the battle fought on the banks of the river Ticinus, in which he defeated Scipio, and compelled him to retire beyond the Po, was the signal for a general rising. Hannibal pursued Scipio across the river, and found that he had taken up his position on the banks of the river Trebia, near to Placentia (Piacenza). Scipio now saw that his true policy was to weary out Hannibal, and to give him no opportunity of attacking; but the Roman general was wounded, and could take no active part in the proceedings. His colleague Tiberius Sempronius, elated by some partial success, ventured beyond the intrenchments, and the result was the speedy and complete defeat of the Romans. Placentia soon afterwards fell into his hands; and thus, within a couple of months, the whole of the north of Italy was at his disposal. The Romans heard this intelligence with great dismay, but took active measures to maintain the contest. The two consuls now took a position where they could watch the proceedings of Hannibal, who would naturally advance to the south as soon as the rigour of the winter months had abated. Accordingly, in the beginning of spring 217 B. C. Hannibal crossed the Apennines into Etruria, by a road, the position of which has been as much disputed as that by which he passed the Alps. We are satisfied with Vaudoncourt, who has minutely examined this point, that he crossed the Apennines by the road which leads from Parma to Pontremoli and Sarzana, and that the marshes, where Hannibal had nearly lost his life, are those now called Paludi di Fuccechio, a little above the place where the Arno falls into the sea.

Hannibal found the consul Flaminius posted at Arretium, a city situated on the slopes of the Apennines, and ready to dispute his advance. He laid waste the country on every side, and drew Flaminius into an ambuscade which he had laid for him on the banks of the Thrasymene Lake, where the consul fell, and his whole army was defeated. The road to Rome was now open to him, and it has often been matter of surprise that he did not march directly upon the city, and by one bold stroke put an end to the war. We have no means of knowing the reasons which deterred him from this obvious proceeding; but he turned to the east, at the city of Spoletium (Spoleto), and proceeding through Umbria and Picenum, where he seems to have met with no resistance, he entered the rich province of Apulia, where he wintered. The following year, 216 B. C., he found himself opposed by the cautious policy of Fabius; and though Hannibal used every means to provoke the Roman general to action, his temper and prudence were proof against every attack. Towards the end of the year, however, Hannibal again asserted his superiority; and the battle of Cannæ, fought at a small village of Apulia, on the banks of the Aufidus, on the 2d of August, was as celebrated a defeat as the Romans had ever sustained. Fortune now again seemed to point the way to Rome; and it seems impossible not to feel convinced that Hannibal committed an unpardonable blunder in not attacking the city itself. He wintered at Capua, and the enervating luxury of that district is said to have entirely changed the character of his soldiers. The progress of Hannibal was by no means so rapid as might have been anticipated from his victories. Many of the cities of

Campania made a successful resistance; and the obstinacy with which they maintained their alliance with the Romans, proves that the sway of that people must have been by no means burdensome. It appears to us that the failure of Hannibal was chiefly owing to the small number of his troops, which did not enable him to garrison the cities which he took, or to station bodies of men in various parts of the country to repress insurrectionary movements. Nor do the Carthaginians seem to have entered into the contest with that spirit which the greatness of the prize might have fully justified. Had the number of his men enabled him to follow up his victories by active measures, there can be no doubt that Rome must have fallen into his hands.

The next year produced no action of any importance on either side, though Hannibal gradually lost ground. He pressed earnestly for reinforcements; and his brother Hasdrubal crossed the Alps with a considerable body of troops, 207 B. C. which might again have changed the aspect of affairs. Fortune, however, had deserted him; for Hasdrubal fell in an engagement on the banks of the river Metaurus, and his army was entirely defeated. Hannibal was now left to his own resources, and he was obliged to confine himself to defensive measures. Meanwhile Scipio had commenced his career of conquest in Spain, and had subdued the whole country as far as Gades. He crossed into Africa, and, assisted by Masinissa, attacked the Carthaginians in their own territory. Hannibal was thus obliged to return to the defence of his country, 203 B. C., after he had maintained his footing in Italy for sixteen years. The battle of Zama, fought in Africa 202 B. C., in which Hannibal was completely defeated, left nothing for the Carthaginians but humble submission to the conqueror. Peace was granted, though on hard conditions, and Hannibal now took an active part in the domestic arrangements of his country. He attempted to reform the numberless abuses which had crept into the constitution; but he at the same time excited the enmity of the great body of the aristocracy, who were ready to seize the first opportunity of banishing him. They accused him to the Romans of keeping up an active communication with Antiochus, king of Syria, then supposed to be preparing war against them; and when the Romans sent three commissioners to take cognizance of the affair, Hannibal did not choose to await the result, but fled towards the east, and reached Tyre in safety. Here he staid a few days, and was received with much honour, whilst at Carthage his property was confiscated, and his house razed to the ground. He then proceeded to Ephesus, where he was kindly welcomed by the king, and consulted as to the best mode of attacking the Romans. With Antiochus he remained several years, though his advice was by no means always listened to. At last, when Antiochus was defeated, 190 B. C., the king was unable any longer to protect him from the vengeance of his enemies: he therefore fled first to Crete, and afterwards to Prusias, king of Bithynia, where he resided several years, and assisted him in his war against Eumenes, king of Pergamus, the ally of the Romans. Here too the vengeance of his enemies reached him. Ambassadors from Rome demanded that he should be given up; and as Prusias was ungenerous enough to accede to the demand, Hannibal resolved to free himself from all further persecution, and swallowed poison, which he always carried with him. In what year he died is a point in which the ancients do not agree. According to Atticus (apud Nep. Hannib. c. 13), and Valerius Antias (apud Liv. xxxix. 56), and Cassiodorus, it was 183 B. C., the same year in which Philopœmen and the elder Scipio died. Polybius, however, makes it 182, and Sulpicius 181 B. C. Thus died the most celebrated of the Carthaginians, the only man who could have saved his country from ruin, and restored it to its ancient glory.

HANNO, a Carthaginian, celebrated for a voyage of discovery along the western coast of Africa, but at what period it was made is not known with any degree of certainty. The different writers who have examined the point have fixed him at various periods between 1000 and 300 B. C.; but we are inclined to agree with Rennell, who thinks he must have lived about 570 B. C. The principal object of this expedition is set forth in the journal, which begins with these words:—"It was decreed by the Carthaginians that Hanno should undertake a voyage beyond the Pillars of Hercules, and found Libyphœnician cities. He accordingly sailed with sixty ships, of fifty oars each, and a body of men and women to the number of thirty thousand, and provisions and other necessaries." It is much to be regretted that this curious remnant of antiquity should have been exceedingly brief, and that it should not have come down to us in its original form, for it is evidently a mere abstract of a larger work. Some indeed have endeavoured to strip it of all pretensions to credit, and to rank it with the Arabian tales; but though some of the stories may have the appearance of fable, such as *fiery torrents*, and *women covered with hair*, the facts which are susceptible of verification, either by the test of geography, or a comparison with the descriptions of travellers, are of too consistent a nature to allow us to doubt that the voyage was really undertaken. It would appear that the first city was founded at no great distance from the Strait of Gibraltar, the rest to the north of Cape Bojador. This voyage extended a little to the south of Sierra Leone; but we must refer the reader to the writers who have examined the subject, for a detailed account of his geographical statements. The title of the Periplus is "An Account of the Voyage of Hanno, commander of the Carthaginians, round the parts of Libya beyond the Pillars of Hercules, which he deposited in the Temple of Saturn." It has been published by Hudson (*Geogr. Min.* vol. i.), and Falconer (Oxford, 1797), with an English translation and explanations; also by Kluge, *Hannonis Navigatio, textum critice recogn. et adnotat. illustravit*, Leip. 1829. The following authors have also published commentaries on the voyage, viz. Bochart, Campomanes, Dodwell, Bougainville, Gosselin, Heeren, and Rennell.

HANNO, a senator of Carthage, who headed the party opposed to the warlike policy of the Barcine faction. He was first appointed to the command of the troops in the interior of Africa, and was successful in reducing Hecatompylos, with the adjoining country. When the mercenary troops which had been employed in the first Punic war became clamorous for their arrears of pay, and at last ventured to make open war on Carthage, Hanno was appointed to the command of the forces to be employed against them. His talents, however, seem to have been by no means fitted for the field, and affairs assumed such a threatening aspect under his mismanagement, that the Carthaginians began to be alarmed for the very existence of their state. They therefore appointed as his colleague Hamilcar Barcas; but the enmity which existed between the generals completely neutralised the good that might have been derived from their abilities. At last, however, the dangerous position of affairs compelled them to forget their differences, and to unite cordially in resisting their common enemy. (Polyb. i. 73–88.)

He continued during his whole life to be the advocate of peace, in opposition to the ambitious policy of Hannibal; and when that general sent his brother Mago, after the battle of Cannæ, to obtain reinforcements, Hanno exerted all his influence to prevent this request being granted, and even proposed that Hannibal should be given up to the Romans. (Liv. xxi. 3, 9; xxiii. 13.)

HANOVER, a kingdom in Germany, formed out of the duchies which formerly belonged to several families of the junior branch of the house of Brunswick. In the course of the revolutionary war, under the influence of France, the dukedoms of Bavaria, of Saxony, and of Wirtemburg had been raised to the rank of kingdoms; and when the overthrow of Bonaparte was accomplished, the dukedoms which had composed the electorate of Hanover were thought by the allied powers of sufficient consequence to be elevated to the same dignity, as, with the additions then made to them, they were nearly equal in extent and population to the other portions of Germany whose rulers had received that rank. It accordingly assumed that grade in 1814, under George III., and was acknowledged as such by all the powers of Europe.

The obscurity in which antiquity has involved the early history of nations can only be in a slight degree cleared up by tracing the origin of the families that maintained the continued rule over them. The ruling family of Hanover has been traced, by the combined efforts and researches of Muratori and Leibnitz, to an Italian origin, in the dark ages, that is, to the princely house of Este; and by Gibbon, from that house up to the descendants of Charlemagne. A Marquis of Este, in the eleventh century, married Cuniza or Cunegonda, an heiress of a princely family in Bavaria, whose son received the name of Guelph, derived from his maternal ancestors, and inherited their dominions, including the dukedom of Bavaria. The grandson of this Guelph, named Henry the Black, and his son named Henry the Proud, acquired by marriage new and extensive dominions on the banks of the Elbe and the Weser; and Henry the Lion, the most powerful prince of his age, was the first of the race who assumed the title of Duke of Brunswick. Under this Henry, who distinguished himself as a great warrior, an uncle wrested from him the southern portion of his territory in Bavaria and Suabia, and left him, at the conclusion of most bitter hostility, in the possession of the northern portion of it. He made the city of Brunswick the capital of his dominions, and, being in possession of the rich silver mines of the Hartz, was enabled to extend his power over the tribes of Northern Germany, inhabiting Holstein, Mecklenburg, and nearly the whole coast of the Baltic Sea.

Henry the Lion was twice married. By his first wife he left no family; and by his second wife, who was Maud, the daughter of Henry II. of England, though he had several sons, none of them left any issue except William, under whose only son Otho the partition of the house took place, Brunswick and Luneburg being divided into two dukedoms. The latter branch received the Hanoverian portion as a fief from William Sigefred, bishop of Hildesheim. After the death of Otho, and of his two sons Otho and William, who successively followed, the male line became extinct in 1369. Otho, elector of Saxony, who had married a daughter of William, was, by the influence of the emperor of Germany, Charles IV. invested with the government. He died without issue, having by his testament bequeathed the dukedom to his uncle Wenceslaus, elector of Saxony; a bequest which was contested by Torquatus Magnus, duke of Saxony, but at length was terminated in a compromise, by which Bernard, the eldest son of Torquatus, obtained the dominion, and reigned until 1434. After several successions, the power became vested in Ernest of Zell, who first introduced the Lutheran religion into his states, and died in the year 1546. The succession since has been, William, who died in 1592; Ernest, in 1611; Christian, in 1633; August, in 1636; Fredrich, in 1648; Ernest Augustus, bishop of Osnaburg, who was made an elector of the German empire in 1692, and died in 1698; George Louis, who, after the death of his uncle George William, inherited the dukedom of Zell in 1705, and succeeded to the crown of Great Britain by the title of George I. in 1714. He died in 1727, since which period the succession has been the same as in that kingdom.

The accession of the electors of Hanover to the throne of Great Britain, though it has led ultimately to a great extension of territory, has, on the other hand, subjected the electorate to sufferings and to oppression during the wars between Great Britain and France. At the commencement of the Seven Years' War, a French army invaded it; and the forces under the Duke of Cumberland, being unequal to its defence, were compelled, by the convention of Kloster-Severn, to abandon the country to the invaders. By the peace of 1763 it was again restored to its ancient sovereign. At the renewal of hostilities after the treaty of Amiens, Hanover was once more seized upon by the French, and by them delivered over to the king of Prussia, who ruled it till after his defeat at Jena. It was then incorporated as part of the kingdom of Westphalia, erected in favour of Jerome Bonaparte. This rule was terminated by the battle of Leipsic, by which Hanover, with the rest of Germany, was delivered from French domination, and returned to its ancient sovereigns, with the addition of the provinces of Hildesheim, Osnaburg, East Friesland, Goslar, and some other territories. On the other hand, Hanover gave up the ancient duchy of Lauenburg, which was transferred to Denmark, and some portions or bailiwicks, a part to Prussia, and a part to the Duke of Oldenburg.

Hanover has thus become a compact dominion, extending over 14,720 English square miles. It lies between 50° 18′ and 53° 54′ north latitude, and 6° 58′ and 11° 56′ east longitude. It is bounded on the north by the duchy of Oldenburg, the bailiwick of Ritzebüttel, belonging to Hamburg, and the mouth of the Elbe. On the north-east the river Elbe divides it from Holstein and Luneburg, belonging to Denmark, and from the duchy of Mecklenburg-Schwerin; but it possesses the small territory of Neuhof on the right bank of that river. On the east it is bounded by the Prussian province of Saxony, and by the duchy of Brunswick; on the south it touches the dominions of Prussia, of Hesse-Cassel, of both the Lippes, and of Westphalia; and on the west the kingdom of the Netherlands is the boundary.

The kingdom of Hanover is divided in the following manner:—

Provinces.	Extent in English Acres.	Population.	Number of Dwelling-Houses.
Hanover....	1,601,280	296,000	40,745
Hildesheim.	1,121,920	322,000	44,199
Luneburg....	2,871,040	285,000	37,037
Stade..... ..	1,725,440	244,000	37,747
Osnabruck..	1,441,280	244,000	39,411
Aurich......	743,040	152,000	24,261
Clausthal...	122,080	26,000	2,738
	9,626,080	1,569,000	226,138

A new survey and division of provinces has been made within the last four years. The population returns are grounded on a census taken in 1817, since which the deaths have been deducted and the births added each year. This gives an increase of inhabitants of 236,400 in fifteen years. In the year 1832 the births appear to have been 48,273, and the deaths 39,806. The capital of each of the provinces is the city of the same name.

The chief cities and their population are as follows: Hanover, 26,300; Hildesheim, 13,800; Luneburg, 12,500; Emden, 12,100; Osnabruck, 11,800; Göttingen, 11,000; Zell, 10,300; Clausthal, 8850; Goslar, 7160; Leer, 6340; Hameln, 5750; Norden, 5600; Stade, 5500; Eimbeck, 5100.

The province of Hildesheim is somewhat mountainous, and that of Clausthal, containing the Hartz, is wholly so, as well as some parts near Göttingen. The other provinces form a part of that extensive plain which commences on the shores of the German Ocean, and terminates on the frontiers of Russia. The whole plain is a sandy soil, resting on a bed of granite, and is generally sterile, except on the banks of the various rivers that water it, or near the cities, where cultivation has improved it by artificial means. The most fruitful part of the kingdom is on the banks of the Elbe, and near the German Ocean, where, as in Holland, rich meadows are preserved from being immersed in water, by broad dykes and deep ditches, constructed and kept in repair at a great expense.

The most remarkable mountains are those of the Hartz Forest, three fifths of which are in this kingdom, and two fifths in the duchy of Brunswick. These mountains are not a part of any chain, but rise from a plain in a group by themselves, the highest points of which are nearly in the centre. The mass is about eighty miles in length from east to west, and about twenty-eight in breadth from north to south. The highest points, and their height above the level of the sea, are Bruchberg, 3020 feet; Wormberg, 2880 feet; Achtermanshöhe, 2710 feet; the Little Winterberg, 2684 feet; Kahlenberg, 2180 feet; and the Rammelsberg, 1915 feet. These mountains are wholly covered with forests. On their lower sides the trees are of the deciduous kinds, but the summits are exclusively covered with pines. These mountains abound with minerals of almost every kind, and the principal employment of the inhabitants consists either in mining, or in manufacturing the iron and copper into domestic utensils. Some of the mining and manufacturing towns, as Clausthal, Andreasberg, Cellerfeld, and several others, are from 1700 to 1900 feet above the level of the sea; and their population would suffer most severely from the cold of the severe winters, but for the abundance both of wood and fossil coal with which they are supplied.

The whole of the kingdom of Hanover dips towards the north, and the courses of all the rivers are in that direction. These are, *first*, the Elbe, which borders a large part of the dominion, and receives into it the Ohre, which rises in the province of Luneburg; the Aland and the Jeetze, which come out of Prussia, and are navigable before they terminate in the Elbe; the Ilmenau, which becomes navigable at Luneburg; the Este, which is navigable to Buxtehude; the Lühe, navigable to Hornburg; the Schwinge, by which vessels reach Stade; the Oste, which passes Harburg, and is navigable to Kirchosters; and the Medem, which runs through the land Hadeln, and admits large vessels as high as Ottendorf. *Second*, the Weser, which enters the dominions of Hanover at Münden, being there formed by the junction of the Fulda and the Werra. It is navigable for barges from the spot at which its name commences, and it receives, in its course, the Hamel, the Aller, the Oertze, the Line, the Böhme, the Eyther, the Wümme, the Lesum (formed by the three streams, Rodau, Wiste, and Worpe), the Greste, and the Hunter; all of which are Hanoverian rivers, and continue their united courses till they are lost in the German Ocean near Bremen. *Third*, the Ems, a river rising in the Prussian province of Westphalia. After entering Hanover, it receives the waters of the Aa, the Hase, the Else, and the Leda. Before reaching the sea, it falls into the Dollart near Emden, which is the principal seaport in the kingdom. The vessels belonging to this port are about 270, and their tonnage 19,289 lasts. There are equipped at the mouth of this river upwards of fifty busses, which are employed in the herring fishery, and usually take and cure from 12,000 to 14,000 tons of that fish annually. *Fourth*, the Vecht, a river of short course, rising in the Prussian province of Westphalia, and terminating in the Zuyder Zee. Its principal importance is derived from a navigable canal, which commences at the city of Münster, and is the channel of some trade through the Vecht to Amsterdam.

Though Hanover is generally a sandy soil, it has some small fresh-water lakes. The Dummersee, in Diepholtz, is about twelve miles in circuit. The Steinhudermeer, in the province of Kalenburg, is about four miles long and two broad; and the Dollart, at the mouth of the Ems, which is rather an estuary than a lake, is twelve miles across. The canals are all of short course. The Bremen Canal is designed to unite the Hamme, the Oste, and the Schwinge; and the Treckschuit Canal is intended to connect Witmund with Aurich. The Pappenburg Canal is only navigable from the Ems to that city.

Though considerable variations, in conformity to the different natures of the soils, occur in the husbandry of Hanover, yet it may be generally described as at a very low standard. The land mostly belongs either to the king, or to the nobles, as lords of the soil, who have under them a species of tenants called bauers, having the use of small portions of land, under many and various feudal conditions. These bauers pay little or no rent in money, but render the lord a stipulated number of days' work in seed time and harvest on his demesne lands, or give him a certain proportion of the proceeds of their crops. In most instances the lords have the right of pasture for their cattle over the whole land, and are the proprietors of most of the sheep and cows. There is an exception to this mode of holding, called the *meyer law;* but it extends over so small a portion of the kingdom as not to merit a detailed notice of it. The rotation of crops usually followed in Hanover is first a fallow, on which the land is cultivated to potatoes, peas, or flax; then follows winter corn, either rye or wheat, but chiefly the former; and to these succeeds summer corn, either barley or oats. As the fields are usually divided into small portions, like many of our common fields in England, and the larger divisions must all be cultivated alike, though belonging to different occupiers; and as the course that has prevailed from time immemorial must be continued; there is little or no room for improvement, and little encouragement for superior knowledge or greater activity. Such is the bad state of cultivation, that the increase of grain is not estimated to exceed four for one of the quantity sown throughout the whole kingdom. The breeding and fattening of cattle is a branch of rural economy, confined to particular portions adapted to that purpose, and is in the same backward state as the agriculture. By the latest enumeration of the live stock, which was previous to some provinces of 600,000 acres in extent being added to it, there were 224,500 horses; 675,926 head of horned cattle; 1,540,794 sheep and lambs; 15,728 goats and kids; 176,974 swine; and 1498 asses and mules. Much of the heath land, especially in the province of Luneburg, is used for no other purpose but that of rearing bees for the sake of their honey and wax. The hives are transported in waggons, at the commencement of the spring, to those more southern countries where the flowers bloom early, and are afterwards brought back when the heath flowers are fit for them, and remain till the proper time for taking the contents of the hives. Large numbers of geese are also kept by the bauers on the moist situations: their flesh is salted for winter domestic consumption, and their feathers are preserved for sale. These two sources, affording wax, honey, and feathers, yield the principal disposable produce of some of the provinces.

The manufactures of Hanover are very numerous, but none of them extensive. Except linen, linen yarn, and domestic utensils, few of them afford a surplus beyond the home consumption. The linen is of four kinds: first, that called *Hauseleinwand*, or household linen, the making as well as use of which is to be met with in every family; secondly, a coarse kind, that called the *Lowentleinen;* thirdly, the fine linen, which is only made in some of the cities to a small extent, and almost wholly consumed by the richer families of the kingdom; and, fourthly, sail-cloth and hempen linen, which is principally made in East Friesland and the duchy of Bremen, and is mostly sold for foreign consumption. Besides the linen yarn used in the home fabrics, a great quantity is spun for foreign trade. Spinning is indeed the constant operation of almost all the females in the villages during the long nights of winter. The spinning of coarse wool, and making it into cloth, either by itself or mixed with linen, occupies a considerable portion of the industry of the peasantry, and furnishes them with clothing from the produce of their own lands. Besides these, they spin cotton, and mixing the yarn with that of linen, manufacture dresses for the females and the younger part of their families. The stockings they wear, whether of linen, cotton, or worsted, are usually made at home. In some parts of the country much oil is made from linseed. Coarse pottery ware is made in many parts. Paper-mills, which supply about 80,000 reams annually, are not sufficient for the home consumption. In the cities, woollen cloths, silk goods, cotton of various kinds, hats, hosiery, soap, and leather, are manufactured. The principal branches that employ much capital are the breweries of Hanover, Eimbeck, and Goslar, and the corn distilleries which are to be found in all the cities. The former of these are suffering a gradual declension, whilst the latter are as rapidly increasing.

The mines are a source of wealth, which, from having been neglected during the French occupation, have required considerable expenditure to make them as productive as they were before that calamitous period. The gross quantities delivered of all the mines in the seventeen years from the beginning of 1815 to the end of 1832, have been as follows, viz.

Gold	103	merks.
Silver	878,699	...
Lead	1,683,781	quintals.
Copper	33,509	...
Zinc	596	...
Sulphur	17,396	...
Vitriol	44,058	...
Iron	1,329,139	...
Salt	1,400,000	...
Fossil coal	17,500,000	cubic feet.

It is expected that in future the proceeds will be more considerable, and the expense of working much less, as some new shafts have been recently sunk, and the cost of them deducted from the price of the metals.

As may be supposed from the small quantity of surplus production, the trade of Hanover cannot be extensive. The principal port, Emden, has some export and import trade; but from the state of the roads between that place and the more populous parts of the kingdom, more of its trade passes through Hamburg and Bremen than through that city. Besides the more considerable articles made from flax, its honey, wax, feathers, and large quantities of timber, are sent to Hamburg and Bremen. Hops, rapeseed, oil-cake, fruit, hams, and sausages, form also articles of export of small amount. In very fruitful years some corn is exported, but in general the consumption is equal to the produce. The imports consist principally of wine, coffee, tea, sugar, indigo, tobacco, and a few manufactured articles, which are consumed by the richer classes. As the roads to the great fairs of Leipsic and Frankfort pass through Hanover, the transit of goods by these create a pretty large commission trade, and give employment to many waggons, horses, and men, as well as to the barge owners. The exports and imports nearly balance each other, and the amount of neither exceeds L.500,000 sterling.

Hanover is a hereditary monarchy in the house of Guelph, with a Salic law, which prevents the throne being filled by a female. In case the present branch becomes extinct, the heir of the duchy of Brunswick will succeed. The legislative power was vested in the several states formerly, which caused a great complication, both in the financial and the judicial departments. This arose from the several parts which have successively been added to Hanover having possessed ancient constitutions, with considerable differences in the laws, religion, and institutions. By gradual arrangements these have been assimilated into one system, and a legislative body formed, which, as far as it has hitherto proceeded, works rather favourably for the general good. It consists of two houses. The upper house contains fifty-five members. They are in part the mediatorial sovereigns within the kingdom, in part the Protestant and the Catholic bishops or prelates, and in part the ministers at the head of the several departments of the government; but the greater number consists of the representatives of the nobility, proprietors of estates in the several provinces.

The second chamber is composed of seventy-two members, who are chosen for six years. Twenty-nine of them are elected by the cities, and the remainder by the proprietors of the estates in their respective provinces. Amongst these are several clergymen and lawyers. The president and vice-president are selected by the assembly, but subject to the approbation of the king, or, in his absence, of the viceroy. They assemble every year, and their attention recently has been chiefly addressed to the simplification of the finances, and to the abolition of those inferior local justiciaries, which had belonged to the proprietors of certain estates.

The revenue of the kingdom is derived from various sources, all of which have been clearly communicated to the public by one of the chiefs of the board of revenue, Mr Ubbelohde, up to the beginning of 1834.

The sovereigns of Hanover were, like most others in Germany, the largest landed proprietors in their dominions. Their land, called the domains, with what was denominated the royalties, such as the mines, the posting, the road and harbour tolls, and other branches, amounted to nearly as much as the taxes. These have recently been given up by the crown, and form one branch of the general revenue applicable by the legislature to the purpose of paying the interest of the public debt, and defraying the expenses of the several departments of the administration.

The nett amount of this royal property, after deducting the expense of management and collection, and the sum appropriated to the viceregal household, appears to have been, in 1833, 1,194,640 rixdollars, or L.89,598 sterling, besides that derived from the mines and salt springs, which amounted to 117,000 rixdollars, or L.8775 sterling. The remainder of the revenue is obtained by taxation of various kinds, such as land, house, personal, and income taxes, by imposts on beer and corn spirits, by stamps, and by a custom-duty on foreign goods. These are the chief subjects of taxation, but there are some few of a smaller kind, more troublesome than productive.

The nett revenue now is found to produce as follows:

	Rixdollars.	Sterling.
From the royal treasury	2,356,543	L.176,625
From the kingdom's treasury	3,006,600	225,495
	5,363,143	L.402,235
The whole expenses of the government, as enumerated below, amounted in 1832 to	5,390,800	L.404,310
Thus leaving a deficit of	41,485	L.2,075

The annual expenses are as follows :—

	Rixdollars.
Cabinet ministers	90,950
Office in London	14,400
Bailiwick and other expenses in the country parts, and police	618,350
Legislative body	76,400
Ministry of foreign affairs	70,000
Ministry of war	1,657,950
Ministry of justice	215,600
Ministry of religion and general instruction	97,650
Ministry of the interior	651,000
Ministry of trade	41,300
Ministry of finances	208,000
Interest of debt	1,306,400
Pensions	144,000
Expiring expenses	198,800
	5,390,800

or L.404,310 sterling.

The public debt consists in part of annuities, and in part of loans. The annual interest, as is shown in the account of expenses, amounts to nearly one quarter of these. It is, however, annually diminishing, by means of a sinking fund, *tillgungo fond*, the amount paid towards which is included in the 1,306,400 rixdollars of the expenditure. It now amounts to 311,100 rixdollars, or nearly one quarter of the annual interest.

In the expenditure of the ministry of the interior is comprehended the cost of improving the roads, the dykes, and the navigable rivers. It has been well expended, especially that on the roads, which have, within the last fifteen years, from the worst become some of the best in any part of Europe.

The military force of Hanover consists of an engineer and artillery corps, the latter composed of two companies of horse and one of foot, a corps of riflemen, a battalion of infantry, of which two are the guards and two light troops, and four regiments of cavalry. The total number amounts to about twelve thousand men, but many of them are indulged with furloughs, so that the whole expense of the army, including the repairs of the fortifications, is very small. Hanover has a single vessel of war moored in the Elbe to collect the dues on that stream, and some small craft at the mouths of the Weser and of the Ems.

The religious establishments of Hanover are the three Christian sects in different parts. The Lutherans are the most numerous, comprehending 1,235,200 persons, having ten superintendents or bishops, and 924 clergymen. They have also nine convents for men and eighteen for females, but the members of these are not bound to celibacy. The tithes are commonly paid in kind, but some of them have stipends from the government. The Catholics are about 200,000, having one bishop, and 143 parish priests. The Reformed are about 100,000, and have 114 parish churches, and a minister to each. There are, besides, three Mennonite and one Moravian congregation. The Jews are allowed the freest toleration as regards their worship, but are excluded from some of the civil privileges. Their number is about 12,000.

The business of education is well attended to, and abundant means are supplied to aid it, both by the government and the voluntary contributions of corporations and individuals. The first establishment is the university of Göttingen, founded by George II. in 1734. Its professors are scholars of great eminence in every branch of science and literature, and in 1833 it contained 845 students. There are, besides, five ecclesiastical seminaries, twenty-nine schools for the common sciences, and sixteen gymnasiums or public classical schools; and each village and town has the appropriate number of elementary schools, amounting to the number of 3560. All are taught to read and to write, and the common rules of arithmetic. There are also surgical and medical schools, hospitals for midwifery, and a good veterinary college. The freedom of the press is allowed to the professors of the university, but all other writings must pass through a very mild censorship ; though of late, from the proceedings of the diet at Frankfort, some restrictions have been enacted against the unlimited publication of political newspapers, and other smaller works.

The poor are provided for wholly by voluntary contributions, which are made from house to house at stated periods. They are in a great degree supported in workhouses, where their own labour contributes in some measure to their maintenance. Their food and clothing are of the coarsest kind. There are many hospitals and other charitable establishments for the relief and cure of the diseased ; and, upon the whole, the poor are as well taken care of as in other countries where their maintenance is compulsory.

The language usually spoken in Hanover is the Plat-Deutsche, a dialect of the High German, more pure, and less complicated in its construction, but treated by the learned with more contempt than it merits. As the service in the churches and the instruction in the schools are exclusively in the High German, all the peasantry understand it, though they never use it when they can avoid it. The higher classes pride themselves in speaking the High German with greater purity than is practised in any other part of the empire.

Hanover has two standards of money, the Leipsiger and the convention. The public accounts are kept in the latter. The gold coin called Georgs d'or is five rixdollars eight groschen in convention money ; or, in Leipsiger money, four rixdollars sixteen groschen. The other gold coin, the Gold-Gulden, is two rixdollars six groschen in convention, two dollars two groschen in Leipsiger money.

The long measure is the rood of eight ells ; the ell is two feet ; the foot twelve inches. Six Hanoverian are equal to five Brabant ells. Land is measured by hufen and morgens. The hufe is thirty morgens, the morgen 120 ruthen, equal to 24·844 Paris feet. The morgen by which woodland is measured contains 160 ruthen. The liquid measure is the eimen, of 3·136 cubic inches, or the anker of 1·960 cubic inches. The latter makes sixteen stübchens or thirty-two kannen, and sixty-four quartiere or 128 nosel. The weights in common use are ships-pounds, lies-pounds, hundreds, and customary pounds. The ships-pound is equal to twenty lies-pounds ; the hundred is 110 lies-pounds. The lies-pound is divided into two marks, the mark into eight ounces, the ounce into two loths, the loth into four quentins. The local weights and measures vary from these standards in all the villages of the several provinces.

See *Erdebescreibung des Konigreichs Hannover*, von Sonne ; *Weimarishe Erdebescreibung*, vol. iv. part i.; Jacobs' *View of Germany, &c.* 1820 ; *Weimar Almanach*, 1834 ; Hodgskin's *Germany ; Hannoverische Zeitungen*, 1833 ; and *Uber die Finances des Konigreichs Hannover und deren Verwaltung*, von Hofrath, J. G. L. W. Ubbelohde, 1834.

Hanover, a city, the capital of the kingdom of the same name, in Germany, as well as of the province of Kalenburg. It is built on an extensive plain on the river Leine, which receives the waters of the Ihme, and then becomes navigable to the Weser. The former walls, which were indefensible, have been destroyed, and planted, and thus converted into pleasant promenades. The city is divided into the old and the new town by the river. The former is old, ill built, and dirty ; the latter is much better, contains a fine square, some good streets, and several handsome public and private buildings. The most prominent of these are the palace of the Duke of Cambridge, the theatre, and the house of assembly of the states. The royal library, containing 25,000 volumes, and the cabinet of natural history, are objects of attention. The city contains seven Lutheran, two Reformed, and one Catholic church, with 2195 houses, and about 25,000 inhabitants. The chief trade is brewing beer, but it has those kinds of manufactures which are naturally encouraged in the capital of each kingdom, however small or poor. As the residence of a court, of an armed force, of the legislature, the courts of justice, and of several of the nobility, a great number of small tradesmen obtain subsistence by supplying their wants. The trade by water consists chiefly in transmitting wood, and some corn and flax, to Bremen, where it is shipped for markets at a distance. There is, however, an exchange and a chamber of commerce, and some of the bankers are considerable capitalists. It is situated in longitude 9. 39. 40. E. and latitude 52. 22. 18. N. Near the city is the royal palace of Hernhausen, with fine walks, gardens, graperies, and plantations.

Hanover, *New*, an island in the Pacific Ocean, seen by Captain Carteret in 1767, and, according to his account, about thirty miles in length. The passage between this island and New Zealand is obstructed by reefs and islets. The south-west part is situated in long. 148. 27. E. and lat. 2. 49. S.

HANSE, or Hans, an ancient name for a society or company of merchants, particularly that of certain cities in Germany, hence called *Hanse-towns*. The word *hanse* is obsolete High Dutch or Teutonic, and signifies *alliance, confederacy, association*. But some derive it from the two German words *am-see*, that is, *on the sea*, because the first hanse towns were all situated on the sea-coast; and hence the society is said to have been originally called *am zee stenen*, or *cities on the sea*, and afterwards, by abbreviation, *hansee*, and *hanse*.

Hanse Towns. The Hanseatic society was a league between several maritime cities of Germany, for the protection of their commerce. Bremen and Amsterdam were the first two that formed it; and the trade of these towns experienced such advantage by their fitting out two men of war in each to convoy their ships, that more cities entered into the league. Even kings and princes made treaties with the league, and were often glad of their assistance and protection; by which means they became so powerful both by sea and land, that they raised armies as well as navies, possessed countries in sovereignty, and made peace or war, though always in defence of their trade, as if they had been an united state or commonwealth.

At this time many cities, though they had no great interest in trade, or intercourse with the ocean, entered into this alliance for the preservation of their liberties; so that in 1200 we find no less than seventy-two cities in the list of the towns of the Hanse, particularly Bremen, Amsterdam, Antwerp, Rotterdam, Dort, Bruges, Ostend, Dunkirk, Middleburg, Calais, Rouen, Rochelle, Bordeaux, St Malo, Bayonne, Bilboa, Lisbon, Seville, Cadiz, Carthagena, Barcelona, Marseilles, Leghorn, Naples, Messina, London, Lubeck, Rostock, Stralsund, Stettin, Wismar, Königsberg, Dantzig, Elbing, and Marienburg.

The alliance was now so powerful that their ships of war were often hired by other princes to assist them against their enemies. They not only awed, but often defeated, all that opposed their commerce; and in 1358 they took such revenge on the Danish fleet in the Sound, for having interrupted their commerce, that Waldemar III. king of Denmark, for the sake of peace, gave them up Schonen for sixteen years, by which they commanded the passage of the Sound in their own right. In 1428 they made war on Erick, king of Denmark, with two hundred and fifty sail, carrying on board 12,000 men. These so ravaged the coast of Jutland, that the king was glad to make peace with them.

Many privileges were bestowed upon the Hanse Towns by Louis XI., Charles VIII., Louis XII., and Francis I., kings of France, as well as by the emperor Charles V., who had different loans of money from them, and by King Henry III., who also incorporated them into a trading body, in acknowledgment of money which they had advanced to him, as well as for the good services they did him by their naval forces in 1206.

These towns exercised a jurisdiction amongst themselves; and for this purpose they were divided into four colleges or provinces, distinguished by the names of their four principal cities, viz. Lubeck, Cologne, Brunswick, and Dantzig, in which were held their courts of judicature. They had a common stock or treasury at Lubeck, and power to call an assembly as often as was necessary. They kept magazines or warehouses for the sale of their merchandises in London, Bruges, Antwerp, Berg in Norway, Revel in Livonia, and Novogorod in Muscovy, which were exported to most parts of Europe, in English, Dutch, and Flemish bottoms. One of their principal magazines was at London, where a society of German merchants was formed, called the Steelyard Company. To this company great privileges were granted by Edward I.; but these were revoked by act of parliament in 1552, in the reign of Edward VI., upon a complaint of the English merchants that this company had so completely engrossed the cloth trade, that in the preceding year they had exported 50,000 pieces, whilst the English had only shipped 1100 pieces. Queen Mary, who ascended the throne the following year, having resolved to marry Philip, son of the emperor Charles V., suspended the execution of the act for three years; but after that term, whether by reason of some new statute, or in pursuance of that of King Edward, the privileges of the company were no longer regarded, and all efforts of the Hanse Towns to recover this loss were unavailing.

Another accident which contributed to their mortification occurred whilst Queen Elizabeth was at war with the Spaniards. Sir Francis Drake happening to meet sixty ships in the Tagus, loaded with corn belonging to the Hanse Towns, took out all the corn as contraband goods, which they were forbidden to carry by their original patent. The Hanse Towns having complained of this to the diet of the empire, the queen sent an ambassador thither to declare her reasons. The king of Poland likewise interested himself in the affair, because the city of Dantzig was under his protection. At last, though the queen strove hard to preserve the commerce of the English in Germany, the emperor excluded the English company of merchant-adventurers, who had considerable factories at Stade, Emden, Bremen, Hamburg, and Elbing, from all trade in the empire. In short, the Hanse Towns, particularly in Germany, were not only in so flourishing, but in so formidable a state, from the fourteenth to the sixteenth century, that they gave umbrage to all the neighbouring princes, who threatened a strong confederacy against them, and, as the first step towards this, commanded all the cities within their dominion or jurisdiction to withdraw from the union or Hanse, and have no further concern therein. This immediately separated from them all the cities of England, France, and Italy. The Hanse, on the other hand, prudently put themselves under the protection of the empire; and as the cities just mentioned had withdrawn from them, they withdrew from several more, and made a decree amongst themselves, that none should be admitted into their society but such as stood within the limits of the German empire, or were dependent thereon, except Dantzig, which continued a member, though in nowise dependent on the empire. By this means they maintained their confederacy for the protection of trade, without being any more envied by their neighbours; but they were reduced to Lubeck, Bremen, Hamburg, and Dantzig, in the first of which they kept their register, and held assemblies once in three years at least. In the middle of the seventeenth century, Lubeck, Bremen, and Hamburg were all that continued to acknowledge the authority of the league; and even to this day the shadow of its power still exists, these places having been acknowledged in the act for the establishment of the Germanic confederation signed at Vienna on the 8th of June 1815, as free Hanseatic cities.

HANSOOT, a town of Hindustan, in the province of Gujerat, twelve miles south-west from Broach. Long. 72. 59. E. Lat. 21. 32. N.

HANSY, a town of Hindustan, in the province of Delhi, and district of Hissar Feroseh, situated on the edge of the canal, now in ruins, cut from the river Jumna about the year 1353, by Sultan Feroy. It is a very ancient town, and contains the tomb of a Mahommedan saint called Sheikh Jemmal. It was taken by the Mahommedans early in 1035, and has experienced many revolutions. Towards the end of the eighteenth century it was the capital of the short-lived principality erected by the adventurer George Thomas, and is now possessed by independent native chiefs.

HANTCHAO, a small island in the Chinese Sea, not far from the coast of Cochin-China, at the entrance of the harbour of Turon. Lat. 16. 12. N.

HANTCHONG, a city of China, of the first rank, in the province of Chensi, situated in a fertile country, and surrounded by mountains and forests. It carries on a trade in honey, wax, musk, and cinnabar. Long. 106. 44. E. Lat. 32. 59. N.

HANYANG, a city of China, of the first rank, situated at the confluence of the rivers Han and Yantse. Long. 113. 44. E. Lat. 63. 19. N.

HANWAY, Jonas, distinguished for his benevolent designs and useful writings, was born at Portsmouth, in Hampshire, on the 12th of August 1712. His father, Thomas Hanway, an officer in the naval service, and for some years store-keeper to the dockyard at that place, was deprived of his life by an accident, and left his widow with four children, Jonas, William, Thomas, and Elizabeth, all of very tender age. Mrs Hanway having repaired to London after the death of her husband, put Jonas to school, where he learned writing and accounts, and made some proficiency in Latin. At the age of seventeen he was sent to Lisbon, where he arrived in June 1729, and was bound apprentice to a merchant in that city. On the expiration of his apprenticeship, he entered into business at Lisbon as a merchant or factor; but he did not remain there long before he returned to London.

He soon afterwards connected himself as a partner in Mr Dingley's house in St Petersburg, where he arrived on the 10th of June 1743. The trade of the English nation by the Caspian Sea to Persia had at this period been intrusted to the care of Mr Elton, who, not content with the pursuit of commercial affairs, had injudiciously engaged in the service of Nadir Shah, to build ships on the Caspian after the European manner. This had alarmed the merchants engaged in the Russian trade, and a resolution was formed that one of their body should make a journey into Persia. On this occasion Mr Hanway offered his service, and was accepted. He set out on the 10th of September, and, after experiencing a great variety of hazards in that kingdom during the course of twelve months, returned to St Petersburg on the first of January 1745, without having been able to establish the intended trade by the Caspian, partly through the jealousy of the Russian court on account of Elton's connections with the Persians, and partly from the troubles and revolutions by which the latter kingdom was distracted.

He now settled at St Petersburg, where he remained five years. During this time he interested himself greatly in the concerns of the merchants who had engaged in the Caspian trade; but the independence he had acquired having excited a desire to revisit his native country, he left St Petersburg on the 9th of July 1750. In 1753 he published an Historical Account of the British Trade by the Caspian Sea, with a Journal of Travels from London through Russia into Persia, and back again through Russia, Germany, and Holland; a work which was received with great attention by the public. In 1754, we find Mr Hanway commending a plan offered for the advantage of Westminster, and suggesting hints for the further improvement of it, in a letter to Mr John Spranger on his excellent proposal for paving, cleansing, and lighting the streets of Westminster, 8vo. A few years afterwards, when a scheme of the same kind was carried into effect, many of Mr Hanway's ideas, thrown out in this pamphlet, were adopted. In 1756, he printed a Journal of Eight Days' Journey from Portsmouth to Kingston-upon-Thames, with an Essay upon Tea, which was afterwards reprinted in two volumes 8vo, 1757.

At this juncture, Great Britain being on the eve of a war with France, Hanway published Thoughts on the Duty of a good Citizen with regard to War and Invasion, in a Letter from a Citizen to his Friend, 8vo. About the same time, several gentlemen formed a plan which was matured and perfected by the assiduity of Hanway, for providing the navy with sailors, by furnishing poor children with necessaries to equip them for the service of the country. The success and propriety of this scheme soon became apparent. Mr Hanway wrote and published three pamphlets on the occasion; and the treasurer of the society, accompanied by Mr Hanway, having waited on the king, the society received L.1000 from his majesty, L.400 from the prince of Wales, and L.200 from the princess dowager. This excellent institution was through life the favourite object of Mr Hanway's care, and it continued to flourish under his auspices, greatly to the advantage of the community. In 1758 he became an advocate for another charitable institution, which derived considerable emolument from his patronage. This was the Magdalen Charity, to assist which he published a Letter to Robert Dingley, Esq. containing a Proposal for the Relief and Employment of friendless Girls and repenting Prostitutes, 4to. He also printed other small performances on the same subject.

In 1759, Mr Hanway wrote Reasons for an Augmentation of at least Twelve Thousand Mariners to be employed in the Merchants' Service and Coasting Trade, 4to. The next year he published several productions, viz. 1. A candid historical Account of the Hospital for the reception of exposed and deserted young Children, 8vo; 2. An Account of the Society for the Encouragement of the British Troops in Germany and North America, 8vo; 3. Eight Letters to —— Duke of ——, on the Custom of Vails giving in England, 8vo. In 1761, he produced Reflections, Essays, and Meditations on Life and Religion, with a collection of Proverbs, and eighteen Letters written occasionally on several subjects, in 2 vols. 8vo.

In July 1762, he was appointed one of the commissioners for victualling the navy; a post which he held above twenty-one years. His attention having been particularly directed towards alleviating the miseries of young chimney-sweepers, he published, in 1773, the State of the Chimney-sweepers' Young Apprentices, showing the wretched condition of these distressed boys, the ill conduct of such masters as do not observe the obligation of Indentures, and the necessity of a strict inquiry in order to support the civil and religious rights of these apprentices, 12mo. In the succeeding year, 1774, he enlarged a former publication, entitled Advice from a Farmer to his Daughter, and republished it under the title of Virtue in Humble Life, containing Reflections on the Reciprocal Duties of the Wealthy and Indigent, the Master and the Servant, 2 vols. 8vo. This edition being sold, in a few months he reprinted it in two-quarto volumes, with a dedication to Mrs Montagu.

In 1783, finding his health decline, he determined to resign his office at the victualling board, which he did on the 2d of October that year; and immediately received a grant of his whole salary by way of pension during his life. In the summer of 1786 Mr Hanway's health declined visibly. He had long felt the approach of a disorder in the bladder, which, increasing by degrees, caused a strangury, and at length, on the 5th of September 1786, put a period to a life spent almost entirely in the service of his fellow-creatures. On the 13th he was interred in the family-vault at Hanwell, being attended to the grave by a numerous retinue of friends; and after his death the public regard for his virtues was displayed by a subscription of several hundred pounds for erecting a monument to perpetuate his memory.

HAPPINESS, or FELICITY, absolutely considered, denotes the durable possession of perfect good without any admixture of evil; or the enjoyment of pure pleasure unalloyed with pain; or a state in which all the wishes are satisfied. In these senses happiness is known only by name upon the earth. The epithet *happy*, when applied to any state or condition of human life, admits of no positive definition, but is merely a relative term; in other words, when we call a man happy, we mean that he is happier than some others with whom we compare him, than the generality of others, or than he himself was in some other situation.

This subject has been treated by many eminent writers, and in a great variety of ways; but by none does it appear to have been set in a clearer and more definite point of view than by Archdeacon Paley in the sixth chapter of his *Principles of Moral and Political Philosophy*. In strictness, says he, any condition may be denominated happy in which the amount or aggregate of pleasure exceeds that of pain; and the degree of happiness depends upon the quantity of this excess. And the greatest quantity of it, ordinarily attainable in human life, is what we mean by happiness, when we inquire or pronounce what human happiness consists in.

If any *positive* signification, distinct from what we mean by pleasure, can be affixed to the term *happiness*, it may be taken to denote a certain state of the nervous system in that part of the human frame in which we feel joy and grief, passions and affections. Whether this part be the heart, which the turn of most languages would lead us to believe; or the diaphragm, as Buffon imagined; or the upper orifice of the stomach, as Van Helmont thought; or rather a kind of fine net-work, lining the whole region of the præcordia, as others have imagined; it is possible not only that every painful sensation may violently shake and disturb the fibres at the time, but that a series of such may at length so derange the very texture of the system, as to produce a perpetual irritation, which will show itself by fretfulness, restlessness, and impatience. It is possible also, on the other hand, that a succession of pleasurable sensations may have such an effect upon this subtle organisation, as to cause the fibres to relax, and return into their place and order; and thereby to recover, or, if not lost, to preserve, that harmonious conformation which gives to the mind its sense of complacency and satisfaction. This state may be denominated *happiness;* and is so far distinguishable from pleasure, that it does not refer to any particular object of enjoyment, or consist, like pleasure, in the gratification of one or more of the senses; but is rather the secondary effect which such objects and gratifications produce upon the nervous system, or the state in which they leave it. The comparative sense, however, in which we have explained the term *happiness*, is more popular; and in prosecuting the subject, we may consider, first, what human happiness does not consist in; and, secondly, what it does consist in.

I. *First*, then, happiness does not consist in the pleasures of sense, in whatever profusion or variety they may be enjoyed. By the pleasures of sense are meant the animal gratifications of eating, drinking, and that by which the species is continued, as well as the more refined pleasures of music, painting, architecture, gardening, splendid shows, theatrical exhibitions, and, lastly, the pleasures of active sports, as of hunting, shooting, fishing, &c. For, 1. These pleasures continue but for a little while at a time. This is true of them all, especially of the grosser sort. Laying aside the preparation and the expectation, and computing strictly the actual sensation, we shall be surprised to find how inconsiderable a portion of our time they occupy, how few hours in the four and twenty they are able to fill up. 2. By repetition they lose their relish. It is a property of the machine, for which we know no remedy, that the organs by which we perceive pleasure are blunted and benumbed by being frequently exercised in the same way. There is hardly any one who has not found the difference between a gratification when new and when familiar, or any pleasure which does not become indifferent as it grows habitual. 3. The eagerness for high and intense delights takes away the relish from all others; and as such delights fall rarely in our way, the greater part of our time becomes from this cause empty and uneasy. There is hardly any delusion by which men are greater sufferers in their happiness, than by their expecting too much from what is called *pleasure;* that is, from those intense delights which vulgarly engross the name of pleasure. The very expectation spoils them. When they do come, we are often engaged in taking pains to persuade ourselves how much we are pleased, rather than in enjoying any pleasure which springs naturally out of the object; and whenever we depend upon being vastly delighted, we always go home secretly grieved at missing our aim. Likewise, as has been just now observed, when this humour of being prodigiously delighted has once taken hold of the imagination, it hinders us from providing for or acquiescing in those gently soothing engagements, the due variety and succession of which are the only things that supply a continued stream of happiness.

The truth seems to be, that there is a limit at which these pleasures soon arrive, and from which they ever afterwards decline. They are by necessity of short duration, as the organs cannot hold on their emotions beyond a certain length of time; and if you endeavour to compensate for this imperfection in their nature by the frequency with which you repeat them, you lose more than you gain by the fatigue of the faculties and the diminution of sensibility. We have in this account said nothing of the loss of opportunities or the decay of faculties, which, whenever they happen, leave the voluptuary destitute and desperate; teased by desires that can never be gratified, and the memory of pleasures which must return no more. It will also be allowed by those who have experienced it, and perhaps by those alone, that pleasure which is purchased by the encumbrance of our fortune is purchased too dear; the pleasure never compensating for the perpetual irritation of embarrassed circumstances.

Happiness.

These pleasures, after all, have their value; and as the young are always too eager in the pursuit of them, the old are sometimes too remiss; that is, too studious of their ease to be at the pains which they really deserve.

Secondly, Neither does happiness consist in an exemption from pain, labour, care, business, suspense, molestation, and "those evils which are without;" such a state being usually attended, not with ease, but with depression of spirits, a tastelessness in all our ideas, imaginary anxieties, and the whole train of hypochondriacal affections. For this reason it seldom answers the expectations of those who retire from their shops and counting-houses to enjoy the remainder of their days in leisure and tranquillity; much less of such as in a fit of chagrin shut themselves up in cloisters and hermitages, or quit the world and their stations in it, for solitude and repose.

Where there exists a known external cause of uneasiness, the cause may be removed, and the uneasiness will then cease. But those imaginary distresses which men feel for want of real ones (and which are equally tormenting, and so far equally real), as they depend upon no single or assignable subject of uneasiness, so they admit oftentimes of no application or relief. Hence a moderate pain, upon which the attention may fasten and spend itself, is to many a refreshment; as a fit of the gout will sometimes cure the spleen. And the same may be said of any moderate agitation of the mind, as a literary controversy, a law-suit, a contested election, and, above all, gaming, the passion for which, in men of fortune and liberal minds, is only to be accounted for on this principle.

Thirdly, Neither does happiness consist in greatness, rank, or in elevated station.

Were it true that all superiority afforded pleasure, it would follow, that by how much we are the greater, that is, the more persons we are superior to, in the same proportion, as far as depends upon this cause, we should be the happier; but so it is, that no superiority yields any satisfaction, save that which we possess or obtain over those with whom we immediately compare ourselves. The shepherd perceives no pleasure in his superiority over his dog; the farmer in his superiority over the shepherd; the lord in his superiority over the farmer; nor, lastly, the king in his superiority over the lord. Superiority, where there is no competition, is seldom contemplated, and is a thing of which most men are quite unconscious. But if the same shepherd can run, fight, or wrestle, better than the peasants of his village; if the farmer can show better cattle, if he keeps a better horse, or be supposed to have a longer purse, than any farmer in the hundred; if the lord have more interest in an election, greater favour at court, a better house, or larger estate, than any nobleman in the county; if the king possess a more extensive territory, a more powerful fleet or army, a more splendid establishment, more loyal subjects, or more weight and authority in adjusting the affairs of nations, than any prince in Europe; in all these cases the parties feel an actual satisfaction in their superiority. No superiority appears to be of any account but a superiority over a rival. This, it is manifest, may exist wherever rivalships do; and rivalships fall out amongst men of all ranks and degrees. The object of emulation, the dignity or magnitude of this object, makes no difference; as it is not what either possesses that constitutes the pleasure, but what one possesses more than the other. Philosophy smiles at the contempt with which the rich and great speak of the petty strifes and competitions of the poor; not reflecting that these strifes and competitions are just as reasonable as their own, and the pleasure which success affords the same.

It appears evident, then, that happiness does not consist in greatness, since what are supposed to be the peculiar advantages of greatness, the pleasures of ambition and superiority, are in reality common to all conditions. But whether the pursuits of ambition be ever wise, whether they contribute more to the happiness or misery of the pursuers, is a different question, and a question concerning which we may be allowed to entertain great doubt. The pleasure of success is exquisite; so also is the anxiety of the pursuit, and the pain of disappointment; but, what is the worst part of the account, the pleasure is short-lived. We soon cease to look back upon those whom we have left behind; new contests are engaged in, new prospects unfold themselves; a succession of struggles is kept up, whilst there is a rival left within the compass of our views and profession; and when there is none, the pleasure terminates with the pursuit.

II. We have seen what happiness does *not* consist in. We are next to consider in what it *does* consist. In the conduct of life, the great matter is to know beforehand what will please us, and what pleasures will hold out. So far as we know this, our choice will be justified by the event. And this knowledge is more rare and difficult than at first sight it may seem to be; for sometimes pleasures, which are wonderfully alluring and flattering in the prospect, are found in the possession to be extremely insipid, or do not hold out as we expected. At other times pleasures start up which never entered into our calculation, and which we might have missed by not foreseeing; and hence we have reason to believe that we actually do miss many pleasures from the same cause.

The original diversity of taste, capacity, and constitution, observable in the human species, and the still greater variety which habit and fashion have introduced, render it altogether impossible to propose any plan of happiness which will succeed to all, or any method of life which is universally eligible or practicable. All that can be said is, that there remains a presumption in favour of those conditions of life in which men generally appear most cheerful and contented; for though the apparent happiness of mankind be not always a true measure of their real happiness, it is the best measure we have.

Upon this principle, then, happiness appears to consist in the exercise of the social affections. Those persons commonly possess good spirits who have about them many objects of affection and endearment, as wife, children, kindred, friends; and to the want of these may be imputed the peevishness of monks and of such as lead a monastic life. Of the same nature with the indulgence of our domestic affections, and equally refreshing to the spirits, is the pleasure which results from acts of bounty and beneficence, exercised either in giving money, or in imparting to those who want it the assistance of our skill and profession.

Another main article of human happiness is, the exercise of our faculties, either of body or mind, in the pursuit of some engaging end. It seems to be true that no plenitude of present gratification can make the possessor happy for a continuance, unless he have something in reserve, something to hope for and look forward to. This may be inferred from comparing the alacrity and spirits of men who are engaged in any pursuit which interests them, with the dejection and *ennui* of almost all who are either born to so much that they want nothing more, or who have *used up* their satisfactions too soon, and drained the sources of enjoyment. It is this intolerable vacuity of mind which carries the rich and great to the race-course and the gaming table, and often engages them in contests and pursuits, of which the success bears no proportion to the solicitude and expense with which it is sought.

The question now occurs, how we are to provide ourselves with a succession of pleasurable engagements. This requires two things; judgment in the choice of ends adapted to our opportunities; and a command of imagina-

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tion, so as to be able, when the judgment has made choice of an end, to transfer a pleasure to the *means;* after which the end may be forgotten as soon as we will. Hence those pleasures are most valuable, not which are most exquisite in the fruition, but most productive of engagement and activity in the pursuit.

A man who is in earnest in his endeavours after the happiness of a future state, has in this respect an advantage over all the world; for he has constantly before his eyes an object of supreme importance, productive of perpetual engagement and activity, and of which the pursuit (and this can be said of no pursuit besides) lasts him to the end of his life. Yet even he must have many ends beside the far end; but then they will conduct to that, be subordinate, and in some way or other capable of being referred to that, and derive their satisfaction, or an addition of satisfaction, from that.

Engagement is every thing. The more significant, however, our engagements are, the better; such as the planning of laws, institutions, manufactures, charities, improvements, public works, and the endeavouring by our interest, address, solicitations, and activity, to carry them into effect; or, upon a smaller scale, the procuring of a maintenance and fortune for our families, by a course of industry and application to our callings, which forms and gives motion to the common occupations of life; training up a child; prosecuting a scheme for his future establishment; making ourselves masters of a language or a science; improving or managing an estate; labouring after a piece of preferment; and, lastly, any engagement which is innocent is better than none, as writing a book, building a house, laying out a garden, digging a fish-pond, even raising a cucumber or a tulip. Whilst the mind is occupied with the objects or business before it, we are commonly happy, whatever the objects or business be; when the mind is absent, and the thoughts are wandering to something else besides what is passing in the place in which we are, we are often miserable.

The art in which the secret of human happiness in a great measure consists, is to set the habits in such a manner that every change may be a change for the better. The habits themselves are much the same; for whatever is made habitual becomes smooth, and easy, and indifferent. The return to an old habit is likewise easy, whatever the habit be. Therefore the advantage is with those habits which allow of indulgence in the deviation from them. The luxurious receive no greater pleasure from their dainties than the peasant does from his bread and cheese; but the peasant whenever he goes abroad finds a feast, whereas the epicure must be well entertained to escape disgust. Those who spend every day at cards, and those who go every day to plough, pass their time much alike; intent upon what they are about, wanting nothing, regretting nothing, they are both in a state of ease. But then, whatever suspends the occupation of the card-player distresses him, whereas to the labourer every interruption is a refreshment; and this appears in the different effect which the Sabbath produces upon the two, proving a day of recreation to the one, but a lamentable burden to the other. The man who has learned to live alone, feels his spirits enlivened whenever he enters into company, yet takes his leave of it without regret. Another, who has long been accustomed to a crowd or continual succession of company, experiences in company no elevation of spirits, nor any greater satisfaction than what the man of a retired life finds in his chimney-corner. So far their conditions are equal; but let a change of place, fortune, or situation, separate the companion from his circle, his visitors, his club, common-room, or coffee-house, and the difference of advantage in the choice and constitution of the two habits will show itself. Solitude comes to the one clothed with melancholy; to the other it brings liberty and repose. You will see the one fretful and restless, at a loss how to dispose of his time, till the hour comes round that he can forget himself in bed; the other easy and satisfied, taking up his book or his pipe as soon as he finds himself alone; ready to admit any little amusement which casts up, or to turn his hands and attention to the first business which presents itself; or content without either to sit still, and let his trains of thought glide indolently through his brain, without much use perhaps or pleasure, but without hankering after any thing better, and without irritation. A reader who has inured himself to books of science and argumentation, if a novel, a well-written pamphlet, an article of news, a narrative of a curious voyage, or the journal of a traveller, fall in his way, sits down to the repast with relish, enjoys his entertainment while it lasts, and can return, when it is over, to his graver reading without distaste. Another, with whom nothing will go down but works of humour and pleasantry, or whose curiosity must be interested by perpetual novelty, will consume a bookseller's window in half a forenoon, during which time he is rather in search of diversion than diverted; and as books to his taste are few and short, and rapidly read over, the stock is soon exhausted, when he is left without resource from this principal supply of innocent amusement.

As far as circumstances of fortune conduce to happiness, it is not the income which any man possesses, but the increase of income, that affords the pleasure. Two persons, of whom one begins with L.100, and advances his income to L.1000 a year, and the other sets off with L.1000 and dwindles down to L.100, may, in the course of their time, have the receipt and spending of the same sum of money; yet their satisfaction, as far as fortune is concerned, will be very different; the series and sum total of their incomes being the same, it makes a wide difference which end they begin at.

Happiness consists in health, understanding by health, not only freedom from bodily distempers, but also that tranquillity, firmness, and alacrity of mind, which we call *good spirits.* For the sake of health, according to this notion of it, no sacrifices can be too great. Whether it requires us to relinquish lucrative situations, to abstain from favourite indulgences, to control intemperate passions, or to undergo tedious regimens; whatever difficulties it lays us under, a man who pursues his happiness rationally and resolutely will be content to submit to. When we are in perfect health and spirits, we feel in ourselves a happiness independent of any particular outward gratification whatever, and of which we can give no account. This is an enjoyment which the Deity has annexed to life, and probably constitutes in a great measure the happiness of infants and brutes, especially of the lower and sedentary orders of animals, as of oysters, periwinkles, and the like.

The above account of human happiness will justify two conclusions, which, although found in most books of morality, have seldom been supported by any sufficient reasons, viz. first, that happiness is pretty equally distributed amongst the different orders of civil society; and, secondly, that vice has no advantage over virtue, even with respect to this world's happiness.

HAPUE, a cluster of four or more low islets amongst those called the Friendly Islands. They are about six or seven miles in length, and are joined together by reefs. They are fertile and well cultivated, and are situated in long. 185. 36. to 185. 45. E. lat. 19. 39. to 19. 53. S.

HAQUE, in our old writers, a little hand-gun, forbidden to be used for the destruction of game, by statute 33 Henry VIII. cap. 6, and 2 and 3 Edward VI. cap. 14. The half-haque, or demi-haque, comes also within the said acts.

HARAN, CHARRAN, or CHARRÆ, or Mesopotamia, a city celebrated for having been the place were Abraham first retreated after he left Ur, and where Terah, Abraham's father, died and was buried. Thither likewise Jacob retired to Laban, when he fled from the indignation of his brother Esau. Lastly, at Haran or Charræ, in Mesopotamia, Crassus, the Roman general, was defeated and killed by the Parthians. Haran was situated between the Euphrates and the river Chebar, at a considerable distance from the place where these two rivers unite.

HARANGUE, a modern French term for a speech or oration made by an orator in public. Ménage derives the word from the Italian *arenga*, which signifies the same thing, and is formed, according to Ferrari, from *arringo*, a joust, or place of jousting. Others derive it from the Latin *ara*, an altar, by reason of the first harangues having been made before altars. The word is also frequently used in a bad sense, for a pompous, prolix, or unseasonable speech or declamation.

HARBINGER, an officer of the king's household, having four yeomen under him, who ride a day's journey before the court when it travels, in order to provide lodgings and other necessaries.

HARBINGER'S REEFS, some reefs which lie in Bass's Strait, New Holland, and extend in patches nearly two leagues from the north end of King's Island.

HARBOROUGH MARKET, a town of the county of Leicester, within the hundred of Gastre, and eighty-three miles from London. It consists of one long and well-built street, in which is to be seen a great number of carriages passing between London and the northern parts of the kingdom. There was, till within a few years, a considerable quantity of thin worsted goods made in this town, but the trade has nearly all proceeded farther north. There is a market on Tuesday, which is well attended. The population amounted in 1801 to 1716, in 1811 to 1754, in 1821 to 1873, and in 1831 to 2272.

HARBOUR, a general name given to any sea-port or haven, and also to any place convenient for mooring shipping. The qualities requisite in a good harbour are, that the bottom be entirely free from rocks or shallows; that the opening be of sufficient extent to admit without difficulty the entrance or departure of large ships; that it should have good anchorage ground, and be easy of access; that it should be well defended from the violence of the wind and sea; that it should have room and convenience to receive the shipping of different nations, and those which are laden with different merchandises; that it should be furnished with a good light-house, and have a variety of proper rings, posts, moorings, and the like, in order to remove or secure the vessels contained therein; and, finally, that it should have plenty of wood, and other materials for fuel, besides hemp, iron, mariners, and so forth.

HARBURG, a city of the kingdom of Hanover, in the province of Luneburg, on the river Elbe. It stands opposite to the city of Hamburg, and was united to it by a bridge seven miles in length, as long as that city was occupied by the French. It has now hourly intercourse by steam and other boats. It contains 3760 inhabitants.

HARCOURT, a market-town of the arrondissement of Bernay, in the department of the Eure, in France, containing 1398 inhabitants, who are chiefly employed in cotton manufactures.

HARDERWYK, a city of the Netherlands, in the province of Gueldres, on the Zuyder Zee. It was formerly fortified, but the walls are decayed. There is a collegiate institution of education. In 1831 it contained 4831 inhabitants, who were chiefly employed in fishing, and trading in corn, especially oats, and in wood.

HARDHEIM, a town of the circle of Maine and Tauber, in the duchy of Baden, and bailiwick of Walldurn. It stands on the river Erfa, and contains 296 houses, and 1906 inhabitants, amongst whom are linen weavers, distillers, tanners, and curriers.

HARDNESS, in bodies, a property directly opposite to fluidity, and by which they resist the impression of any other substance, sometimes in an extreme degree. Quist and others have constructed tables of the hardness of different substances. The method pursued in constructing these tables was by observing the order in which the articles tried were capable of cutting or making an impression upon one another. The following table, extracted from Magellan's edition of Cronstedt's *Mineralogy*, was taken from Quist, Bergman, and Kirwan. The first column shows the hardness, and the second the specific gravity.

Diamond from Ormus	20	3·7
Pink diamond	19	3·4
Bluish diamond	19	3·3
Yellowish diamond	19	3·3
Cubic diamond	18	3·2
Ruby	17	4·2
Pale ruby from Brazil	16	3·5
Ruby spinell	13	3·4
Deep blue sapphire	16	3·8
Ditto paler	17	3·8
Topaz	15	4·2
Whitish ditto	14	3·5
Bohemian ditto	11	2·8
Emerald	12	2·8
Garnet	12	4·4
Agate	12	2·6
Onyx	12	2·6
Sardonyx	12	2·6
Occidental amethyst	11	2·7
Crystal	11	2·6
Cornelian	11	2·7
Green jasper	11	2·7
Reddish yellow ditto	9	2·6
Schoerl	10	3·6
Tourmaline	10	3·0
Quartz	10	2·7
Opal	10	2·6
Chrysolite	10	3·7
Zeolite	8	2·1
Fluor	7	3·5
Calcareous spar	6	2·7
Gypsum	5	2·3
Chalk	3	2·7

HARDOUIN, JOHN, a Jesuit, one of the most learned, and at the same time most singular men whose names are to be found in the history of letters, was born at Quimper, in 1646. He was the son of a bookseller; and this circumstance, in furnishing him with the means of instruction, no doubt contributed to develope that desire for knowledge which at first formed the principal trait of his character. When his studies were terminated, he made application to the Jesuits, into whose body he wished to be received; but he only obtained his admission after two years of trial and examination; from which it may reasonably be conjectured that, at the age of twenty, he gave no proofs of those brilliant qualities for which he was afterwards distinguished. For some time he professed rhetoric, and then proceeded to Paris in order to complete his course of theology. He was associated with Father Garnier in classifying the books belonging to the college of Louis the Great, and in 1683 he succeeded to the office of librarian. The learned were then preparing editions of the classical authors for the use of the Dauphin; but none of them had ventured to undertake the *Natural History* of Pliny, a work the text of which has suffered more than that of almost any other ancient author, and which, to be thoroughly understood and appreciated, requires extensive knowledge of various kinds. Father Hardouin undertook this task, to which he applied himself with incredible zeal. In trying to determine the positions of the towns mentioned by Pliny, he became sensible that a knowledge of medals would assist him in clearing up different points of ancient geography; and with this view he immediately applied to the study of numismatics, in which he soon rendered himself profound. His edition of Pliny was completed in five years, and, when it appeared, made the learned and indefatigable editor known to all Europe. This work, which, according to Huet, would have occupied any five ordinary scholars fifty years, met with so flattering a reception, that Father Hardouin could not enjoy his success with moderation. The commendations which poured in upon him from all quarters intoxicated him with pride; and he no longer spoke of other antiquaries, except with the utmost contempt. The latter, again, set themselves to humble him in his turn, by depreciating his merits, and exaggerating his faults. Hardouin replied with bitterness, and in his reasonings displayed more subtlety than good faith; for rather than confess his errors, he attempted to palliate them by paradoxes, and, proceeding from one thing to another, he at length came to advance some so utterly extravagant, that, if they have not ruined his reputation, as some pretend, they have at least weakened the impression which would otherwise have been produced by his really prodigious knowledge. In one of his works, *La Chronologie expliquée par les Médailles*, he ventured to maintain that ancient history had been entirely recomposed in the thirteenth century, with the help of the works of Cicero and Pliny, the Georgics of Virgil, and the satires and epistles of Horace, the only monuments which, in his opinion, had any claim to antiquity. This strange assertion, which tended to raise doubts as to the authenticity of the sacred Scriptures themselves, caused his production to be suppressed, drew down upon him the censure of his superiors, and obliged him, in 1708, to make a retractation, but without in any degree changing his opinions, which he reproduced in several of his works. Besides his office of librarian, Hardouin filled a chair of theology; and, notwithstanding the continual distractions to which he was exposed, he passed few years without publishing some new writing, as remarkable for erudition as for novelty of the ideas. He rose, summer and winter, at four in the morning, and continued his readings until night was well advanced. Endowed with an astonishing memory, and a sagacity which made itself be remarked even in his greatest aberrations, he would have more certainly obtained the glory he coveted if he had pursued it less eagerly. He thought himself original when he was only singular; and he frequently advanced vain subtleties or extravagant paradoxes, that he might avoid repeating what others had said before him. He prepared himself for death with Christian resignation, and terminated his long career, which it would have been easy for him to render more honourable, as well as more useful, in the house of his order at Paris, on the 3d of September 1729, in the eighty-third year of his age. His epitaph, written by Jacob Vernet of Geneva, gives a very just idea of the celebrated personage, and of the strange mixture of pride and naiveté, of scepticism and solid piety, which made up his character.[1] His principal works are: 1. Nummi antiqui Populorum et Urbium illustrati, de re monetaria veterum Romanorum ex Plinii Secundi sententia, Paris, 1684, in 4to; 2. Antirrheticus de Nummis antiquis Coloniarum et Municiporum ad Jo. Foy-Vaillant, ibid. 1689, in 4to; 3. C. Plinii Secundi Historiæ Naturalis libri xxxvii. Paris, 1689, in five vols. 4to; 4. S. Joannis Chrysostomi Epistola ad Cæsarium monachum, notis illustrata, Paris, 1686, in 4to; 5. Chronologiæ ex Nummis antiquis restitutæ specimen primum, Paris, 1696, in 4to; 6. Opera Selecta, Amsterdam, 1709, 1719, in folio; 7. Conciliorum Collectio Regia Maxima, Paris, 1715 and the following years; 8. Apologie d'Homère, où l'on explique le véritable dessein de l'Iliade, et la Théo-mythologie, Paris, 1716, in 12mo; 9. Opera Varia Posthuma, Amsterdam, 1733, in folio; 10. Commentarius in Novum Testamentum, Amsterdam, 1742, in folio; 11. Prolegomena ad censuram Scriptorum veterum, London, 1766, in 8vo; and, 12. a very great number of Dissertations, chiefly on Medals, in the *Mémoires de Trevoux*. (A.)

HARDWICKE. See YORK.

HARE. See MAMMALIA.

HARE, *Dr Francis*, an English bishop, the date of whose birth is unknown, but who was bred at Eton School, and from that foundation became a member of King's College, Cambridge, where he had the tuition of the Marquis of Blandford, only son of the illustrious Duke of Marlborough, who had appointed him chaplain-general to the army. He afterwards obtained the deanery of Worcester, and was thence promoted to the bishoprick of Chichester, which he held with the deanery of St Paul's till his death, which happened in 1740. Owing to party prejudices, he was dismissed from his office as chaplain to George I. in 1718, along with Dr Moss and Dr Sherlock, persons distinguished for talents and learning. About the end of Queen Anne's reign, he published a remarkable pamphlet, entitled The Difficulties and Discouragements attending the Study of the Scriptures, in the way of private judgment, in order to show, that since such a study of the Scriptures is an indispensable duty, it concerns all Christian societies to remove, as much as possible, those discouragements. He also published many pieces against Bishop Hoadley, in the Bangorian Controversy, as it was called, besides other learned works, which, after his death, were collected and published in four volumes 8vo. He likewise published an edition of Terence, with notes, in 4to; and the book of Psalms in Hebrew, 4to. In this last work he pretends to have discovered the Hebrew metre, which was supposed to be irretrievably lost. But his hypothesis, though defended by some, has been confuted by several learned men, particularly by Dr Lowth in his *Metricæ Hareanæ brevis Confutatio*, annexed to his lectures *De Sacra Poesi Hebræorum*.

HAREWOOD, a market-town of the wapentake of Skyrack, in the west riding of Yorkshire, 204 miles from

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[1] Naked, unvarnished truth is a rare ingredient in epitaphs. The following, however, which is that alluded to in the text, presents, in this respect, a remarkable exception:—

In expectatione judicii
Hic jacet hominum paradoxotatos
Natione Gallus, religione jesuita,
Orbis litterati portentum
Venerandæ antiquitatis cultor et deprædator
Docte febricitans
Somnia et inaudita commenta vigilans edidit.
Scepticum pie egit
Credulitate puer
Audacia juvenis
Deliriis senex,
Verbo dicam, hic jacet Harduinus.

London. It is situated on the beautiful river Wharfe, and is chiefly remarkable for the magnificent castle, the ancient residence of the Lascelles family, on whose head the title of Earl of Harewood has been conferred. The population amounted in 1801 to 707, in 1811 to 771, in 1821 to 849, and in 1831 to 894.

HARFLEUR, a sea-port of the arrondissement of Havre de Grace, in the department of the Lower Seine, in France. It is situated on the river Lezgarde, at the end of a valley between two mountains which terminate on the Seine. It contains about 400 houses, and 1862 inhabitants. There are several establishments for refining sugar, and some manufactures of china-ware. It is said to be the place where William the Conqueror embarked on his successful invasion of England. Long. 0. 6. 22. E. Lat. 49. 30. 23. N.

HARIHARA, a town and fortress of Southern Hindustan, in the Balaghaut ceded territories, and province of Bejapore, situated on the south-east bank of the Toombuddra river. In the fort there is a celebrated temple of Vishnu, and among the inhabitants there are many of low caste. In this vicinity the inhabitants are poor, and never marry, owing to the expense of the ceremony. Not many of the women, however, live in a state of celibacy. The practice of polygamy is common amongst the rich. The inhabitants in the neighbourhood are said to be noted for their stupidity, in which reproach the Brahmins are included; and many ridiculous anecdotes are related concerning them. The place being situated on the confines of two countries, has often changed masters. After the defeat of Ram Rajah, and the destruction of the Bijanagur sovereignty, it became subject to the Adil Shahee dynasty of Bejapore. On the destruction of the dynasty by the Moguls, it fell into the hands of the nabob of Savanoor, from whom it was afterwards taken by the rajah of Ikery, who was expelled by the Mahrattas; and these, after a period of fifteen years, were driven out by Hyder. On the death of Tippoo, and the division of his country, it was one of the districts ceded to the British, and is now included in the collectorship of Bellary. Long. 75. 48. E. Lat. 14. 24. N.

HARIORPOOR, a town of Hindustan, in the province of Orissa, and the capital of the district of Mohurbunge. It is possessed by independent zemindars, and is fifty miles south-west from Midnapoor. Long. 86. 52. E. Lat. 21. 52. N.

HARIOT, or HERIOT, in *Law*, a due belonging to a lord at the death of his tenant, consisting of the best beast, either horse, or cow, or ox, which he had at the time of his death; and in some manors the best goods, piece of plate, &c. were called hariots.

HARIOT, *Thomas*. See HARRIOT.

HARLECH, a market-town of Merionethshire, in North Wales, within the hundred of Ardudwy. It is situated on the Irish Channel, with an ancient castle in good preservation, originally built by King Edward I., which was the last fortress that surrendered to the parliamentary forces in the civil wars of Charles I. There is a small market held on Saturdays.

HARLEIAN COLLECTION, a most valuable collection of useful and curious manuscripts, commenced about the end of the seventeenth century, by Robert Harley of Brampton Bryan, in Herefordshire, afterwards Earl of Oxford, and Lord High Treasurer. He procured his first considerable collection in August 1705, and in less than ten years he got together nearly two thousand five hundred rare and curious manuscripts. Soon after this, Dr George Hickes, Mr Anstis, Bishop Nicholson, and many other eminent antiquaries, not only offered him their assistance in procuring manuscripts, but presented him with several very valuable ones. Being thus encouraged to persevere by the success he met with, he kept many persons employed abroad in purchasing manuscripts for him, and furnished them with written instructions for their guidance. By these means the collection was, in the year 1721, increased to near six thousand books, fourteen thousand original charters, and five hundred rolls. On the 21st of May 1724 Lord Oxford died; but his son Edward, who succeeded to his honours and estate, still further enlarged the collection; so that when he died on the 16th of June 1741, it consisted of eight thousand volumes, several of them containing distinct and independent treatises, besides many loose papers which have since been arranged and bound up in volumes, and above forty thousand original rolls, charters, letters-patent, grants, and other deeds and instruments of great antiquity. The principal design of making this collection was the establishment of a manuscript English historical library, and the rescuing from destruction such national records as had eluded the diligence of preceding collectors. But Lord Oxford's plan was more extensive; for his collection also abounds with curious manuscripts in every science. This collection was purchased by government, and deposited in the British Museum. There is a printed catalogue of its contents.

HARLEM ISLE, an island of about four miles in circumference, lying off the north-west coast of the island of Ceylon, and affording excellent pasture for horses. Long. 79. 54. E. Lat. 9. 41. N.

HARLEQUIN, in the Italian comedy, a buffoon, dressed in parti-coloured clothes, and answering to our merry-andrew or jack-pudding. We have also introduced harlequin upon our stage, and this is one of the standing characters in the modern grotesque or pantomime entertainments. The term is said to have taken its origin from a famous Italian comedian who appeared in Paris under Henry III., and, from frequenting the house of M. de Harlay, was called by his companions Harlequino, or little Harlay; a name which has descended to those of the same rank and profession.

HARLESTON, a town of Norfolk, in the hundred of Earsham, a portion of the parish of Redenhall. It is situated on the river Waveney, 100 miles from London, and there is a good corn market on Thursday. The population amounted in 1801 to 1459, in 1811 to 1538, in 1821 to 1641, and in 1831 to 1784.

HARLEY, ROBERT, Earl of Oxford and Mortimer, was the eldest son of Sir Edward Harley, and born in 1661. At the Revolution, Sir Edward and his son raised a troop of horse at their own expense; and after the accession of William and Mary he obtained a seat in parliament. His promotion was rapid. In 1702 he was chosen Speaker of the House of Commons; in 1704, he was sworn of Queen Anne's privy council, and the same year made secretary of state; in 1706 he acted as one of the commissioners for the treaty of union with Scotland; and in 1710 he was appointed a commissioner of the treasury, and chancellor and under-treasurer of the exchequer. A daring attempt was made on his life on the 8th of March 1711, by the Marquis of Guiscard, a Frenchman, who, when under an examination before a committee of the privy council, stabbed him with a penknife. Of this wound, however, he soon recovered; and he was the same year created Earl of Oxford and lord high treasurer, which office he resigned immediately before the queen's death. In 1715 he was impeached of high treason, and committed to the Tower; but he was cleared of the charge by trial, and died in 1724. He was not only an encourager of literature, but the greatest collector in his time of curious books and manuscripts. See HARLEIAN COLLECTION.

HARLING. See HERLING.

HARLING, EAST, a town of Norfolk, in the hundred of Guiltcross, ninety-three miles from London, with a market on Thursdays. The inhabitants amounted in 1801 to 674, in 1811 to 752, in 1821 to 867, and in 1831 to 1031.

HARLINGEN, a city of the Netherlands, in the province of Friesland. It is strongly fortified, stands on the Zuyder Zee, at the mouth of the river Blies, and is surrounded by a fertile district. It has a good harbour, but large ships must be lightened before they can enter it. It contains five churches, a very fine admiralty, and about 1000 houses, with (in 1831) 7537 inhabitants. The streets are broad, straight, and clean. There are many manufactures carried on, especially of cloth, half linen half cotton, and of sailcloth. There is also much trade in bricks and tiles, and in timber of all kinds. Long. 5. 36. 30. E. Lat. 53. 17. 20. N.

HARLOT, a woman given to incontinency. The word is supposed by some to be the diminutive *whorelet*, but others derive it from *Arletta*, mistress to Robert duke of Normandy, and mother to William the Conqueror. Camden, however, derives it from *Arlotha*, concubine to William the Conqueror. Harlots were tolerated amongst Jews, Greeks, and Romans. Fornication indeed was prohibited amongst the Jews, under severe penalties; but those they explained as extending only to women of their own nation. The public stews were therefore stocked with foreign prostitutes, who seem to have been taken under the protection of government. This appears to be the reason why the expression *strange women* is often found to signify a harlot. At Athens the prostitutes were generally strangers; and such as debauched an Athenian female were liable to a severe penalty. Corinth was a remarkable nursery of loose women, and gave birth to the noted Laïs. Their accomplishments were oftentimes great, extending to philosophy, dancing, singing, rhetoric, and other acquisitions. Aspasia, the mistress of Pericles, was admired by Socrates for her learning. The more accomplished females of this description frequently amassed large fortunes. A remarkable instance of this we have in Phryne, who offered to rebuild the walls of Thebes, when destroyed by Alexander, on condition that they would perpetuate her memory and profession by an inscription.

HARLOW, a town of the county of Essex, twenty-three miles from London, in the hundred of the same name. It had formerly a market, but of late years it has not been frequented. The inhabitants amounted in 1801 to 1514, in 1811 to 1695, in 1821 to 1928, and in 1831 to 2101.

HARMATTAN, the name of a remarkable periodical wind which blows from the interior parts of Africa towards the Atlantic Ocean. Of this wind we have an account (*Philosophical Transactions*, vol. lxxi.) furnished by Mr Norris, a gentleman who had frequent opportunities of observing its singular properties and effects.

On that part of the coast of Africa which lies between Cape Verde and Cape Lopez, an easterly wind prevails during the months of December, January, and February, which by the Fantees, a nation on the Gold Coast, is called the *Harmattan*. Cape Verde is in 15° north latitude, and Cape Lopez in 1° south latitude; and the coast between these two capes runs in an oblique direction nearly from west-south-west to east-south-east, forming a range of upwards of 2100 miles. At the Isles de Los, which are a little to the northward of Sierra Leone, and to the southward of Cape Verde, it blows from the east-south-east, on the Gold Coast from the north-east, and at Cape Lopez, and the river Gabon, from the north-north-east. This wind is by the French and Portuguese, who frequent the Gold Coast, called simply the north-east wind, the quarter from which it blows. The English, who sometimes borrow words and phrases from the Fantee language, which is less guttural and more harmonious than that of their neighbours, adopt the Fantee word *harmattan*.

The harmattan comes on to blow at any hour of the day, at any time of the tide, or at any period of the moon, and continues sometimes only a day or two, sometimes five or six days; but it has been known to last fifteen or sixteen days. There are generally three or four returns of it every season. It blows with a moderate force, not quite so strong as the sea-breeze, which every day sets in during the fair season from the west, west-south-west, and south-west, but somewhat stronger than the land wind at night from the north and north-north-west.

A fog or haze is one of the peculiarities which always accompanies the harmattan. The gloom occasioned by this fog is so great, as sometimes to obscure objects near at hand. The English fort at Whyddah stands about midway between the French and Portuguese forts, and not quite a quarter of a mile from either, yet often neither of the other forts can be discovered from the intermediate one. The sun, concealed during the greater part of the day, appears only a few hours about noon, and is then of a mild red, exciting no painful sensation in the eye.

Extreme dryness is another property of this wind. No dew falls during the continuance of the harmattan; nor is there the least appearance of moisture in the atmosphere. Vegetables of every kind are much injured; all tender plants, and most of the productions of the garden, are destroyed; the grass withers, and becomes dry like hay; the vigorous evergreens likewise feel its pernicious influence; the branches of the lemon, orange, and lime trees droop; the leaves become flaccid, wither, and, if the harmattan continues to blow for ten or twelve days, are so parched as to be easily rubbed to dust between the fingers; and the fruit of these trees, deprived of its nourishment, and stinted in its growth, only *appears* to ripen, becoming, in fact, yellow and dry, without acquiring half the usual size. The natives take the opportunity of the extreme dryness of the grass and young trees to set fire to them, especially near the roads, not only to keep those roads open to travellers, but to destroy the shelter which long grass, and thickets of young trees, would afford to skulking parties of their enemies. A fire thus lighted spreads with such rapidity as to endanger those who travel. In this situation a common method of escape is, on discovering a fire to windward, to set the grass on fire to leeward, and then follow your own fire. There are other extraordinary effects produced by the extreme dryness of the harmattan.

The parching effects of this wind are likewise evident on the external parts of the body. The eyes, nostrils, lips, and palate, are rendered dry and uneasy, and drink is often required, not so much to quench thirst, as to remove a painful aridity in the fauces. The lips and nose become sore, and even chapped; and though the air be cool, yet there is a troublesome sensation of prickling heat on the skin. If the harmattan continues four or five days, the scarf skin peels off, first from the hands and face, and afterwards from the other parts of the body, if it continue a day or two longer. Mr Norris observed, that when by exercise sweat was excited on those parts which were covered by his clothes from the weather, it was peculiarly acrid, and tasted, on applying his tongue to his arm, something like spirits of hartshorn diluted with water.

Salubrity forms a third peculiarity of the harmattan. Though this wind is so very prejudicial to vegetable life, and occasions such disagreeable parching effects on the human species, yet it is highly conducive to health. Those labouring under fluxes and intermitting fevers generally recover during an harmattan. Those weakened by fevers, and sinking under evacuations for the cure of them, particularly bleeding, which is often injudiciously repeated, have their lives saved, and vigour restored, in spite of the doctor. It stops the progress of epidemics; the smallpox and intermittent fevers not only disappear, but those labouring under these diseases, when an harmattan comes on, are almost certain of a speedy recovery.

This account, however, differs from that given by Dr Lind, who calls the harmattan a malignant and fatal wind. (See his *Diseases of Hot Climates.*)

HARMODIUS and Aristogeiton, two Athenians, whose names are connected with one of the brightest and most celebrated deeds of Grecian story. The noble qualities of Pisistratus, and the mildness of his government, seem to have reconciled the Athenians to the loss of their independence, and enabled that prince to transmit his power unimpaired to his two sons Hippias and Hipparchus. It would appear that at first these young princes wisely followed the footsteps of their father, and that all classes hailed with joy their ascent to the throne. But this feeling did not long continue; for the possession of unrestrained power soon perverted the minds of the princes, and their tyrannical conduct excited conspiracies against them. The one of which we have the most circumstantial account is that headed by Harmodius and Aristogeiton; but the cause of its breaking out is variously stated by different authors. According to Ælian, the refusal of Hipparchus to admit the sister of Harmodius to the Panathenaic festival was the reason; whilst Plato states one of a less honourable kind. But be this as it may, Harmodius slew Hipparchus, 514 B. C., in the midst of his guards, and was himself cut to pieces on the spot. Aristogeiton was seized by Hippias, and torture applied, with the view of discovering his associates. Aristogeiton accused all the friends of Hippias, and when they had been put to death, informed the tyrant of the stratagem which he had employed (Polyæn. *Strat.* i. 22; Senec. *de Ira*, ii. 23). Statues were afterwards erected to their honour, which were still in existence in the time of Pausanias, A. D. 174 (Pausan. i. 8, 5), and a law was passed which forbade a slave to receive either of their names. (Gell. ix. 2.)

HARMONIA, in fabulous history, the wife of Cadmus, was, according to some, daughter of Jupiter and Electra, but according to others, of Mars and Venus. Her marriage was a remarkable event in Grecian fable, and rivalled in magnificence those of Perseus, Pirithous, and Peleus. The gods honoured it with their presence, and from them she received a magnificent robe (*peplum*) and necklace, the workmanship of Vulcan. But these divine gifts afterwards proved the cause of many catastrophes. (See Alcmæon, Eriphyle.) Harmonia had four daughters, Semele, Ino, Agave, and Autonoe, and a son Polydorus. When every species of calamity overwhelmed the race of Cadmus at Thebes, she attended her husband to Epirus, and was changed into a serpent. (Apollodor. iii. 4, 5; Diodor. Sic. iv. 66, v. 49; Eustath.; Dionys. Peri. 391.)

HARMONIC signifies in general any thing belonging to harmony, though in our language the adjective is more properly written *harmonical*. In this case it may be applied to the harmonical divisions, or to a monochord, or, in a word, to consonances in general. As a substantive neuter, it imports all the concomitant or accessary sounds which, upon the principles resulting from the experiments made on sonorous bodies, attend any given sound whatever, and render it appreciable. Thus all the aliquot parts of a musical string produce harmonical sounds, or harmonics.

HARMONICA. This word, when originally appropriated by Dr Franklin to that peculiar form or mode of musical glasses which he himself, after a number of happy experiments, had constituted, was written *armonica*. In this place, however, we have ventured to restore it to its native plenitude of sound. It is derived from the Greek word αϱμονια. The radical word is ἀϱειν, *to suit* or *fit one thing to another*. By the word ἀϱμονια the Greeks expressed *aptitudes* of various kinds; and from the use which they made of that expression, we have reason to conclude that it was intended to import the highest degree of refinement and delicacy in those relations which it was meant to indicate. Relations or aptitudes of sound, in particular, were understood by it; and in this view Dr Franklin could not have selected a name more expressive of its nature and genius, for the instrument which we are now to describe; as, perhaps, no musical tones can be finer, or susceptible of juster concords, than those which it produces.

The doctor, in his letter to Beccaria, has given a minute account of the harmonica; nor does it appear that his successors have either sensibly improved, or more accurately delineated, that instrument. The detail of his own improvements, therefore, shall be given in his own words.

"Perhaps," says he, "it may be agreeable to you, as you live in a musical country, to have an account of the new instrument lately added here to the great number that charming science was possessed of before. As it is an instrument that seems peculiarly adapted to Italian music, especially that of the soft and plaintive kind, I will endeavour to give you such a description of it, and of the manner of constructing it, that you or any of your friends may be enabled to imitate it, if you incline so to do, without being at the expense and trouble of the many experiments I have made in endeavouring to bring it to its present perfection.

"You have doubtless heard the sweet tone that is drawn from a drinking glass, by pressing a wet finger round its brim. One Mr Puckeridge, a gentleman from Ireland, was the first who thought of playing tunes formed of these tones. He collected a number of glasses of different sizes; fixed them near each other on a table; and tuned them, by putting into them water, more or less as each note required. The tones were brought out by pressing his fingers round their brims. He was unfortunately burnt here, with his instrument, in a fire which consumed the house he lived in. Mr E. Delaval, a most ingenious member of our Royal Society, made one in imitation of it, with a better choice and form of glasses, which was the first I saw or heard. Being charmed with the sweetness of its tones and the music he produced from it, I wished to see the glasses disposed in a more convenient form, and brought together in a narrower compass, so as to admit of a greater number of tones, and all within reach of hand to a person sitting before the instrument; which I accomplished, after various intermediate trials, and less commodious forms, both of glasses and construction, in the following manner.

"The glasses are blown as near as possible in the form of hemispheres, having each an open neck or socket in the middle. The thickness of the glass near the brim is about the tenth of an inch, or hardly quite so much, but thicker as it comes nearer the neck, which in the largest glasses is about an inch deep, and an inch and a half wide within; these dimensions lessening as the glasses themselves diminish in size, except that the neck of the smallest ought not to be shorter than half an inch. The largest glass is nine inches diameter, and the smallest three inches. Between these there are twenty-three different sizes, differing from each other a quarter of an inch in diameter. To make a single instrument, there should be at least six glasses blown of each size; and out of this number one may probably pick thirty-seven glasses (which are sufficient for three octaves with all the semitones), that will be each either the note one wants, or a little sharper than that note, and all fitting so well into each other, as to taper pretty regularly from the largest to the smallest. It is true there are not thirty-seven sizes; but it often happens that two of the same size differ a note or half a note in tone, by reason of a difference in thickness; and these may be placed one in the other, without sensibly hurting the regularity of the taper form.

"The glasses being chosen, and every one marked with a diamond the note you intend it for, they are to be tuned by diminishing the thickness of those that are too sharp. This is done by grinding them round from the neck towards the brim, the breadth of one or two inches, as may be required, often trying the glass by a well-tuned harpsichord, comparing the note drawn from the glass by your finger with the note you want, as sounded by that string of the harpsichord. When you come near the matter, be careful to wipe the glass clean and dry before each trial; because the tone is something flatter when the glass is wet than it will be when dry; and grinding a very little between each trial, you will thereby tune to great exactness. The more care is necessary in this, because, if you go below your required tone, there is no sharpening it again, but by grinding somewhat off the brim, which will afterwards require polishing, and thus increase the trouble.

"The glasses being thus tuned, you are to be provided with a case for them, and a spindle on which they are to be fixed. My case is about three feet long, eleven inches every way wide within at the biggest end, and five inches at the smallest end; for it tapers all the way, to adapt it better to the conical figure of the set of glasses. This case opens in the middle of its height, and the upper part turns up by hinges fixed behind. The spindle is of hard iron, lies horizontally from end to end of the box within, exactly in the middle, and is made to turn on brass gudgeons at each end. It is round, an inch diameter at the thickest end, and tapering to a quarter of an inch at the smallest. A square shank comes from its upper end through the box, on which shank a wheel is fixed by a screw. This wheel serves as a fly to make the motion equable, when the spindle, with the glasses, is turned by the foot like a spinning-wheel. My wheel is of mahogany, eighteen inches diameter, and pretty thick, so as to conceal near its circumference about twenty-five pounds of lead. An ivory pin is fixed in the face of this wheel, about four inches from the axis. Over the neck of this pin is put the loop of the string that comes up from the moveable step to give it motion. The case stands on a neat frame with four legs.

"To fix the glasses on the spindle, a cork is first to be fitted in each neck pretty tight, and projecting a little without the neck, that the neck of one may not touch the inside of another when put together, for that would make a jarring. These corks are to be perforated with holes of different diameters, so as to suit that part of the spindle on which they are to be fixed. When a glass is put on, by holding it stiffly between both hands, while another turns the spindle, it may be gradually brought to its place. But care must be taken that the hole be not too small, lest, in forcing it up, the neck should split; nor too large, lest the glass, not being firmly fixed, should turn or move on the spindle, so as to touch or jar against its neighbouring glass. The glasses thus are placed one in another; the largest on the biggest end of the spindle, which is to the left hand. The neck of this glass is towards the wheel; and the next goes into it in the same position, only about an inch of its brim appearing beyond the brim of the first; thus proceeding, every glass when fixed shows about an inch of its brim (or three quarters of an inch, or half an inch, as they grow smaller) beyond the brim of the glass that contains it; and it is from these exposed parts of each glass that the tone is drawn, by laying a finger on one of them as the spindle and glasses turn round.

"My largest glass is G, a little below the reach of a common voice, and my highest G, including three complete octaves. To distinguish the glasses more readily to the eye, I have painted the apparent parts of the glasses within side, every semitone white, and the other notes of the octave with the seven prismatic colours; viz. C red, D orange, E yellow, F green, G blue, A indigo, B purple, and G red again; so that the glasses of the same colour (the white excepted) are always octaves to each other.

"This instrument is played upon by sitting before the middle of the set of glasses, as before the keys of a harpsichord, turning them with the foot, and wetting them now and then with a spunge and clean water. The fingers should be first a little soaked in water, and quite free from all greasiness: a little fine chalk upon them is sometimes useful, to make them catch the glass and bring out the tone more readily. Both hands are used, by which means different parts are played together. Observe, that the tones are best drawn out when the glasses turn *from* the ends of the fingers, not when they turn *to* them.

"The advantages of this instrument are, that its tones are incomparably sweet beyond those of any other; that they may be swelled and softened at pleasure by stronger or weaker pressures of the finger, and continued to any length; and that the instrument, being once well tuned, never again wants tuning."

HARMONY, according to the modern definition of the word, is a succession of chords, written according to the laws of fundamental progression and modulation. Harmony is a generic term when it signifies the doctrine of chords; but we also make use of the expression to indicate the effect of a combination of sounds on the ear.

The history of harmony forms an interesting branch of musical knowledge. In tracing its progress, we observe an almost uninterrupted succession of discoveries in the aggregate properties of sounds. These discoveries are referrible to the early felt and increasing desire to create novelty of effect; to the boldness of human skill and invention, to the improvement of instrumental music, and, without doubt, also to the results of chance. The history of the theory is necessarily dependent upon that of the practice of harmony; for, in proportion as composers have attempted new combinations, it becomes more difficult to trace their origin and reduce them to a general system. The innumerable modifications which chords undergo so essentially change their primitive forms, that we can scarcely wonder at the multiplicity of errors which have been committed in endeavouring to classify them.

We could almost persuade ourselves that harmony, from its being so natural to man, must have been universally understood in all ages. We learn, however, that the ancients had scarcely any idea of it; and even now the oriental nations are ignorant of harmonic relations, and our music affects them with disagreeable sensations. The knowledge which the Greeks and Romans had of harmony has been the subject of much controversy, but to little purpose. Some treatises on music, written since the time of Alexander the Great, and towards the decline of the Grecian empire, have come down to us; but in none of them do we find the word *harmony* employed in the sense in which we now understand it. The chant or song of an ode by Pindar, a hymn to Nemesis, and a few other fragments, without chords of any kind, are all that have been preserved as specimens of ancient Greek music. Moreover, the form of ancient instruments, and the small number of their strings, all tend to render probable the opinion of those who doubt the employment of harmony in the music of the ancients. Their opponents contend that harmony exists as an elementary part of our nature, and must have been comprehended in the most primitive times; but this opinion we are strongly induced to disregard, from the fact, that to this day the Turks, Arabians, and Chinese are unacquainted with the simplest union of harmonies.

The first indications of an approach to harmony appeared among the writers of the middle ages, towards the ninth century; but it remained in a state of barbarism till about the middle of the fourteenth century, when some Italian musicians began to mould it into a somewhat agreeable form. Amongst those who distinguished themselves at this remote epoch were, Francesco Cieco, so called from his blindness, and Francesco degli Organi, so designated from his skill in organ-playing, and Jacomo da Bologna. Harmony was still further elucidated by two French musicians, Guillaume Dufay and Giles Binchois, and by John Dunstable, an Englishman, who lived about the early part of the fifteenth century. The advancement of this science must, however, for a long period have been of small extent, and still less interest; for, up to the close of the sixteenth century, we find that consonant chords, and certain discordant prolongations, or suspensions as they are now called, were all that were known and used in music. Composed of such elements, harmony was too limited in its operation to become the groundwork of any intelligible science. It appears indeed probable, that at this dark period of musical history, no systematic connection was even supposed to exist between the chords, or the tones of which they consisted. The intervals were considered only in a double relation; and the art of writing them, according to certain conditions, comprehended the whole doctrine of the schools.

Towards the year 1590, a Venetian called Monteverde introduced the fundamental discord, and immediately a new impulse was given to the art, which attracted the attention of musicians. About fifteen years after this period, Monteverde's invention was disputed by Viadana and some Germans, who represented harmony by figures, and considered the nature of musical sounds separately. It was then that the term *chord* was introduced into the vocabulary of music; and harmony, or the *basso continuo* as it was styled, became a branch of scientific study. For nearly a century, no further advances were made, although a number of elementary works had been published during that interval, to explain the intricacies of the new science.

In 1699, Sauveur, a French geometrician, entertained such a passion for music, that it became the object of all his pursuits. The doctrine of sounds appeared to him worthy of mathematical analysis, and his researches were so successful, that he founded the science called Acoustics. Availing himself of the labours of Father Mersenne, Sauveur also found that every sound, however simple, was always accompanied with other sounds less sensible. With this experiment Rameau set out, and upon it formed the basis of his harmonic system, which he demonstrated in a series of works published in the early part of the last century. Tartini, although following a different mode of investigation, arrived at conclusions similar to those of Rameau. The latter supposes the treble to be generated by the bass; the former makes the bass result from the treble. Rameau deduces harmony from melody; Tartini, on the contrary, derives melody from harmony. To determine from which of the two schools the best performances are likely to proceed, no more is necessary than to investigate the end of the composer, and discover whether the air is made for the accompaniment, or the accompaniment for the air. Rousseau, in his *Musical Dictionary*, gives a decided preference to the system of Tartini; but this celebrated author was not very profoundly versed in these matters. D'Alembert gave a familiar explanation of the doctrines of Rameau, and in 1752 published his *Elements of the Theory and Practice of Music*, in which an apparent order and clearness is imparted to a system essentially defective. Marpurg attempted to introduce these doctrines into Germany without success. It is almost unnecessary to add, that they are now universally rejected by all modern theorists.

It was reserved for Kirnberger, a learned musician, to discover the theory of suspensions, and explain, in his *Wahren Grundsätze sum gebrauch der Harmonie*, published in 1773, the laws of harmony, in a manner at once natural and satisfactory. Catel has reproduced this system in a clear and simple form, in his treatise on harmony, written for the conservatory of music in France. Albretzberger, Reicha, and several other eminent theorists, have propagated and elucidated the doctrines of Kirnberger with ingenuity and ability, and by their elaborate works have largely promoted the practical uses of harmony. In England the science has been as yet very imperfectly explained. One of the best works we have met with in our language is by Kollmann, whose *Treatise on Harmony* displays admirable systematic arrangement, although his expositions are rather dry and verbose. See MUSIC. (Z. Z.)

HARMONY *of the Spheres*, or *Celestial Harmony*, a sort of music much talked of by many of the ancient philosophers and fathers, and supposed to have been produced by the sweetly-tuned motions of the stars and planets. This harmony they attributed to the various proportionate impressions of the heavenly globes upon one another, acting at proper intervals. It is impossible, according to them, that such prodigiously large bodies, moving with so much rapidity, should be silent. On the contrary, the atmosphere, continually impelled by them, must yield a set of sounds proportionate to the impression it receives; and as they do not all run the same circuit, nor revolve with the same velocity, the different tones arising from the diversity of motions, directed by the hand of the Almighty, must form an admirable symphony or concert. They therefore supposed that the moon, as being the lowest of the planets, corresponded to *mi*, Mercury to *fa*, Venus to *sol*, the Sun to *la*, Mars to *si*, Jupiter to *ut*, Saturn to *re*, and the orb of the fixed stars, as being the highest of all, to *mi*, or the octave.

HARMOSTES, or HARMOSTA, in *Antiquity*, a sort of magistrate amongst the Spartans. Of these there were several, whose business it was to look to the building of citadels, and repairing the forts and fortifications of the cities. The word is ἁρμοστης, formed from ἁρμοζω, *apto, concino*, to adapt or concert.

HARMOSYNIANS, ἁρμοσυνοι, in *Antiquity*, were magistrates amongst the Spartans, who, after the death of Lycurgus, were appointed to enforce the observance of that law of the Spartan legislator which required married women to wear a veil when they appeared in the streets, by which they were distinguished from single females, who were allowed to appear abroad with their faces uncovered.

HARNESS, a complete armour, or the whole equipage and accoutrements of a cavalier heavily armed. The word is formed from the French *harnois*, which some derive from the Greek ἀρνακις, *a lamb's skin*, because they anciently covered themselves therewith. Du Cange observes, that the word *harnesium* is used in the corrupt Latin in the same sense, and that it comes from the High Dutch *harnas* or *harnisch*; but others derive it from the Italian *arnese*, and others from the Celtic *harnes*, a cuirass.

HARNESS is also used to signify the furniture put on a horse to draw in a coach or waggon, or other carriage; such as collars, leathers, traces, and so forth.

HARO, a small town of Spain, in Old Castille, on the Ebro, surrounded with walls. Long. 2. 23. W. Lat. 42. 40. N.

HARO, *Harou*, or *Harol*, in the Norman customs. *Cla-*

mour de haro is a cry or formula of invoking the assistance of justice against the violence of some offender, who upon hearing the word *haro* is obliged to desist, on pain of being severely punished for his outrage, and to go with the party before the judge. The word is commonly derived from *ha* and *roul*, as being supposed an invocation of the sovereign power, to assist the weak against the strong, because Raoul, first duke of Normandy, rendered himself venerable to his subjects by the severity of his justice, and hence they invoked him even after his death when they suffered any oppression. Some derive it from Harola, king of Denmark, who in the year 826 was made grand conservator of justice at Mentz; and others from the Danish *aa rau*, signifying *help me*, a cry raised by the Normans in flying from a king of Denmark named Roux, who made himself duke of Normandy. The letters of the French chancery formerly bore *Nonobstant clameur de haro*, &c. The haro had anciently such vast power, that a poor man of the city of Caen named Asselin, in virtue thereof, arrested the corpse of William the Conqueror, in the middle of the funeral procession, till such time as his son Henry had paid the value of the land in question, being that on which the chapel was built in which he was interred.

HARP, a musical instrument of the stringed kind, of a triangular figure, and held upright between the legs of the performer.

Papias and Du Cange conceive the harp to have taken its name from the Arpii, a people of Italy, who were supposed to have been the first who invented it, and from whom it was borrowed by other nations. Ménage derives the word from the Latin *harpa*, and that from the German *herp* or *harp;* others deduce it from the Latin *carpo*, because touched or thrummed with the fingers. Dr Hickes derives it from *harpa* or *hearpa*, which signifies the same thing. The English priest who wrote the life of St Dunstan, and who lived in the tenth century, says (cap. ii. n. 12), *Sumpsit secum ex more citharam suam, quam paterna lingua* hearpam *vocamus;* thus intimating that the word is of Anglo-Saxon origin.

The harp was the favourite musical instrument of the Britons and other northern nations in the middle ages. This is evident from their laws, and from every passage in their history in which there is any allusion to music. By the laws of Wales, a harp was one of the three things which were necessary to constitute a gentleman or a freeman; and none could pretend to that character who had not one of these favourite instruments, or could not play upon it. By the same laws, to prevent slaves from pretending to be gentlemen, it was expressly forbidden to teach or to permit them to play upon the harp; and none but the king, the king's musicians, and gentlemen, were allowed to have harps in their possession. A gentleman's harp was not liable to be seized for debt, because the want of it would have degraded him from his rank, and reduced him to the condition of a slave. The harp was in no less estimation, and in universal use, amongst the Saxons and Danes. Those who played this instrument were declared gentlemen by law; their persons were esteemed inviolable, and secured from injuries by very severe penalties; and they were readily admitted into the highest company, and treated with distinguished marks of respect wherever they appeared.

There is some diversity in the structure of harps. That which is called the *triple harp* has ninety-seven strings or chords in three rows, extending from C in the tenor cliff to double G in alt, making five octaves; the middle row is for the semitones, and the two outside rows are perfect unisons. On the bass side, which is played with the right hand, there are thirty-six strings; on the treble side, twenty-six; and in the middle row thirty-five strings. There are two rows of pins or screws on the right side, serving to keep the strings tight in their holes, which are fastened at the other end to three rows of pins on the upper side. The harp has been in some degree improved by the addition of eight strings to the unison, viz. from E to double F in alt. This instrument is struck with the finger and thumb of both hands. Its music is much like that of the spinet, all its strings going from semitone to semitone; and hence some have called it an *inverted spinet.* It is capable of a much greater degree of perfection than the lute.

King David is usually painted with a harp in his hands; but we have no testimony in all antiquity that the Hebrew harp, called *chinnor*, in any respect resembled ours. On a Hebrew medal of Simon Maccabæus we observe two sorts of musical instruments; but they are both of them very different from our harp, and only consist of three or four strings. All authors agree that our harp is very different from the *lyra*, *cithara*, or *barbiton* of the Romans. Fortunatus (lib. vii. carm. 8) mentions that it was an instrument in use amongst the barbarians:

> Romanusque lyra, plaudat tibi barbarus *harpa*,
> Græcus Achilliacha, crotta Britanna canat.

Bell-Harp, a musical instrument of the string kind, so called from the common players swinging it about, as a bell on its basis. It is about three feet in length; its strings, which are of no determinate number, are of brass or steel wire, fixed at one end, and stretched across the sound-board by screws fixed at the other. It takes in four octaves, according to the number of the strings, which are struck only with the thumbs, the right hand playing the treble and the left hand the bass; and in order to draw the sound the clearer, the thumbs are armed with a little wire pin. This may perhaps be the *lyra* or *cithara* of the ancients; but we find no mention made of it under the name it now bears, which must be allowed to be modern.

HARPAGINES, in *Antiquity*, were hooks of iron, hanging on the top of a pole, which being secured with chains to the masts of ships, and then let down with great velocity into the enemy's vessels, caught them up into the air. By way of defence against these machines, they covered their ships with hides, which broke and blunted the force of the iron. The harpagines, by the Greeks called ἁρπαγες, owe their invention to Anacharsis the Scythian philosopher.

HARPAGUS, one of the ablest and most confidential ministers of Astyages, king of Media, whose history is given with considerable detail by Herodotus. When Astyages, warned by an oracle, feared deposition by the hands of his grandson, Harpagus was employed to destroy the infant Cyrus, and thereby remove all his fears. But, guided rather by the dread of Mandane, the prince's mother, than by a feeling of humanity, he did not obey the command. His disobedience reached the ears of the king, and he was summoned to answer for his conduct. The king apparently yielded to the reasons he gave, but having invited him to supper, placed before him the body of his son prepared as food. Indignant at this treatment, he assisted Cyrus to dethrone his grandfather (about 561 B. C.), and having been afterwards appointed as governor of Lydia (about 540 B. C.), he reduced under subjection the cities of Ionia and the greater part of Asia Minor. (Herodotus, book i.)

HARPALUS, a Greek astronomer, the place of whose birth, and the exact period when he flourished, it is impossible to determine. He must have lived at least before the time of Meton, 433 B. C. Harpalus is known for an attempt to fix the cycle which the sun and moon require to run before they reach the point from which they started. Before his time, Cleostratus had fixed it at eight years, but he added another and made it nine. It was Meton, however, who discovered that the cycle was really nineteen years. (Festus Avienus.)

HARPIES, in Latin *Harpyiæ*, ancient goddesses, who seem to have presided over the winds and tempests, generally considered as the daughters of Thaumas and Electra (Apollod. i. 2, 6), or of Typhon (Val. Flac. iv. 515), and originally two in number, Aëllo and Ocypete, to whom was added Celæno, or, according to Hesiod, Iris. They are represented by Virgil as winged monsters, with the face of a virgin, the body of a vulture, and the feet and fingers armed with sharp claws. They carried off whatever food was placed upon the table, or spoiled it by their filth. (Virg. *Æn.* iii. 216.) They were sent by Jupiter to punish Phineas, son of Agenor, king of Salmydessus in Thrace, where they remained till they were driven away during the expedition of the Argonauts, by Zethus and Calais, when they proceeded to the islands called Strophades, where they were found by Æneas. (Pausanias, iii. 18, v. 17.)

HARPINGS, the fore-parts of the wales which encompass the bow of a ship, and are fastened to the stem, being thicker than the after-part of the wales, in order to reinforce the ship in this place, where she sustains the greatest shock of resistance in plunging into the sea, or dividing it, under a great pressure of sail.

HARPOCRATES, in *Mythology*, the son of Isis and Osiris, an Egyptian deity, whose distinguishing attribute it is, that he is represented with his fingers applied to his mouth, denoting that he is the god of silence. The statue of this idol was fixed in the entrance of most of the Egyptian temples, and he was commonly exhibited under the figure of a young man naked, crowned with an Egyptian mitre, holding in one hand a cornucopia, in the other the flower of the lotus, and sometimes bearing a quiver.

HARPOCRATION, a grammarian of Alexandria, in Egypt, respecting whose personal history we are entirely ignorant, and even the period during which he flourished is not clearly ascertained. Some have considered him to be the Greek instructor of the Emperor Lucius Verus, mentioned by Julius Capitolinus (Life of Verus, c. 2), whilst others have made him live so late as A. D. 360, because several passages are found in his work taken from Athenæus, who is supposed to have flourished about A. D. 300. But however this may be, we are indebted to him for a very useful, though not very complete Dictionary on the ten chief Attic Orators. It contains, though not in strictly alphabetical arrangement, historical notices of more or less known persons or circumstances, as also explanations of phrases derived from common life, and of legal terms. Its value perhaps has been enhanced by the accidental circumstance of all the dictionaries on the Greek orators, of which the ancients possessed many, being lost. Suidas and the author of the Etymologicum Magnum have both borrowed from this work. He is also the author of a work entitled 'Ανθηρων Συναγωγη, a collection of beautiful passages from various authors. The first edition was published along with Ulpian's Scholia to the Philippics of Demosthenes, by Aldus, Ven. 1503. Perhaps the best edition is that of Diudorf, Leipsic, 1824, 2 vols.; but a later edition has been published by Bekker, Berlin, 1833.

HARPONULLY, a district in the south of India, bounded on the north by the Toombuddra river, and situated between the 14th and 16th degrees of north latitude. It is a fertile country, and not so hilly as some of the adjacent districts; and it possesses the strong fortress of Ouchimadroog. The rajah of this district was tributary to the kings of Bejanagur and Bejapore, to the Moguls, and the Mahrattas; in 1774 he became tributary to Hyder, and in 1786 he was completely subdued by Tippoo, and sent prisoner to Seringapatam. On the capture of that city, Harponully was taken possession of by the heir. It was then assigned to the nizam as a portion of his division of Tippoo's territory, and by him assigned to the British in 1800. It is now included in the Bellary collectorship, and is yearly improving in value. Harponully is the capital, and is 170 miles north-by-west from Seringapatam. Long. 76. 18. E. Lat. 14. 47. N.

HARPOON, or HARPING-IRON, a spear or javelin used to strike the whales in the Greenland fishery. See WHALE FISHERY.

HARPISCHORD, the most harmonious of all the musical instruments of the stringed kind. It is played on after the manner of the organ, and is furnished with one set, sometimes with two sets of keys. The touching or striking of these keys moves a kind of little jacks, which also move a double row of chords or strings of brass or iron, stretched over four bridges on the table of the instrument.

HARPSTED, a town of the kingdom of Hanover, the capital of a bailiwick of the same name, in the province of Hoya. It is situated on the river Delme, and contains 152 houses, with 1030 inhabitants.

HARQUEBUSS, a piece of fire-arms of the length of a musket, and cocked by means of a wheel. It carried a ball that weighed one ounce seven eighths. There was also a larger sort, called the great harquebuss, used for the defence of strong places, which carried a ball of about three ounces and a half.

HARRIER, a kind of hound, endowed with an acute sense of smelling, and very bold in the pursuit of game.

HARRINGTON, a small sea-port of the county of Cumberland, in Allerdale ward, above Derwent, 311 miles from London, and three from Workington. It has a considerable trade in lime and coal with Ireland, and some ship-building and iron works. The population amounted in 1801 to 1357, in 1811 to 1621, in 1821 to 1845, and in 1831 to 1758.

HARRINGTON, *Sir John*, an English poet, was born at Kelston, near Bath, in 1561, instructed in classical learning at Eton School, and thence removed to Cambridge, where he took his degree in arts. At the age of thirty, he published a translation of the *Orlando Furioso*, which, though executed without spirit or even accuracy, enriched our poetry with new stores of imagery or romance. Harrington was knighted in the field by Essex, to the great displeasure of the queen, who wished all such honours to emanate from herself; and in the reign of King James he was created a knight of the bath. Being a courtier, he presented to Prince Henry a manuscript, directed chiefly against the married bishops. This production was intended for the private use of the prince; but being afterwards published, it raised a great clamour against the author, who had otherwise incurred suspicion, if not odium, by supporting Raleigh in his suit for the manor of Banwell, belonging to the bishopric of Bath and Wells, on the presumption that the right reverend incumbent had incurred a *præmunire* by marrying a second wife. Sir John died in 1612. His epigrams, which were the most popular of his works, though possessing little poetical merit, appeared first in 1618, and afterwards in 1625. The *Nugæ Antiquæ*, a miscellaneous collection of his works, was published in 1792, and again in 1804, with illustrative notes, and a memoir of the author. (A.)

HARRINGTON, *James*, an eminent English writer, was born in January 1611, at Upton in Northamptonshire. After being educated at Oxford, he travelled into Holland, France, Denmark, and Germany, and learned the languages of these countries. Upon his return to England, he was admitted one of the privy chamber extraordinary to King Charles I. He served the king with great fidelity, and made use of his interest with his friends in parliament to procure matters to be accommodated with all parties. The king loved his company, except when the conversation happened to turn upon commonwealths. He found means to see the king at St James's; and attended him on the scaffold, where, or a little before, he received a token of his majesty's affection. After the death of King Charles, Harriot.

he wrote his *Oceana*, a kind of political romance, in imitation of Plato's Commonwealth, which he dedicated to Cromwell. It is said, that when the latter perused it, he declared, that "the gentleman had wrote very well, but must not think to cheat him out of his power and authority; for that what he had won by the sword he would not suffer himself to be scribbled out of." This work was attacked by several writers, against whom he defended it. Besides his writings to promote republican principles, he instituted a nightly meeting of several ingenious men in the New Palace-Yard, Westminster. This club was called the *Rota*, and continued till the secluded members of parliament were restored by General Monk. In 1661, he was committed to the Tower for treasonable designs and practices; and Chancellor Hyde, in a conference with the Lords and Commons, charged him with being concerned in a plot. But a committee of Lords and Commons could make nothing of the alleged plot. He was conveyed to St Nicholas's Island, and thence to Plymouth, where his imagination became disordered. Having obtained his liberty through the Earl of Bath, he was carried to London, and died in 1677. Besides the above works, he published several others, which were first collected by Toland in 1700, one vol. folio; but a more complete edition was published in 1737, by the Reverend Dr Birch.

HARRIOT, Thomas, an eminent mathematician, was born at Oxford in 1560. Having been instructed in grammar, he entered St Mary Hall as a commoner, and took his bachelor's degree in 1579. He then distinguished himself by his skill in the mathematics, and became preceptor in that science to Sir Walter Raleigh. In 1585, he accompanied the first colony sent out to Virginia; and having surveyed that country, ascertained its natural productions, and observed the manners and customs of the aboriginal population, he published an account of it, which was afterwards reprinted in Hackluyt's Voyages. On his return to England, after an absence of two years, he resumed his mathematical studies with such zeal and success, that Henry earl of Northumberland, the liberal and enlightened protector of the learned, assigned him a yearly pension of L.120. The same nobleman also pensioned Robert Hues, known by his Treatise on the Globes, and Walter Warner, who is supposed to have communicated to Harvey the first hint concerning the circulation of the blood. Both these persons were mathematicians; and, in 1608, when the earl was committed to the Tower for life, they, along with Harriot, were his constant companions, and usually styled his magicians. They had a table at the charge of the earl, who constantly conversed with them, to beguile the tedium of his confinement, as did also Sir Walter Raleigh, who was then a prisoner in the Tower. Harriot lived for some time at Sion College, and died at London on the 2d of July 1621, at the age of sixty, after having suffered much from a cancer in the lip, occasioned by a habit he had contracted of holding in his mouth instruments of brass often charged with verdigris. He was universally esteemed on account of his learning. A manuscript of his entitled *Ephemeris Chrysometria* is preserved in Sion College; and his *Artis Analyticæ Praxis ad Æquationes Algebraicas resolvendas* was published at London in 1631, folio. Descartes has been charged with taking from this book many improvements in algebra, which he afterwards published to the world as his own; but notwithstanding all that has been said by Wallis in his account of the discoveries of Harriot, and by Zach in the Astronomical Ephemeris for 1788, there seems to be no good ground for the charge; and it would even appear that much that incontestibly belongs to Vieta or Descartes has been ascribed to Harriot. Montucla has reduced to their just value the services of the English mathematician, and shown that these, when truly estimated, are sufficiently important to entitle him to a place, in the second rank, amongst those men who have contributed to the progress of the mathematical sciences. (See Dissertations Third and Fourth, prefixed to this work). From some papers of Harriot, discovered in 1784, it appears that he had either procured a telescope from Holland, or divined the construction of that instrument; and that he coincided, in point of time, with Galileo in discovering the spots on the sun's disc. (A.)

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HARRIS, James, an English gentleman distinguished by his writings on the subject of grammar, was born on the 20th of July 1709. He received his early education at Salisbury, whence he was removed to Oxford at the age of sixteen; and having passed the usual number of years as a gentleman commoner of Wadham College, he was entered at Lincoln's Inn as a student of law, though not intended for the bar. When he had attained his twenty-fourth year, his father died; and this event having at once freed him from all control, and placed him in the possession of an independent fortune, enabled him to exchange the study of law for other pursuits more congenial to his taste. The decided bent of his mind had always been towards the Greek and Latin classics, which he preferred to every other kind of reading; and to the study of these authors he now applied himself with unremitting assiduity during a period of fourteen or fifteen years. The first fruit of this lengthened course of application was a volume which he published in 1744, containing three treatises; one on art, another on music, painting, and poetry, and a third on happiness. These treatises are illustrated with a variety of learned notes and observations; and one of them, that upon art, has been commended by Lord Monboddo as containing "the best specimen of the dividing or diæretic manner, as the ancients called it, that is to be found in any modern book." But the work by which he is best known is his *Hermes*, a philosophical inquiry concerning universal grammar, which appeared in 1751, 8vo. "Those who would enter deeply into the subject" (of universal grammar), says Dr Lowth, "will find it fully and accurately handled, with the greatest acuteness of investigation, perspicuity of application, and elegance of method, in a treatise entitled *Hermes*, by James Harris, Esq.; the most beautiful example of analysis that has been exhibited since the days of Aristotle." To this eulogium, however, the philosophical grammarians of the present time are not by any means disposed to subscribe. Without questioning the learning displayed in the *Hermes*, we may venture to affirm, that the arrangement of the parts of speech into substantives, attributives, definitives, and connectives, is entirely arbitrary; that nothing whatever is gained by this departure from the ordinary classification, excepting perhaps to impart to the work an appearance of originality, which, upon examination, will be found to vanish; that, though professing to treat the subject of grammar in a philosophical manner, Mr Harris is in reality the slave of authority; and that there is no quality for which his work is less distinguished than that rigid analysis which Bishop Lowth has somewhat hastily given him credit for. This, we think, has been fully established in the article Grammar of the present work, to which accordingly the reader is referred for more ample information. Mr Harris's attention seems to have been first directed to this subject by the *Minerva* of Sanctius, to which he has confessed himself indebted for much valuable information; but it is somewhat remarkable, that with the treatise of Apollonius (*De Constructione Orationis*) also before him, he should not have avoided the narrow and confined views which he has adopted on particular points, or should have missed principles which would have served to guide him through the intricacies in which he is frequently entangled. Mr Harris's other productions are, Philosophical Arrangements, published in

1775, being part of a larger work which he had meditated, but did not complete, on the peripatetic logic; and Philological Inquiries, printed in 1780, but not published till 1781, containing not so much a regular system, as a summary of the conclusions to which the philosophy of the ancients had conducted them in their critical inquiries. After having been quite exhausted by illness, Mr Harris expired on the 22d of December 1780, in the seventy-second year of his age. In 1801, his son Lord Malmesbury published an edition of his works in two volumes quarto; prefixed to which is a biographical sketch of the author from the pen of the editor. (A.)

Harris, a district of the Hebrides, forming, with the larger district of Lewis, one considerable island. In one part it is divided into nearly two parts by the approximation of West Loch Tarbet and East Loch Tarbet, which leave only a neck of land of about half a mile in breadth. At the head of the former is situated the solitary village of Tarbet. Harris is about twenty miles in length, by eleven in breadth in the northern part, and from six to seven in the southern. It is bleak, rocky, and unproductive. On the shores, however, there are small patches of cultivated land; the rearing of cows and black cattle further tends to support the inhabitants; but until the duty on barilla was lowered, their chief source of profit was the manufacture of kelp. This, however, is now considerably reduced. Harris is an independent parish in the presbytery of Wick, and its kirk-town and capital is Rowadill or Rowdill, a small village at the south-east corner of the island. The population amounted in 1821 to 3909, and in 1831 to 3900.

HARRISON, William, a writer much esteemed and patronised by the literati of his time, was fellow of New College, Oxford. Whilst employed as tutor to the Duke of Queensberry's son, he fortunately attracted the favour of Dr Swift, at whose solicitation Mr St John, afterwards Lord Bolingbroke, obtained for him the employment of secretary to Lord Raby, ambassador at the Hague, and afterwards Earl of Strafford. A letter written by him whilst at Utrecht, dated 16th December 1712, is printed in the dean's works. Mr Harrison, who did not long enjoy his rising fortune, was dispatched to London with the Barrier Treaty, and died on the 14th of February 1713. Mr Tickel has mentioned him with respect in his *Prospect of Peace;* and Dr Young, in the close of an epistle to Lord Lansdowne, pathetically bewails his death. Dr Birch, who has given a curious note on Harrison's letter to Swift, has confounded him with Thomas Harrison of Queen's College. In Nichols' *Select Collection* are some pleasing specimens of his poetry, which, with Woodstock-Park, in Dodsley's Collection, and an Ode to the Duke of Marlborough, in Duncombe's Horace, form all of his poetical writings that are known. Harrison figured both as an humorist and a politician in the fifth volume of the Tatler, of which, under the patronage of Bolingbroke, Henley, and Swift, he was professedly the editor.

Harrison, *John*, an ingenious mechanic, the inventor of the time-keeper or chronometer for ascertaining the longitude at sea, and also of the compound, or, as it is commonly called, the gridiron-pendulum, was born at Foulby, in the parish of Wragby, near Pontefract in Yorkshire, in 1693. The vigour of his natural abilities amply compensated the deficiencies of his education, as appears from the astonishing progress he made in that branch of mechanics to which he devoted himself. His father was a carpenter, in which profession the son assisted; but occasionally, according to the miscellaneous practice of country artists, he also surveyed land, and repaired clocks and watches. From his earliest childhood he was attached to any machinery moving by wheels, as appeared whilst he lay sick of the small-pox about the sixth year of his age, when he had a watch placed open upon his pillow to amuse himself by contemplating the movement. In 1700, he removed with his father to Barrow, in Lincolnshire, where, though his opportunities of acquiring knowledge were but scanty, he eagerly improved every incident from which he could collect information, frequently employing the greater part of his nights in writing or drawing. He always acknowledged his obligations to a clergyman who came every Sunday to officiate in the neighbourhood, and who lent him a manuscript copy of Professor Saunderson's Lectures, which he carefully transcribed, with all the diagrams. His native genius enabled him to surmount every disadvantage; and in the year 1726, he constructed two clocks, mostly of wood, in which he applied the escapement and compound pendulum of his own invention. These clocks surpassed every thing that had yet been made, scarcely erring a second in a month. In 1728 he went to London with the drawings of a machine for determining the longitude at sea, in expectation of being employed to execute one by the board of longitude. Upon application to Dr Halley, he was referred to Mr George Graham, who, discovering that he had uncommon merit, advised him to construct his machine before he applied to the board of longitude. He returned home to perform this task; and in 1735 he proceeded to London with his first machine, and was sent to Lisbon the next year to make trial of its properties. In this short voyage he corrected the dead reckoning about a degree and a half. About the year 1739 he completed his second machine, which was of a construction much more simple than the first, and answered much better; and this, though not sent to sea, recommended Mr Harrison in a still stronger manner to the patronage of his friends and the public. His third machine, which he produced in 1749, was still less complicated than the second, and superior in accuracy, as erring only three or four seconds in a week. This he conceived to be the *ne plus ultra* of his attempts; but in an endeavour to improve pocket watches, he found the principles he applied to surpass his expectations; and this encouraged him to make his fourth time-keeper, which is in the form of a pocket watch, about six inches diameter. With this time-keeper his son made two voyages, the one to Jamaica, and the other to Barbadoes, in both of which it corrected the longitude within the nearest limits required by the act of the 12th of Queen Anne; and the inventor therefore, at different times, though not without infinite trouble, received the proposed reward of L.20,000. These four machines were given up to the board of longitude. The three former were not of any use, as all the advantages gained by making them were comprehended in the last; they were, however, worthy of being carefully preserved as mechanical curiosities, in which might be traced the gradations of ingenuity executed with the most delicate workmanship; but they now lie totally neglected in the royal observatory at Greenwich. The fourth machine, emphatically distinguished by the name of *the time-keeper*, was copied by Kendal; and the duplicate, during a three years' circumnavigation of the globe in the southern hemisphere by Captain Cook, answered as well as the original. The latter part of Mr Harrison's life was employed in making a fifth improved time-keeper, on the same principles with the preceding one, which, at the end of a ten weeks' trial, in 1772, at the king's private observatory at Richmond, erred only four seconds and a half. Within a few years of his death, his constitution visibly declined; he had frequent fits of the gout, a disorder which had never attacked him before his seventy-seventh year; and he died at his house in Red-Lion Square, in 1776, aged eighty-three. The recluse manner of his life, in the unremitting pursuit of his favourite object, was by no means calculated to qualify him to shine as a man of the world; and the many discouragements he met with in soliciting the legal reward of his labours, still less disposed him to

Harrison.

accommodate himself to the humours of mankind. In conversing on his profession, he was clear, distinct, and modest; but, like many other mere mechanics, he found much difficulty in delivering his meaning in writing, and adhered to a peculiar, uncouth phraseology. This was but too evident in his *Description concerning such Mechanism as will afford a nice or true Mensuration of Time*, 1775, 8vo; the defects of which may be accounted for from his small acquaintance with letters, from his advanced age, and concomitant mental infirmities, amongst which may be reckoned his obstinate refusal to accept of any assistance whatever in this publication. This small work includes also an account of his new musical scale, or mechanical division of the octave, according to the proportion of the radius and diameter of a circle respectively to the circumference. He had in his youth been the leader of a distinguished band of church-singers; he had a very delicate ear for music; and his experiments on sound, with a curious monochord of his own improvement, are said to have been not less accurate than those which he was engaged in for the mensuration of time.

HARROW, a town in the county of Middlesex, in the hundred of Gore, ten miles from London. It is usually distinguished from its situation by the adjunct "on-the-Hill." It commands extensive prospects on every side, over well cultivated and undulating districts. The church and spire at the highest point present a distinguishing object to the whole country around it. The free school, founded here in the reign of Queen Elizabeth, is one of the most celebrated seminaries for classical learning in the kingdom, and in it the youth of the first families receive the first rudiments of education. The population in 1801 amounted to 2485, in 1811 to 2813, in 1821 to 3017, and in 1831 to 3861.

HARROWGATE, a township within the parish of Knaresborough, in the wapentake of Claro, of the west riding of Yorkshire, 212 miles from London, and twenty-two from York. It is situated in a cold exposed heath, but is much visited in the summer season, on account of its mineral springs, some of which are chalybeate, and others sulphureous. There are appropriate boarding-houses and taverns, with libraries and a theatre, and the other accommodations usual at a well-frequented watering place.

HARROWTY, a district of Hindustan, in the province of Ajmeer, situated between the 25th and 26th degrees of north latitude, and intersected by the river Chumbul. The chief towns are Kotah and Boondee, each of which is the residence of a rajah of the Chohan tribe, and denominated half-rajpoots. The cultivators are Rajpoots, Jauts, Brahmins, Bheels, and other castes or tribes.

HARSEFELD, a town, the capital of a bailiwick of the same name, in the province Hoya with Diepholz, in the kingdom of Hanover, having 146 houses and 1140 inhabitants.

HART, a stag or male deer, in the sixth year. See Mammalia.

Hart's Horns, the horns of the common male deer. The scrapings or raspings of the horn of this animal are medicinal, and used in decoctions, ptisans, and the like.

HARTBERG, a town of the Austrian province of Steyermark, in the circle of Gratz. It has a large woollen cloth manufactory, and an establishment for refining saltpetre. It contains 296 houses, and 1520 inhabitants.

HARTE, Walter, the historian of Gustavus Adolphus, was born about the beginning of the eighteenth century. He received his education at Marlborough School, from which he was sent to Oxford, where he took his master's degree on the 30th of June 1720. He early acquired an intimacy with Pope, and, in 1727, published a volume of poems dedicated to the Earl of Peterborough, who, in consequence, took some notice of him. In 1730, he published an Essay on Satire, 8vo, and, in 1735, an Essay on Reason, folio, to which Pope is understood to have been a contributor. He afterwards became vice-principal of St Mary Hall, and obtained so much reputation as a tutor that Lord Lyttleton recommended him as private and travelling preceptor to his natural son, in which capacity he acted from 1746 to 1750. In 1759, he published his History of Gustavus Adolphus, in two vols. 4to; a work on which he had bestowed much labour, and in which he has undoubtedly accumulated a large body of valuable materials. But this is nearly all that can be said in its favour. Harte had learning, industry, and the spirit of research, with no inconsiderable share of military and even political knowledge; he had also access to the most valuable materials, and his work, with all its faults, may therefore be considered as in a certain sense original. But it is totally destitute of arrangement and method; and, from the affectation of employing uncouth words and phrases, as well as from the adoption of a style singularly harsh, pedantic, and involved, which, by some strange hallucination, he appears to have considered as fine writing, it is even more deficient in perspicuity than in the other qualities essential to historical composition. The idea of digesting his materials into a regular narrative seems never to have occurred to him, or, if it did, to have been disregarded, possibly from a conscious incapacity for giving it effect. Dr Johnson was, however, of opinion that the defects of Harte's history proceeded more from foppery than imbecility, and that these are to be attributed not so much to want of talent as to inordinate and overweening conceit; but whatever the cause may have been, the result is unfortunately the same. Harte left London on the day of the publication of his book, that he might be out of the way of the great praise he was to receive; and he was ashamed to return when he found how very ill it had succeeded. Robertson's *History of Scotland* had been published about a month before; Hume's *History of the House of Tudor* appeared the same week; and it is not wonderful that, after perusing these masterpieces of historical composition, the public should consider Harte's style as intolerable. Towards the close of his life, he solaced his solitary and painful hours by devotional reading, and died unmarried, though at what precise date has not been ascertained. His only other productions are some Sermons, and the *Amaranth*, a poem which, as he informs us, was written for his private consolation under a lingering and dangerous state of health, and which is strongly marked with that serious cast of feeling with which every man of a rightly-constituted mind regards his approaching end. (A.)

HARTLAND, a town of the county of Devon, in the hundred of the same name, 146 miles from London. It stands on a point of land projecting into the Bristol Channel, which forms one of the boundaries of the bay of Barnstaple. It has a market on Saturday, attended chiefly by persons from the adjoining county of Cornwall. The harbour is rendered secure by a pier. The population amounted in 1801 to 1546, in 1811 to 1734, in 1821 to 1968, and in 1831 to 2143.

HARTLEBURY, a town in the hundred of Oswaldslow, in the county of Worcester, 122 miles from London. It is situated at the junction of the river Stour with the Severn. It is chiefly remarkable from the palace of the Bishop of Worcester, altered from an ancient castle erected by Henry III., and much beautified by successive prelates, especially by Madox and Hurd. The population amounted in 1801 to 1534, in 1811 to 1673, in 1821 to 1676, and in 1831 to 1746.

HARTLEPOOL, a market-town and sea-port in the ward of Stockton, of the county of Durham. It is an incorporated town, with a mayor and aldermen; but the trade is inconsiderable, consisting chiefly of the export of coals. It is frequented in the months of summer as a sea-bathing place. The population amounted in 1801 to 993, in 1811 to 1047, in 1821 to 1249, and in 1831 to 1330.

HARTLEY, or Hartley Pans, a sea-port town in the ward of Castle, in the county of Northumberland, a portion of the parish of Earsdon, 283 miles from London. It has a good harbour near it, and some valuable coal mines; and there are extensive establishments for making glass, salt, and copperas. It is the property of the family of Delaval, whose magnificent seat and elegant gardens are about a mile from it; and the harbour, as well as the improvements, have been the result of the operations of that noble family. The population amounted in 1801 to 1639, in 1811 to 1872, in 1821 to 1795, and in 1831 to 1850.

HARTLEY, David, an ingenious physician and philosopher, was the son of a clergyman at Armley, in Yorkshire, and born on the 30th of August 1705. After spending some time at a private school, he was admitted of Jesus College, Cambridge, in 1720, became afterwards a fellow of that college, and took his master's degree in 1729. He was originally intended for the church; but having some scruples about subscribing the thirty-nine articles, he directed his studies to the medical profession, and having completed his professional education, commenced practice at Newark, whence he removed to Bury St Edmund's, and afterwards settled for some time in London, but eventually established himself at Bath. Dr Hartley was indefatigable in the pursuit of all collateral branches of knowledge, and he lived in personal intimacy with some of the most learned men of his age, including Law, Butler, Warburton, Jortin, Hales, Young, Hooke the Roman historian, and others. From early youth he was devoted to the sciences, particularly logic and mathematics; he studied mathematics and experimental philosophy under Professor Saunderson; he was an ardent admirer of Newton, even where Newton was not in his strength, we mean, on the subjects of chronology and religion; and from Locke he derived the first principles of logic and metaphysics, as appears from the work by which he is now principally known. The doctrine of vibrations, as instrumental to sensation and motion, he obtained from Newton; and the principle of association he derived originally from Locke. This work he commenced about the age of twenty-five, and published it in 1749, under the title of Observations on Man, his Frame, his Duty, and his Expectations, in two vols. 8vo. He did not expect that it would meet with any general or immediate reception in the philosophical world; nor did it happen otherwise than he had expected; but he entertained a hope that, at some future period, his system would be adopted by philosophers; and in this he appears to have been mistaken. Dr Priestley, indeed, published, in 1775, a work on Hartley's theory; but all that he has done in this production is to convince us of his own materialism, and his earnest desire to prove Hartley a materialist, although the latter dreaded nothing so much. It must be confessed, however, that his doctrines have an apparent tendency towards that principle, and that other philosophers, who had not the same views or object with Priestley, have arrived at the same conclusion with him. Nor is this all. Although Hartley's mind was active and penetrating, his industry indefatigable, and his philosophical observations unremitting, he has built upon a gratuitous assumption the doctrine by which he attempts to explain the origin and propagation of sensation; for Haller has shown that he attributes properties to the medullary substance of the brain and nerves which are incompatible with their nature; and that, consequently, he has assumed, as the basis of his system, what neither does nor can exist. (See, on the subject of Hartley's philosophical doctrines, Sir James Mackintosh's continuation of Dissertation Second, p. 362.) Hartley was the author of several medical tracts relative to the operation of Mrs Stephens' medicine for the stone, a disease with which he was himself afflicted; and he is also said to have written a defence of inoculation for smallpox, against Dr Warren and others. He died at Bath, on the 28th of August 1757, in the fifty-second year of his age. The philosophical character of Hartley is delineated in his works, which are alike remarkable for modesty and originality, though disfigured by an affectation of mathematical forms of reasoning in treating a subject to which they can never be made to apply. In private life he was gay, cheerful, and social; his hours of recreation were devoted to music, poetry, and history; and the virtuous principles which he instilled in his works formed the invariable guides of his life and doctrine. (A.)

HARUSPICES, an order of priests amongst the Romans. Their name is derived, according to Donatus (Ter. *Phorm.* iv. 5), from *haruga*, a victim, though others have referred its origin to the word *ara*, an altar. Dionysius (ii. 22) explains it by the word ἱεροσκοπος, inspector of the victims, and states that Romulus appointed three, one from each tribe. This number was gradually increased, till it became an important body in the state, was regarded as a collegium, and its president was called Summus Haruspex, or Magister Publicus. In the flourishing period of the republic, it enjoyed great influence, from the explanation it was called on to give of omens, which were taken at the commencement of any important undertaking; but in proportion as the doctrines of the Greek philosophers spread amongst the Romans, the Haruspices gradually lost their influence, at least amongst the higher ranks. Cato used frequently to say that he was surprised the Haruspices did not laugh when they met one another in the street. (Cic. *Nat. Div.* i. 26.) The Emperor Claudius made an attempt to revive their importance, and the Pontifices received an order to report as to the best way of accomplishing this object; but how far he succeeded we have no means of discovering. (Tacit. *Ann.* xi. 15.) Alexander Severus appointed fixed salaries to the members of this body, and teachers, who should instruct the young in the arts of soothsaying (Lamprid. 44); and they continued in this state till Constantine put an end to their functions, by forbidding, under the penalty of death, the continuation of their superstitious practices. (Codex Theodos. 9, tit. 16.) The duties of the Haruspices were to examine the entrails of victims sacrificed, and thence to derive omens of futurity. They also attended to the flame, the smoke, whether the victim came to the altar willingly, stood quietly, fell by one stroke, and many other circumstances of the same kind. Their knowledge of this art was derived from the Etruscans; and in early times the young nobility used to be sent to Etruria to be instructed in this art. (Cic. *Div.* i. 2, 41.)

HARVEST, probably derived from a Saxon word signifying *herb feast*, is that season of the year when the corn is ripe, and fit to be reaped and gathered into barns.

Harvest-Home denotes the feast which is often observed at the close of harvest, and also the song used on that occasion.

HARVEY, Dr William, an illustrious English physician, the discoverer of the circulation of the blood, was born in Kent on the 2d of April 1569. After six years of study in Caius College, Cambridge, he travelled through France, Germany, and Italy, and was created a doctor of physic in the University of Padua, where he studied for some time. After his return to London, he was incorporated doctor of physic in Cambridge, afterwards admitted into the College of Physicians in London, and, lastly,

Harvey's Isle
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Haslingden.

appointed lecturer of anatomy and surgery in that college. In these lectures he disclosed his discovery relative to the circulation of the blood, which, after a variety of experiments, he communicated to the world in his *Exercitatio Anatomica de Motu Cordis et Sanguinis.* He was physician to James I. and to Charles I., and adhered to the royal cause in the reign of the latter. His works have immortalised his memory. In 1651 he published his *Exercitationes de Generatione Animalium.* In 1654 he was chosen president of the College of Physicians in his absence; but his age and weakness were so great, that he found himself unable to discharge the duty of the office, and therefore desired the college to choose Dr Pringle. As he had no children, he settled his paternal estate upon the college. He had three years previously built a combination-room, a library, and a museum; and in 1656 he brought the deeds of his estate, and presented them to the college. He was also present at the first festival, instituted by himself, and to be continued annually, together with a commemoration speech in Latin, to be spoken on the 18th of October, in honour of the benefactors to the college. He appointed a handsome stipend for the orator, and also for the keeper of the library and museum, which are still called by his name. This great physician, who died in 1657, had the happiness, in his lifetime, to find the clamours of ignorance, envy, and prejudice, against his doctrine, totally silenced, and to see it universally established. Dr Harvey was not only a great, but a truly excellent man; his modesty, candour, and piety, were equal to his knowledge; and the farther he penetrated into the wonders of nature, the more he felt disposed to venerate its great author.

HARVEY'S ISLE, a low island in the Pacific Ocean, covered by the sea, and about twenty miles in circumference. It was discovered by Captain Cook in 1773. Long. 158. 54. W. Lat. 19. 18. S.

HARWICH, a town in the hundred of Tendring, in the county of Essex, seventy-three miles from London. It is a seaport, situated at the junction of the river Stour and Orwell, which enter the German Ocean. It was once fortified, but the works were demolished in the civil wars of Charles I.; but towards the sea it is defended by a battery. From this place the packets depart for Holland twice every week. There are good dock-yards for building and repairing ships; and some fisheries are carried on in the North Sea. It is governed by a mayor, eight aldermen, a recorder, and some burgesses; and it returns two members to the House of Commons. There are now about 200 voters. The mayor is empowered to hold an admiralty court. The inhabitants amounted in 1801 to 2761, in 1811 to 3732, in 1821 to 4010, and in 1831 to 4297.

HARZGERODE, a city, the capital of a bailiwick of the same name, in the duchy of Anhalt-Bernburg, in Germany. It is situated in a mountainous district, 1440 feet above the sea. It contains 350 houses, and 2430 inhabitants. It is surrounded with walls built of marble, with which kind of stone the streets are also paved. The chief employment is in the mines of iron, and in the quarries of marble.

HASELMERE, a town of the county of Surrey, in the hundred of Godalming, forty-three miles from London. It is an ancient borough, and had the right of returning two members to the House of Commons till 1832, when it was disfranchised. It has a small market on Friday. The inhabitants amounted in 1801 to 642, in 1811 to 756, in 1821 to 887, and in 1831 to 849.

HASLAH, a town of Hindustan, in the Sikk territories, and province of Lahore, 154 miles north-east from the city of Lahore. Long. 75. 32. E. Lat. 33. 20. N.

HASLINGDEN, a market-town of the county of Lancaster, in the hundred of Blackburn, 200 miles from London, and fourteen from Manchester. It forms part of the parish of Whalley, which is denominated a chapelry. It has water communication by a canal with Manchester, Leeds, and Liverpool; and makes cotton and linen goods for the merchants of these places. The population amounted in 1801 to 4404, in 1811 to 5127, in 1821 to 6595, and in 1831 to 7776.

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HASPARREN, a town of the arrondissement of Bayonne, in the department of the Lower Pyrenees, in France, is situated on the river Hilspide, and contains 525 houses, with 4156 inhabitants.

HASSAN KEELA, a strong castle of Armenia, situated on a high mountain. It is inhabited by 4000 Turks and 1000 Armenians, and its mineral waters are in great repute.

HASSELQUIST, FREDERICK, a well-known traveller, was a native of East Gothland, and born in the year 1722. He prosecuted his medical and botanical studies at Upsal. Linnæus having represented in his lectures the important advantages which might be gained by travelling through Palestine, which was at that time but little known, Hasselquist felt the fire of ambition burn within him at the declaration of his master. As the crown gave no pecuniary encouragement for undertakings of this description, extensive collections were made by private individuals, especially from the country of our author, and stipends were granted him by all the faculties in the University of Upsal. Protected in this manner, he began his journey in the summer of 1749, and, through the influence of Lagerström, obtained a passage to Smyrna in a Swedish East Indiaman. He arrived at Smyrna about the latter end of the year, and met with the most friendly reception from the Swedish consuls. In the beginning of 1750 he set out for Egypt, and remained about nine months in the metropolis of that country, whence he transmitted to Linnæus some specimens of his researches, which, after they were published, obtained the approbation of the public. By the influence of Dr Wargentin, a collection of ten thousand dollars of copper currency was made for the encouragement of young Hasselquist in the prosecution of his researches. In the spring of 1751, he passed through Jaffa to Jerusalem, and returned afterwards to Smyrna by way of Rhodes and Scio, having completely fulfilled the expectation of his country; but he did not live long enough to reap the fruits of his labours. His lungs were affected by the burning deserts of Arabia; and after languishing for some time in great distress, he expired in February 1752, before he had completed the thirtieth year of his age. An account of his voyage was published by Linnæus, by whom his memory was honoured with a plant which he called *Hasselquistia.*

HASSELT, a city of the Netherlands, in the province of Limburg, and the capital of a circle of its own name. It is situated on the river Demer, is tolerably well built, and contains about 1000 houses and 6840 inhabitants. There is some trade in linen and woollen goods, and in madder and tobacco, which are extensively cultivated in the vicinity. Long. 5. 9. E. Lat. 50. 55. N.

HASSER, a town and fortress of Hindustan, in the province of Khandesh, and capital of a district of the same name, situated between the 21st and 22d degrees of north latitude. The land is fertile, and tolerably well watered by the Tuptee and Poornah. It is of a hilly surface, on which the native chiefs have erected fortifications. The town is fifteen miles north from Boorhanpoor. Long. 76. 21. E. Lat. 21. 32. N.

HASTA, or *HASTA Pura,* amongst medallists, signifies a kind of spear or javelin, not shod or headed with iron; or rather an ancient sceptre, somewhat longer than ordinary, and occasionally given to all the gods. The *hasta* is supposed to be a symbol of the goodness of the gods, and of the conduct of providence, which is equally mild and forcible.

Hasta, in some countries, is a measure or quantity of ground amounting to thirty paces, and so called, according to Du Cange, from the hasta or rod wherewith it was measured.

HASTEE, a town of Hindustan, in the province of Aurungabad, belonging to the nizam, forty miles south-east from Jalnapoor. Long. 76. 53. E. Lat. 19. 32. N.

HASTINGS, Warren, a man remarkable alike for his talents, his fortunes, and his history, was the son of a clergyman, and born in 1733, though in what place does not seem to have been ascertained. At a subsequent period it was alleged to his disparagement that his origin "was low, obscure, and vulgar;" but such an assertion would seem to have been as gratuitous as it was undoubtedly unworthy of Mr Burke, from whom it proceeded. That his parents were not in affluent circumstances, may be concluded from the fact that the remainder of the family estate had been sold some time previous to the birth of young Hastings; yet, on the other hand, his maintenance and education at a great public seminary, followed by a respectable appointment in the service of the East India Company, do not seem to indicate any want either of substance or of connections; and, in fact, it appears from various authorities, that he was collaterally descended of an ancient family of the same name in the county of Worcester, and that the estate of Daylesford, and the patronage of the living, were vested in his progenitors for many generations, although the fortune of one of them had been greatly diminished by his attachment to the royal cause in the time of Charles I. We notice this circumstance, not because the assertion of Mr Burke would have been any reproach to Mr Hastings, if it had been true to the fullest extent, but because being altogether groundless, it seems to have been calculated for the meridian of a place (the House of Lords) where the imputation of a low, obscure, and vulgar origin could scarcely fail to produce a strong and by no means advantageous impression.

Warren Hastings received his education at Westminster School, where he appears to have made considerable proficiency in learning. Amongst his class-fellows were the celebrated antiquary Soame Jennings, who spent a large fortune in the purchase of articles of vertu, and died in obscurity, if not poverty; and Sir Elijah Impey, afterwards chief justice of Bengal, who was repeatedly threatened with impeachment for his co-operation in many of the acts of his former school-fellow. The residence of young Hastings at Westminster could not have been long, as he appears to have left it about the age of sixteen. But the precocity of his talents attracted the notice of his master Dr Nichols, and he withdrew with the reputation of being one of the best scholars of his standing. It was intended to send him to Oxford, there to complete his studies; but circumstances prevented this design from being carried into effect. In 1750 he was appointed a writer in the service of the East India Company, and had the good fortune to be nominated to Bengal. At that period there existed no college in England for instruction in the oriental languages, nor could any private tutor be found capable of undertaking such a task. It was not, therefore, until after his arrival in India that he was enabled to acquire any knowledge of the dialects of that country. But as his natural sagacity led him to conclude that an acquaintance with the native tongues might serve the purposes of his ambition, he immediately applied himself to the study of the Persian and Hindustanee, in which his assiduity and perseverance were ere long rewarded with success; and to his early proficiency in these languages, which were then but little cultivated, he was chiefly indebted for his rise in the Company's service.

At this period the East India Company still retained much of its primitive character. It had been instituted for the purposes of trade, and its servants abroad were merely merchants, whose views were confined to commercial enterprise, and who had no ambition beyond that of enhancing the profits of mercantile speculation. No visions of conquest had yet flitted across their imagination; no vista of a sovereignty extending over millions of Asiatics had disclosed itself even in the most distant perspective. The great, indeed the only object then was, to open new sources of trade, and to discover new outlets for the commodities of Europe. With this view Mr Hastings was chosen as a fit person to establish a factory in the interior of Bengal. No European had as yet appeared in that part of the country; and one acquainted with the languages in use amongst the natives was naturally selected as the most proper person to conduct the enterprise. The attempt, however, proved unsuccessful; but, notwithstanding its failure, Mr Hastings found means to conciliate the good-will of the principal natives; and when afterwards taken prisoner by Surajah Dowlah, the sworn foe of the English name, his knowledge of Persian mainly contributed to ensure the safety of his person, and even to command the respect of his captor.

But a new and memorable epoch at length occurred, from which may be dated an entire change in the character and policy of the Company of Merchants trading to the East Indies. Colonel Clive, originally a clerk or writer, like Mr Hastings, but a man fitted by nature to play a great part in a different sphere of action, appeared at the head of a small but victorious army; and the fortunes of India were suddenly changed. Surajah Dowlah, doomed in his turn to experience the inconstancy of fortune, was defeated, dethroned, and finally murdered by his successor Meer Jaffier; and from this time the East India Company appeared in the character of a military power. It now became necessary to select as resident minister at the durbar of the nawab Jaffier Ali Cawn, a man of talents and address, conversant with the oriental languages, thoroughly acquainted with the interests of the Company, and capable of unravelling the intricacies of eastern politics, as well as defeating the intrigues peculiar to a court of this description. On this occasion, Colonel, afterwards Lord Clive, showed his discernment and sagacity by pitching upon Mr Hastings as the person best qualified to discharge these various and difficult duties; and, in 1758, the latter was accordingly sent as diplomatic agent of the Company to the court of the new nawab. A more critical or responsible situation cannot well be imagined; but he conducted himself with a degree of skill, prudence, and ability, which gave entire satisfaction to his employers; and he was only recalled to Bengal, in 1761, in consequence of his having become, by seniority, a member of the general administration.

After a residence of about fourteen years in India, Mr Hastings returned to England, with acquisitions so moderate, and wishes so humble, that, whilst he panted to enjoy ease in Europe, he renounced all hopes of realising those golden prospects which had at first induced him to visit the banks of the Ganges. But, in a few years, brighter prospects dawned on him. In 1769 he unexpectedly received the appointment of second in the council, and soon afterwards left England for India. In the outward voyage, Mrs Imhoff happened to be a passenger on board the same ship with Mr Hastings. Married to a German, then on his way to India in the capacity of portrait painter, this lady, at once handsome and majestic in her person, rendered herself still more agreeable by her talents for conversation, and, although she had for some time been both a wife and a mother, contrived to captivate the affections of Mr Hastings, who, in fact, became so much enamoured, that, disregarding the prior rights of the unfortunate portrait painter, he resolved to transfer her matrimonial allegiance to himself. He landed at Madras in 1770, and remained there until the beginning of 1772, when, having been appointed president of the supreme council, he once more proceeded to Bengal. The management of the affairs of the first settlement belonging to the Company necessarily engrossed a large share of his attention; but still the helpmate of the German artist was not lost sight of; and, after a variety of delays incidental to a divorce, Mr Hastings was enabled, in 1777, to present Mrs Imhoff to the world in the character of his wife, having at the same time settled on her a lac of rupees, which, by an accumulation of interest, and the sale of some jewels, was afterwards increased to L.30,000.

As early as the year 1767, the House of Commons had instituted an inquiry, having for its object to ascertain by what right the Company held territorial possessions and exercised sovereignty in India. At that period, the affairs of the Company, both in Europe and in Asia, were in great disorder, and exhibited an appearance of general distress. This was attributed partly to the gross mismanagement of its servants, and partly also to the departure from the ancient and prudential maxims on which it had been originally constituted. No longer a mere association of merchants, traders, and factors, it had recently become a military power, and affected conquest, which was deemed incompatible with commerce; the peaceful economy and regularity of the counting-house had been exchanged for the waste and disorders of the field; the hands which had been sent to India to employ the pen now wielded the sword; and the Company's servants, abandoning their proper vocation, which was to extend its commerce, now sought only to enlarge its territorial dominions. But the system on which its affairs were managed was not yet adapted to the change which had taken place in its character and objects. The different presidencies, claiming equal powers and co-ordinate authority, had not coalesced for common purposes either of aggression or defence; jealousies and disunion prevailed; and, from the want of a central and supreme jurisdiction, the very existence of the Company was brought into jeopardy. To remedy this evil, it was resolved to create a paramount jurisdiction; and Mr Hastings was accordingly invested with supreme authority as Governor-General of Bengal. In the mean while, the situation of England had become critical in the extreme. The fatal attempt to coerce the American colonies had produced an alliance between them and France; Spain and Holland afterwards joined the confederacy against Britain; and a long, sanguinary, and expensive war ensued, the flames of which soon extended to the eastern hemisphere, and at length involved the Company in a contest for existence. At that period Hyder Ali Cawn Bahauder, an able and warlike prince, swayed the sceptre of Mysore, and only waited for a favourable opportunity to expel the English from India. Having collected a formidable army, and entered into alliances, particularly with the Mahrattas, he invaded the Carnatic, spreading terror and desolation wherever he appeared. The chief in command at Madras fled at his approach; the British under Sir Hector Munro were defeated; a strong detachment under Colonel Baillie was, after a gallant resistance, cut to pieces at Conjeveram; dismay pervaded the British settlements, and the triumph of Hyder seemed approaching towards its consummation.

On this critical and trying occasion, the conduct of the governor-general was distinguished for that firmness and energy by which alone great reverses are retrieved. Undismayed by the combination which had been formed against him, he stretched forth a helping hand to the remotest British settlements in Hindustan; on some occasions he had recourse to open force, on others he employed the most refined policy to disunite the confederates; and he even scrupled not, when other means failed, to buy off a dangerous enemy with money. Whilst the army of Sir Eyre Coote carried all before it in the field, and revived the respect of the natives for British prowess, the policy of the governor-general, effectively seconding the impression made by the troops, succeeded in dispelling the most formidable confederacy which had ever menaced the overthrow of the British power in India. But, even in the midst of his victorious career, murmurs began to be raised against him both in England and in India. He was accused of squandering the public money in improvident contracts; he was charged with extorting supplies from allied and dependent states, by means of injustice and oppression; and the peace he had concluded with the Mahrattas, the most formidable enemies of the British power, was declared to be dishonourable. In answer to all this, the friends of the governor-general pleaded the necessity of some of these measures; excused others on the ground that the end in some degree justified the means; ridiculed the idea that the storm in India could have been weathered by a European compass; and challenged the accusers to show how that settlement could have been saved by a policy less unscrupulous and less energetic than that which had been pursued by Mr Hastings. At first no charge of peculation was preferred. The objections were general, not personal; they applied to the policy of the governor-general, not to the conduct of the man.

As early as 1776, however, it became evident that the government at home was displeased with his measures, and steps were accordingly taken at the India House to order his recall; but a majority of the Court of Proprietors having declared in his favour, he was allowed to remain. Nothing further was done for some years, during which the opposition slumbered. But, on the 28th of May 1782, the House of Commons resolved that it was the duty of the Court of Directors to remove Mr Hastings. The motion embodying this resolution was made by Mr Dundas, afterwards Lord Melville, on the arrival of a dispatch containing an account of "an act of the most flagrant violence and oppression, and of the grossest breach of faith, committed against Cheyt Sing, the rajah of Benares." An order for the recall of Mr Hastings was accordingly issued by the Directors; but this also was afterwards rescinded, in consequence of a second vote of the Court of Proprietors in his favour. On these occasions, the talents and capacity of Mr Hastings were acknowledged by all parties; and it was also admitted that both the territories and revenues of the Company had been greatly increased under his administration. No one doubted or questioned his ability, none denied the success which had crowned almost all his schemes; but, on the other hand, these were often of such a kind as shocked all European notions of justice and equity, and the means too frequently employed appeared much more objectionable than the ends proposed to be attained. Hence, as the Court of Proprietors refused to sanction his recall, a regular plan was formed to bridle his power and circumscribe his authority, if these should at any time be exerted for unworthy or improper purposes. With this view, three gentlemen of acknowledged ability, Mr, afterwards Sir Philip Francis, General Clavering, and Colonel Monson, were selected, to whom were assigned seats at the council-board with competent salaries, and who were to form a sort of counterpoise to the governor-general. On the arrival of these functionaries in India, they were received with the customary respect; but, as might have been easily foreseen, many disagreements soon afterwards arose. Mr Hastings' policy did not meet their approbation. On the contrary, many of his projects seemed to them pregnant with danger; and as they constituted a majority, they carried all questions by a plurality of votes. The governor-general, accustomed to exercise absolute sway, could ill brook the restraint thus imposed on him. The newly-constituted board of control, on the other hand, exasperated by his haughty and despotic demeanour, carried their opposition beyond due bounds, protesting against and sternly refusing their consent to measures of undoubted utility. The breach became daily wider and wider between the parties, and at last an open rupture was signalised by a duel between the governor-general and Mr Francis.

Before this event occurred, however, these commissioners and councillors, in consequence of express orders from the Court of Directors, proceeded to inquire into all acts of bribery, peculation, and oppression, committed, or alleged to have been committed, by any of the Company's servants. This proceeding soon brought on a crisis, out of which arose some of the most remarkable events in the history of our Indian empire. Nundcomar, a native of high consideration, perceiving the divisions which existed in the supreme council, laid before that body certain charges of corruption, implicating the governor-general, and at the same time challenged, or rather defied, the latter to deny them. Mr Hastings peremptorily refused either to meet or refute the charges of Nundcomar; but contented himself with vilifying his accuser, and repeatedly dissolved the council, by which means his colleagues were prevented from proceeding with their inquiries. Some progress was, however, made in the investigation. The evidence of Nundcomar, and that of his son Rajah Gourdass, were obtained, from which it appeared that large sums of money had been conveyed by them to the governor-general, in the name of Munry Begum. They mentioned all the intermediate agents employed, the species of coin in which the bribe consisted, the colour of the bags which contained the money, and the rate of exchange paid on the occasion; in corroboration of their statement they produced a letter from Munry Begum herself, and they concluded by requesting that Mr Hastings' banyan, Cantoo Baboo, might be examined respecting all these points. The governor-general, however, declined to meet his accusers; he refused to allow Cantoo Baboo to be produced; and to the specific charges preferred by Nundcomar and Gourdass he merely opposed the integrity of his character. Whilst matters were in this state, an event occurred, which was not only extraordinary in itself, but seemed calculated to fix suspicion upon the governor-general. Nundcomar was arrested on a charge of forgery, and having been committed to the common prison, was soon afterwards tried before Sir Elijah Impey, the chief justice of Bengal, convicted, and executed, in pursuance of a statute which did not apply to Scotland, and which could only be extended to India on a principle of construction expressly excluded in the interpretation of all penal enactments.

In the mean while, the sudden death of General Clavering, followed by that of Colonel Monson, having restored the preponderance of Mr Hastings in the council, Mr Francis, finding himself unsupported, embarked for Europe, though not until he had fought a duel with the governor-general. From that moment the latter conducted the affairs of the government with absolute authority. By his casting vote he nullified the propositions of Mr Wheler; and Mr Barwell, who afterwards acted as his colleague, acceded to all his measures, and contributed to promote their success. Nor can it be disputed that he conducted the war against Hyder with extraordinary ability. The want of money was supplied by the resources of a mind fertile in invention, and not over-scrupulous as to means; the Company's revenues were increased under his administration; and, notwithstanding all that had been alleged against him, his influence, both in England and India, seemed to be unbounded. Nevertheless, on the 9th of February 1787, Mr Hastings deemed it prudent to embark for Europe; and although fully aware that he was returning to pass through the fiery ordeal of impeachment, his mind appears to have been unmoved by the prospect of such a trial. He had powerful friends, he had performed important services, and he trusted that the united influence of both would bear him triumphantly through.

After a passage of four months and a few days, Mr Hastings arrived in England, where he was eagerly expected both by his friends and his enemies. It was not, however, until the 17th of February 1786 that Mr Burke moved for papers connected with the proceedings of Mr Hastings in India; and on the 4th of April the former presented to the house separate articles charging the latter with a number of high crimes and misdemeanours. In these the ex-governor-general was charged with gross injustice, cruelty, and treachery, in hiring British soldiers for the purpose of extirpating the helpless people who inhabited Rohillacund; with bereaving the Great Mogul of considerable territory, forcibly withholding the tribute of twenty-six lacs of rupees, and holding in his name the duannee of the provinces of Bengal, Bahar, and Orissa; with extortion, followed by expulsion, in respect to the rajah of Benares; with inflicting intolerable hardships on the royal family of Oude; with having reduced the province of Ferruckabad to a state of utter ruin; with impoverishing and depopulating the whole country of Oude, and rendering it an uninhabited desert; with a wanton, unjust, and pernicious exercise of his power, in overturning the ancient establishments of India, and extending an undue influence, by conniving at extravagant contracts and appointing inordinate salaries; with receiving money against the orders of the Company, the act of parliament, and his own engagements, and applying it to improper purposes; with having resigned by proxy, for the purpose of retaining his situation, and denying the deed in person; with having conducted himself treacherously towards Muzuffer Jung, who had been placed under his guardianship; and with enormous extravagance and bribery, in the view of enriching his favourites and dependents. But these charges were afterwards restricted to four, viz. those respecting the rajah of Benares, the begums of Oude, the presents, and the contracts.

On the 1st of May, Mr Hastings was called to the bar of the House of Commons, and there read his defence, which occupied two whole days. He described the grounds of crimination as ill founded and malicious; he complained that the various publications of the times contained the most unwarrantable observations on his conduct, and that the press daily teemed with the most gross libels on every part of his administration in India; and he urged the extreme hardship of being obliged to reply to charges containing nothing specific, and which might be called historical narrations with voluminous commentaries. In respect of his public conduct, he had ever acted according to the emergencies of the times; and he had been frequently reduced to such extremities as to defy the sanction of any precedent. No man had ever been in more perilous situations; and, amidst his disasters, he was entirely left to the resources of his own mind. He had resigned the government of India amidst the regret of his fellow-subjects; he had repeatedly received the thanks of his employers, the Directors of the East India Company; he had had the satisfaction of discharging the trust reposed in him with unanimous approbation; and he believed that no other power on earth had a shadow of right to call his conduct in question. He then replied to the different charges in succession, and entered into details and explanations which, from their multiplicity, defy all power of abridgment or concentration.

On the 1st of June, the House of Commons rejected the first charge, deciding that the conduct of Mr Hastings, in the Rohilla war, was not impeachable; but the second, respecting the rajah of Benares, was carried by a great majority, upon which it was resolved that Mr Burke should carry up the impeachment, and that Mr Hastings should be committed to the custody of the serjeant-at-arms. The trial commenced on the 15th of February 1788, when Mr Burke, in an eloquent exordium, recapitulated the history of India since its connection with England. After remarking that the arts of plunder had not been exhausted under Lord Clive, he observed that the accused had introduced into his defence a sort of geographical morality, a set of principles suited only to a particular climate, and had contended that what was peculation and tyranny in Europe lost both its essence and its name in India. He then touched upon the alleged delinquencies of Mr Hastings, commencing with the affair of Nundcomar. That unfortunate person, soon after he had become the accuser of Mr Hastings, was taken off by a prosecution for felony; yet he was not the only accuser, one of the most illustrious princesses of Bengal having declared on oath that the accused had received from her or her agents a bribe of L.40,000, whilst another bribe had been obtained for a judgment relative to the descent of land. He next charged Mr Hastings with employing two notorious criminals, Congo Burwant Sing and Devi Burwant Sing, for corrupt purposes; then entered into a detail of the cruelty, injustice, and extortion practised by these men against the natives; and concluded with a most powerful appeal to the justice of the house. On the sixth day Mr Burke opened the Benares charge. He attributed the prisoner's hatred of the rajah of Benares to the circumstance of the latter having sent a vakeel or ambassador to congratulate Sir John Clavering on his supposed accession to the dignity of governor-general; a proceeding which would appear natural and inoffensive to those who considered the humiliation to which the princes of India were reduced, but which, in the mind of Mr Hastings, was sufficient to excite a rancour that could only be appeased by the ruin of its object. He then stated that a subsidiary treaty had existed between the Company and Cheyt Sing, who was recommended to keep up a body of 2000 horse for their mutual security; that on this treaty the governor-general founded an arbitrary claim, and turning the recommendation into a demand, required the 2000 horse to be found, not at the expense of the Company, as had been agreed on, but at that of the rajah; that Cheyt Sing declared in answer that he had only 1300 horse, 500 of which he offered to furnish, and to supply the deficiency with 500 matchlock-men, all at his own expense; that he likewise attempted to conciliate the friendship and protection of Mr Hastings by a present of L.20,000, which the latter afterwards received for the use of the Company, although such a voluntary gift could not be expected from a man worn out with extortion, and was obviously meant as a bribe to rescue him from future oppression; and that, notwithstanding all these concessions, Mr Hastings declared his patience exhausted, took upon himself the character of judge, accuser, and witness, demanded of the rajah a fine of fifty lacs, or L.500,000, for his disobedience, and proceeded in person to Benares to enforce the requisition. Mr, afterwards Earl Grey, followed, and stated, in terms truly affecting, the arrest and deposition of the unfortunate rajah. The arrangement of the evidence, which was allotted to Mr Anstruther, occupied many days.

The second charge, respecting the begums or princesses of Oude, was opened by Mr, afterwards Lord Chief Commissioner Adam. After representing Oude as a great and flourishing country, Mr Adam observed that the begums were ladies of the highest birth and quality; that they were legally in possession of great estates, both real and personal, which had been guaranteed by the East India Company; that it was therefore the bounden duty of Mr Hastings to maintain them in the undisturbed possession of their property so guaranteed; that, instead of doing so, he had invaded and compelled their own nearest relative, the reigning nawab, to despoil them of this property; that these ladies, besides being treated with the greatest indignity, were reduced to the most deplorable distress; and that, in order to give a colouring to his own proceedings, the accused had, by means of affidavits taken by Sir Elijah Impey, to the great discredit of justice, slandered the begums as the abettors of Cheyt Sing. He then stated it to be the intention of Mr Hastings to obtain a resumption of the jaghires or grants bestowed on these ladies; animadverted on the odious and cruel means employed for this purpose by his agent, Mr Middleton; dwelt with great force on the reluctance with which the personage so nearly related to them[1] had been obliged to violate every thing deemed sacred on earth; and concluded with a harrowing picture of the want, misery, and despair to which they were in consequence reduced. Mr Sheridan occupied three days and part of the fourth in summing up this charge, a duty which he performed with transcendent ability and unsurpassed eloquence. He described the seizure of the treasures and the jaghires as the effect of a dark conspiracy, in which no more than six persons were concerned. Three of these were of a higher order; Mr Hastings, who might be considered as the principal and leader; Mr Middleton, the English resident at Lucknow; and Sir Elijah Impey, the chief justice of Bengal: whilst the other three were inferior or subordinate conspirators; Hyder Beg Khan, the nominal minister, but in reality the creature of Mr Hastings; Colonel Hannay; and Ali Ibrahim Khan. After passing in review, and strongly animadverting on, the character of each of these persons in succession, he recurred to that of Mr Hastings, whom he represented as a man who affected to ensure to the allies of the Company prosperity and protection. And how had this been accomplished by him? The former he secured by sending an army to plunder them of their wealth, and to desolate their soil. His protection was fraught with a similar security; like that of the vulture to the lamb, grappling in its vitals, thirsting for its blood, scaring off every petty kite that hovered round, and then, with an insulting perversion of language, calling this *prosperity and protection.*[2] The parliamentary accusers then proceeded to the sale of the jaghires, which was not followed, as had been promised, by a pecuniary compensation. The goods and jewels taken from these ladies were sold for a low price, at a mock auction, and their ministers imprisoned to exact the deficiency. And yet these were but petty frauds in comparison of the enormities of Mr Hastings, who, after extorting upwards of L.600,000, forbade Mr Middleton to come to a definitive settlement, and afterwards found a balance of twenty-six lacs (L.260,000) more against the begums. "Talk not to us," said the governor-general, "of their guilt or innocence, but as it suits the Company's credit. We will not try them by the code of Justinian or the Institutes of Timur. We will not judge them by the British laws, or by their local customs. No, we will try them by the multiplication table; we will find them guilty by the rule of three; and we will condemn them according to the sapient and profound institutes of Cocker's arithmetic."

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[1] One of the begums was the mother, and the other the grandmother, of the reigning nawab of Oude.

[2] The winding up of this part of the case is eminently forcible and striking. "The deep-searching annals of Tacitus, the luminous philosophy of Gibbon, all the records of man's enormity, from the period of original sin up to the present time, dwindle into comparative insignificance of enormity, both in the aggregation of vile principles, and the extent of their consequential ruin. The victims of this oppression were confessedly destitute of all power to resist their oppressors; but debility, which from other bosoms would have claimed some compassion with respect to the mode of suffering, here excited but the ingenuity of torture. Even when every feeling of the nabob was subdued, nature made a lingering, feeble stand within his bosom; but even then that cold, unfeeling spirit of malignity with which his doom was fixed, returned with double acrimony to its purpose, and compelled him to inflict on a parent that destruction, of which he was himself reserved but to be the last victim."

On the 5th of May, Mr Burke opened the charge relative to the acceptance of presents, and the corrupt appointment of Munry Begum, who had been a dancing girl, to the head of the government of Bengal. But on this occasion the Lords rejected as inadmissible much of the evidence produced; and towards the conclusion of the session, Mr Hastings made an appeal at the bar of the house, in the course of which he demanded if his whole life was to be consumed in this impeachment. On the 16th of February 1791, Mr Anstruther resumed the charge relative to the presents, and accused Mr Hastings of having received a bribe of L.40,000 from Goonga Govin Sing, the most infamous man in all Hindustan. The article relative to corrupt and illegal contracts was opened by Mr St John, who dwelt particularly upon one respecting opium, entered into with Mr Stephen Sullivan, son of the chairman of the East India Company, by whom it was afterwards sold for an enormous premium. He also charged Mr Hastings with engaging the Company in a smuggling trade to China, with giving away the bullock contract without advertisement, and with assigning to Mr Auriol the agency for supplying the presidency of Madras with provisions during a time of scarcity, and agreeing that he should account, not by vouchers, but "upon honour."

On the seventy-third day, and fifth year of the trial, Mr Law, afterwards Lord Ellenborough, entered on the defence of his client. He began by calling the attention of their lordships to the critical situation in which the governor-general had found Bengal; detailed the principal events of his administration from 1773 to 1780; affirmed that the Carnatic had been saved by the spirit and decision of Mr Hastings; pronounced the attack on Goonga Govin Sing mere invective; and declared his opinion that the demand of fifty lacs of subsidy from Rajah Cheyt Sing was legitimate. He then entered into an examination of the articles separately, and concluded with a high-wrought eulogium on the character of Mr Hastings. Evidence was now produced in behalf of the accused; some of the statements of the managers were disproved; a different colour was given to others; and all the witnesses examined testified to the high character of Mr Hastings. In the debates which ensued in the House of Lords, it was maintained that many of the *bribes* were sums usually given for entertainments; that other charges of a similar nature were not established; and that the lesser accusations were not such as to afford grounds for impeachment. But on this occasion the two great law authorities of the house differed widely from each other; Lord Thurlow contending for the complete innocence of the accused, whilst Lord Loughborough, now Chancellor, deemed his conduct in many respects highly culpable.

At length, on the 2d of June, Mr Hastings entered upon his defence before the House of Lords, and in presence of the Commons of Great Britain, his accusers. After lamenting the protracted duration of the proceedings, and expressing the greatest confidence in an acquittal, he produced numerous testimonials from the natives themselves, in answer to the charge of having oppressed them; he referred to the statement of the expenditure of Bengal in war and peace, in reply to the charge of having squandered the public money; and he justified his disobedience of the orders of the Directors, by the absolute, overruling necessity of the case. As to the Benares charge, he denied that Cheyt Sing was an independent prince; that person was merely a zemindar, our subject, and consequently liable to the demands of his superior in time of war. With regard to the alleged usage of the begums, he confessed that he had consented to the resumption of the jaghires or grants, and of the treasure, because he conceived them disaffected to our government, which in his opinion put an end to the guarantee. As to presents, he maintained that no proof existed of his having ever accepted any but the common *zeafut* or entertainment-money given to all former governors; and he utterly denied having received any bribe whatsoever from the unfortunate Nundcomar. On the subject of the contracts, he disavowed all knowledge of the transaction respecting opium, and stated, that if he disobeyed the Company's orders in regard to a public sale, it was because he was desirous to place at the head of this department a man incapable of fraud and falsification. He then enumerated all the services he had performed during the long period he was at the head of the Indian government, and concluded as follows: "I am arraigned in the name of the Commons of England, for desolating the provinces of their dominion in India;—I dare to reply that they are the most flourishing of all the states of India; and it was I who made them so. The valour of others acquired, but it was I who enlarged, and gave shape and consistency, to your dominions. I maintained the wars which were of your formation, not mine; I dispelled a confederacy of the native powers; I neutralised their efforts, I divided their members. I gave you all, and you have rewarded me with confiscation, disgrace, and a life of impeachment."

This trial, after having lasted during the unexampled period of a hundred and forty-eight days, and been protracted for nearly eight years, was at length brought to a termination. Sixteen distinct questions were separately put to the Lords, who, by a large majority of those present, pronounced the accused not guilty; and he was accordingly declared by the chancellor to be "acquitted of the articles of impeachment exhibited against him." With the result of this celebrated impeachment all parties were discontented. The managers objected to the decisions of the Lords, as being unaccompanied with reasons, and to the opinions of the judges, as arising out of cases not stated in their presence; and it was even asserted in the House of Commons that the general acquittal on all the charges afforded only a proof of *legal* innocence. On the other hand, Mr Hastings complained that, after a trial of one hundred and forty-eight days, followed by a complete acquittal, his law expenses, amounting to L.71,080, had not been paid; and that a sum voted by his constituents, the East India Company, to "indemnify him for the legal expenses incurred by him in making his defence," had not been granted. On the 2d of May 1796, the chairman, Sir Stephen Lushington, informed a General Court of Proprietors that an annuity of L.4000 a year for twenty-eight years and a half had been passed by the Court of Directors, and confirmed by the Board of Control, in favour of Mr Hastings, and that the law expenses should also be cleared, although the precise mode had not yet been settled. Of this pension he obtained about ten years in advance; but as he lived thirty-three years thereafter, he survived it for a considerable period. Whether the expenses incurred by him in making his defence were actually cleared by the Company, agreeably to the vote just mentioned, we have had no means of ascertaining.

From the moment of his acquittal, Mr Hastings courted obscurity, and spent the remainder of his life in retirement at Daylesford, where he occupied himself in adorning his grounds and improving his estate. He lived long

Hastings.

enough to see many of his plans realised through the agency of others; and at length having attained his seventy-fifth year, he died on the 22d of August 1818. The powerful talents, intrepid character, and unbounded success, of Mr Hastings, have been acknowledged even by his enemies; but still it is extremely difficult to pronounce any decided opinion, either on his general conduct or the principles of his government. He was no doubt placed in a situation of extreme difficulty and peril, to which the ordinary maxims of government cannot be rigorously applied; but, on the other hand, he urged the plea of necessity a great deal too far, and, in his anxiety to attain a particular end, evinced a blameable indifference as to the character of the means employed. His conduct to Cheyt Sing and the begums of Oude, the extermination of the Rohillas, and his proceedings in regard to the contracts, may probably be excused, but can never be justified, and, notwithstanding all the ingenuity of his defence, will ever be viewed with an unfavourable eye in Europe, whatever opinion may be formed of them in India. In private life Mr Hastings was amiable, conciliating, and unaffected. In his early days he had cultivated poetry; and all the terrors of an impending impeachment could not prevent him from indulging his inclination in this respect, during his second voyage to Europe. At a later period, when writhing under the agony of a protracted prosecution, he produced an epigram, the bitterness of which could only be excused by the situation he was placed in; and Mr Burke, stung by it at the moment, complained loudly to the House of Lords, although no one will, on due consideration, think that it had any just application to him. This epigram is as follows:—

> Oft have I wondered that on Irish ground
> No poisonous reptiles ever yet were found:
> Revealed the secret stands of Nature's work;
> She saved her venom to create a Burke.

Mr Hastings was the author of, 1. Narrative of the Insurrection at Benares, 1782, in 4to; 2. Memoirs relative to the State of India, 1786, in 8vo; 3. A Treatise on the means of guarding Houses, by their construction, against Fires, 1816, in 8vo; 4. Fugitive Poetry, consisting of Imitations of Horace, &c. (A.)

HASTINGS, a market-town of the county of Sussex, sixty-four miles from London. It is situated on the sea-shore, in the hundred of Baldstow and the rape of Bramber. It is said to have been originally built by a Danish pirate, whose name it bears. It is the principal of the cinque ports, and had formerly a harbour, but is now only a roadstead adapted for small vessels and fishing boats. It contains three parishes, but only two churches, both very ancient edifices. There is a custom-house and town-hall, but no other public buildings deserving of notice, excepting an old castle in ruins, which overlooks the town. There is an extensive herring fishery carried on in the autumn, and in all seasons the taking of fish for present use gives occupation to many of the inhabitants. There is also a vast deal of contraband trade pursued, with more zest than gain to those engaged in it. But the town owes its prosperity chiefly to the number of casual visitors, who frequent it on account of the peculiar mildness of the air, and the excellent accommodations for sea-bathing. These circumstances have operated of late years to promote building of a better description; and as a cleft interposed on the western side of the town, the rock has been scooped out sufficiently to erect a new and handsome square. From the same causes, a beautiful suburb called St Leonard's has been covered with many sumptuous houses, adapted for the more wealthy class of visitors. This place has been rendered famous in history by the victory obtained near it by William the Conqueror. It is a borough, governed by a mayor and jurats, and returns two members to parliament. Under the new law the voters are about 580. There are good markets on Wednesday and Saturday. The population amounted in 1801 to 2982, in 1811 to 3848, in 1821 to 6085, and in 1831 to 10,097.

HAT is a term of Saxon derivation, from *haet*, a cover for the head. It is sometimes called castor, from its being made of the fur of the castor or beaver. As a piece of dress, the period of its introduction is not certain, although it may with great probability be referred to the early distinctions of Roman Catholic dignitaries. Froissart chronicles, that it was "saide to the cardynals, Sirs, advyse you if ye delyvere us a Pope Romayne, we be content, or els we woll maike your heddes reeder than your hattes be;" from which, and many other documents, it appears that at this period, as well as for some centuries thereafter, hats were generally of a scarlet or red colour, and made of "a fine kinde of haire matted thegither." A "hatte of biever," about the middle of the twelfth century, was worn by some one of the "nobels of the lande, mett at Clarendom;" and Froissart describes hats and plumes which were worn at Edward's Court in 1340, when the garter order was instituted. In the Diary of Henry's secretary, there is "ane scarlet beever hatte" presented on new year's day 1443. Even at this early period hats were of various shapes, both in the crowns and the brims; the latter being chiefly broad, sometimes narrowing towards the back, and a little bent up and scooped in front. In Henry's privy purse expenses, during his congress with Francis I. in 1520 or 1521, there is "peid for a hatte and plume for the king, in Boleyn, xvs.;" and in Wolsey's inventory, taken on his resigning the great seal to Sir Thomas Moore, there are no fewer than five mentioned. The fashion of this article was then much more diversely capricious than even now, as will appear from an extract from Stubbs' *Anatomie of Abuses*, published about 1585: "Sometimes they use them sharpe on the crowne, pearking up like the spire or shaft of a steeple, standing a quarter of a yard above the crowne of theire heads; some more, some lesse, as please the fantasies of their inconstant mindes. Othersome be flat, and broade on the crowne, like the battlements of a house. Another sorte have rounde crownes, sometimes with one kind of bande, sometimes with another; now black, now white, now russed, now redde, now grene, now yellow; now this, now that; never content with one colour or fashion two daies to an end. And as the fashions be rare and strange, so is the stuffe whereof their hattes be made divers also; for some are silk, some of velvet, some of taffetie, some of sarsnet, some of wool, and, which is more curious, some of a certaine kinde of fine haire, these they call bever hattes, of xx. xxx. or xl. shillings price, fetched from beyonde the seas, from whence a great sorte of other vanities doe come besides; and so common a thing it is, that every servyng man, countreiman, and other, even all indifferently, doe weare of these hattes." About the beginning of 1700, the crowns of hats were mostly round, much lower than before, and had very broad brims, resembling what are now occasionally called Quakers' hats, the protrusive encumbrance of which soon suggested the convenience of their being turned up in front; fashion dictated the upbending of another side or flap, and ultimately a third, so that by this progress, in 1704, the regular three-cocked hat became the order of the day, when feathers ceased to be usually worn. Near the middle of the eighteenth century, a round-edged but flat-topped and full-brimmed hat got into very general use, and the flat and other cocked hats now dwindled almost into a mere distinction of real or assumed rank. Twenty-five years after this, a very near approach to that of the present times became fashionable, and, within ten years, altogether superseded the ordinary use of the cumbrous and antique cock.

Plumes, jewels, silk loops, rosettes, badges, gold and silver bands and loops, have at various periods ornamented this article of dress; metal bands and loops being now esteemed proper only to naval and military "men of honour," and the humble liveried attendants on state, rank, and official dignity. The *opera* or soft folding hat is the only relic at present in general use, of the hats worn by our grandfathers, although it is not improbable that the affluent and growing extravagance of this century is likely to re-introduce the elegant Spanish hat as the precursor perhaps of the prevalence of various other styles, as well as the cocked hat, not yet entirely discarded from the revolving wheel of luxurious fashion.

Hat-making now embraces two distinct kinds of manufacture, felted and covered hats; the covering of the latter being sometimes silk, and at other times Braganza or cotton Angola.

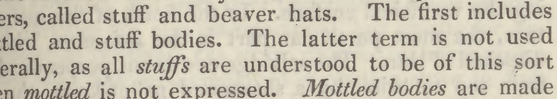
Felted hats comprehend two classes, differing chiefly in the materials used in making, the process being nearly identical. The lower class is marked by inferior ingredients, unmixed with beaver, and embraces *wool*, *plated*, and *short nap* hats.

Wool hats are made entirely of coarse native wool and hair stiffened with glue, chiefly for negroes' wear. Value 1s. 2d. to 2s. 2d. *Plates* have a *nap* or pile rather finer than their body, and are sometimes *waterproof* stiffened. Value 3s. to 4s. 6d. *Short naps* are distinguished from plates by additional kinds of wool, viz. hare's back, seal, neuter, musquash (Muscovy cat), and are all waterproof stiffened. Value 5s. to 9s.

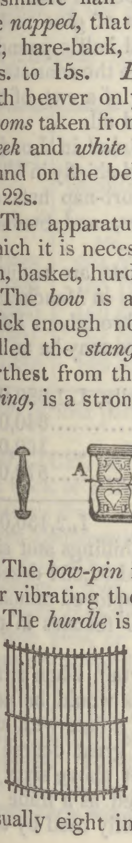
The second class may be said to comprehend two orders, called stuff and beaver hats. The first includes mottled and stuff bodies. The latter term is not used generally, as all *stuffs* are understood to be of this sort when *mottled* is not expressed. *Mottled bodies* are made chiefly of fine Spanish wool, and inferior rabbit down or coney wool. Value 1s. 8d. to 2s. 6d. *Stuff bodies* consist of the best hare, Saxony, and red wools, mixed with Cashmere hair and silk. Value 3s. to 4s. *Stuff hats* are *napped*, that is, covered with pile of mixed seal, neuter, hare-back, inferior beaver, and musquash. Value 10s. to 15s. *Beaver hats* are, or ought to be, napped with beaver only; the lower priced qualities with *brown wooms* taken from the back; the more valuable kinds with *cheek* and *white wooms*, being the finest parts of the fur found on the belly and cheeks of the beaver. Value 16s. to 22s.

The apparatus and terms used in making felted hats, which it is necessary to describe briefly, are the bow, bow-pin, basket, hurdle, battery, and planks.

The *bow* is about six feet long, usually made of ash, thick enough not to be elastic. The handle A, B, C, is called the *stang;* A is named the *breech;* C, the end farthest from the workman's hold, the *cock*. D, the *bow-string*, is a strong catgut cord tensely fastened.



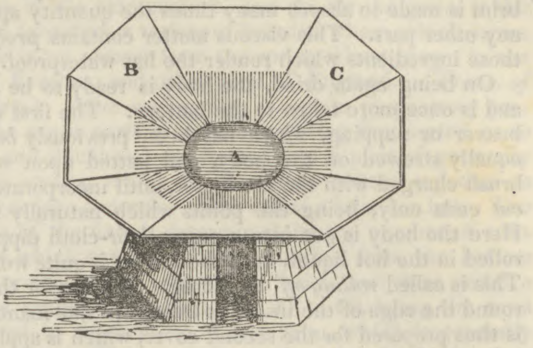
The *bow-pin* is used (just as the finger on the guitar) for vibrating the bowstring.



The *hurdle* is a fixed bench, with three enclosing sides, to prevent the stuff being flittered off in bowing.

The *basket* is of light wicker-work, about twenty by twenty-two inches in size.

The *battery* consists of A, the kettle; B, C, the planks, which are inclined planes, usually eight in number, one only being appropriated to each workman. The half of each plank next the kettle is lead, the upper half is mahogany.



The first process in hat-making is *bowing* the stuff or furs, which are weighed out to a proportionate scale, and laid on the hurdle, immediately under the bow, which is suspended by a pulley. The bow is held firmly with the left hand, rather toward the *breech-end*, not edgewise, but on its side, with the string in contact with the stuff, the clotted and adherent portions of which are separated into single fibres, and attain a loose, flocky, mixed condition by the continued vibration of the bowstring, caused by a very rapid succession of touches with the bowstick. It is then divided as nearly as possible, and one half laid aside, whilst the other is again bowed. In this second operation, partly by the bowing, but chiefly by the *gathering*, or patting use of the basket, the stuff is loosely matted into a conical figure, about fifty by thirty-six inches, called a *bat*. In this formation care is taken to work about two thirds of the wools down towards what is intended for the brim, which being effected, greater density is induced by gentle pressure with the basket. It is then covered with a wettish linen cloth, upon which is laid the *hardening skin*, a piece of dry half-tanned horse hide. On this the workman presses or bakes for seven or eight minutes, until the stuff shall have adhered closely to the damp cloth, in which it is then doubled up, freely pressed with the hand, and laid aside. By this process, called basoning (from a metal plate or *bason*, used for like purposes in making *wool* hats), the bat has become compactly felted and thinned toward the sides and point. The other half of the flocked stuff is next subjected to precisely the same proceedings, after which, a cone-shaped slip of stiff paper is laid on its surface, and the sides of the bat folded over its edges to its form and size. It is then laid paper-side downward upon the first bat, which is now replaced on the hurdle, and its edges transversely doubled over the introverted side-lays of the second bat, thus giving equal thickness to the whole *body*. In this condition it is re-introduced between folds of damp linen cloth, and again hardened, so as to unite both halves, the knitting together of which is quickly effected. The paper is now withdrawn, and the body being folded into three plies, is removed to the plank or battery room.

In the battery the *liquor* is scalding heat, composed of pure soft water, about half a gill of oil of vitriol as an astringent, and a full handful of oatmeal to correct its pernicious tendencies. Herein the body is imbrued, and withdrawn to the plank to partly cool and drain, when it is unfolded, rolled gently with a pin tapering towards the ends like a liquor horse, turned, and worked with in every direction, to toughen, shrink, and at same time prevent adhesion of its sides. *Stopping* or thickening the thin spots which now appear on looking through the body, is carefully performed, by additional stuff daubed on by successive supplies of the hot liquor from a brush frequently dipped into the kettle, until the body be shrunk sufficiently (about one half), and thoroughly equalized. When quite dried, *stiffening* is performed with a brush dipped into a glutinous pulpy composition, and rubbed into the body; the surface intended for the inside having much more imposed than the outer, while the brim is made to absorb many times the quantity applied to any other part. This viscous matter contains *proofing*, or those ingredients which render the hat waterproof.

On being again dried, the body is ready to be *covered*, and is once more taken to the battery. The first cover of beaver or napping, which has been previously *bowed*, is equally strewed on the body, and patted upon with the brush charged with the hot liquor, until incorporated; the *cut* ends only, being the points which naturally intrude. Here the body is put into a coarse hair-cloth dipped and rolled in the hot liquor, until the beaver is quite worked in. This is called *rolling off*, or ruffing. A stripe for the brim, round the edge of the inside, is treated in like manner, and is thus prepared for the second cover, which is applied and inworked in like manner; the rolling, &c. being continued until the whole has become incorporated, and a clean, regular, close, and well-felted *hood* is the result. The dry hood, after having the nap beat up and freed, is clipped to the length which may be thought best, by means of common shears. A clipping machine, invented nearly four years ago in Scotland, is now very generally preferred, and doubtless will soon everywhere supersede the ordinary process; much greater regularity, speed, and certainty being secured by it. When the nap is thus disposed of, the hood is soaked in the battery kettle, and then *drawn down* on a block to the size and shape wanted, firmly tied at the bottom with a cord, around which the brim is left in a frilled condition.

Dyeing is the next step. A *suit*, or six dozen, are put into the dye kettle at a time, all on the crown-blocks already mentioned, and allowed to remain three quarters of an hour in the liquor, which is kept as near as possible one degree below the boiling point. These being taken out and set in the yard to cool, another suit is introduced for a like period, and the various suits are so treated at least twelve times in successive order. Each of the first four introgressions of every suit is accompanied by about seven pounds of copperas, and two pounds of verdigris. The body is then washed and brushed out in changes of hot water, until no colouring can be recognized in it. When thus thoroughly cleansed, it is steamed on a block shaped as the hat is wished to be when complete; and in the finishing shop, by heavy (21-pound) heated irons and moisture, the frilled brim is shrunk until rendered quite level, the nap gently raised all over with a fine wire card, and brushed and ironed smooth in the uniform directions. The tip, a thin lath sheet, is then fitted and stuck to the inside of the crown, and *robbined* or secured all round the edges by stripes of prepared paper. When thus *got down*, it is sent to the *picker*, who, with tweezers, extracts the *kemps*, vulgarly called "grey hairs," which are a few of those thick fibres peculiar to the fur of amphibious animals, that have escaped the search of the machine used in blowing the beaver, so as to separate them from its fine parts. This being carefully accomplished, it is transferred to the finisher, who, with a plush cushion or *velure*, a brush, and hot iron, imparts to it that bright sleeky lustre so characteristic of English and Scotch hats. The *shaper* then rounds the brim with a knife and knotched segment to the breadth wanted; and shapes it in varied styles by means of a hot iron and damp, with about a foot length of rope, over which the *curl* is laid. The *trimming* is next done, when the *tipper off* corrects the twists, smooths the ruffled nap caused by trimming, and *papers* it up with tissue and cartridge, which completes it for the retailer.

Dye-stuffs for a gross of beaver hats.—About 180 gallons of pure soft water, one and a half hundredweight of best Campeachy logwood, eight pounds oxide of copper, and thirty pounds of copperas. It is to be observed, however, that some put the chips, others only the juice, of the logwood into the dye-kettle. Galls are now disused. *Stiffening stuffs.*—Makers differ in the proportions, but the ingredients are shell-lac, rosin, mastic, saundrice, and elm, all churned until dissolved. A quantity of this is then melted over steam, sieved, put in hot, and well mixed. *Cleaning stuffs.*—These are now seldom considered necessary. One half pound of borax, diluted in five gallons of water, into which the stiffened nap is dipped and well brushed.

Silk hats are made upon bodies of wool, stuff, willow, straw, and leghorn plait, and cambric and woollen cloth, although chiefly on felted wool bodies, which are dipped in glue size, wrung out, blocked, and dried. The *tip* is then fitted and robbined, when a flour-box charged with powdered shell-lac and rosin in like quantities is used to strew equally its grainy mixture on the external surface of the *shell*, so called from being the frame-work. This is burned in by hot irons, first on the top, which passes through to the lath-tip within; then on the upper brim, the sides, and, finally, the under brim. When this is hardened, it is coated with thick ordinary flour-paste, which is dried, and the shell again blocked and smoothed; then once more glue-sized outside, dried, and varnished, which prepares it for *covering*. The shag for the sides is cut across the web, in a ratio of obliquity increased by inferiority. This cross part is sewn to a circular piece for the crown, whilst the brims are singly patched together. These preparations being completed, the *top-side* or upper brim is first stuck, then the crown, next the sides, and, finally, the under brim. *Sticking* is effected simply by the heat of the iron passing through the covering and melting the varnished surface. In the finish of this manufacture, the most particular part is the *side-seam*, which is disposed of thus: The selvidge end is cut perpendicularly from top to brim, by a sharpened pallet-knife, the nap having been previously brushed clear off its edge. The other selvidge end is then stuck and cut with the utmost nicety, in close parallel with the other. It is then finished very much in the same manner as a beaver hat.

Tip stuff for silk hats.—Seven pounds of glue melted in water, when three pounds of pitch and half a pound of tallow are added, and the whole is boiled to the consistency of thick jelly. *Varnish stuff.*—A quarter of a cwt. of turpentine, mixed with two gallons of linseed oil.

The major part of stuff hats are *finished* in London, whilst body-making and ruffing is managed chiefly in Gloucester and Derbyshire. Plated and short-nap hats are made principally in Lancashire, Cheshire, and Staffordshire, owing to local advantages.

150,000 dozens of silk and covered hats are annually made in London, and about 100,000 dozens in Manchester, Liverpool, Birmingham, and Glasgow. Throughout Edinburgh and the other parts of Scotland there may be an additional 50,000 dozens made yearly.

Value of plated hats manufactured annually,	L.1,080,000
Stuff hats	640,000
Wool felt hats and military caps	160,000
Silk hats	570,000
	L.2,450,000

Imported hats are each subject to ten shillings and sixpence of duty. In 1832 there were exported 62,854 dozens. In this branch of manufacture there are employed annually nearly 25,000 men, besides about 10,000 females in the trimming and picking departments.

Hats, Straw. Any attempt to ascertain when straw was first used in the manufacture of hats would be useless, because it would be impossible to fix a date with any correctness. In Italy it had arrived at a great degree of perfection two centuries ago; but it is not above sixty or seventy years since it began to be followed as a trade in England. Wheat straw is the material chiefly used by our manufacturers; and the counties most favourable for its production are Bedford, Hertford, and Buckingham, which have been called the *straw-plait district*. The making of straw hats is carried on in other places, but not to the same extent as there. Leghorn bonnets had long been a considerable article of import; but the late war having put a stop to this, a new spirit was given to the home manufacture. It now became a flourishing trade, which produced competition and a consequent improvement in the article. At the close of the war, however, Leghorn hats again usurped the market to a considerable extent, and the domestic manufacture proportionally declined. Many of the straw plaiters having been reduced to great distress, the Society of Arts turned its attention to the subject, and offered premiums for improvements in plaiting, finishing, and bleaching. The straw of Tuscany having been found very superior to British straw, the former became an article of import; and the Italian method of plaiting the straw has also been introduced. So completely successful has this scheme been, that, whilst the importation of Leghorn hats has gradually decreased during the last few years, the introduction of the raw material has gradually increased. Upon this straw there is a duty of only one penny per hundredweight, and it is chiefly plaited in our own straw districts. What is called the Tuscan plait, upon which a heavy duty is levied, has likewise been largely imported, and made into bonnets of equal fineness and beauty to the genuine Leghorn hat.

There are seven descriptions of plait in general use, the difference in the kinds arising from the number of straws used in the plait, and from their being either whole or split. Other varieties are also manufactured, but chiefly for exportation. In Scotland, rye straw, dwarfed by being grown on poor land, has been employed in plaiting straw in imitation of Leghorn, and with such complete success, that the hats manufactured in Orkney, where the rye is raised, are considered by the best judges as quite equal, both in colour and quality, to those of Leghorn. The following description of the preparation of the Italian straw is extracted from M'Culloch's *Dictionary of Commerce*. "The description of straw used, which is cultivated solely for the purposes of the manufacture, and not for the grain, is the *triticum turgidum*, a variety of bearded wheat, which seems to differ in no respect from the spring wheat grown in the vale of Evesham and other parts of England. (*Trans. of Soc. Arts.*) After undergoing a certain preparatory process, the upper parts of the stems (being first sorted as to colour and thickness) are formed into a plait of generally thirteen straws, which is afterwards knitted together at the edges into a circular shape called a 'flat,' or hat. The fineness of the flats is determined by the number of rows of plait which compose them, counting from the bottom of the crown to the edge of the brim, and their relative fineness ranges from about No. 20 to 60, being the rows contained in the breadth of the brim, which is generally eight inches. They are afterwards assorted into first, second, and third qualities, which are determined by the *colour* and *texture;* the most faultless being denominated the first, whilst the most defective is described as the third quality. These qualities are much influenced by the season of the year in which the straw is plaited. Spring is the most favourable, not only for plaiting, but for bleaching and finishing. The dust and perspiration in summer, and the benumbed fingers of the workwomen in winter, when they are compelled to keep within their smoky huts, plaiting the cold and wet straw, are equally injurious to the colour of the hats, which no bleaching can improve. The flats are afterwards made up in cases of ten or twenty dozen, assorted in progressive numbers or qualities, and the price of the middle or average number governs the whole. The *Brozzi* make bears the highest repute, and the *Signa* is considered secondary; which names are given to the flats, from the districts where they are plaited. Florence is the principal market, and the demand is chiefly from England, France, Germany, and America; but the kinds mostly required are the lower numbers; the very finest hats, and particularly of late, being considered as too expensive by the buyers."

The following Statement shows the Imports into England of Italian Straw Hats, Straw Plait, and Unmanufactured Straw, from 1828 *to* 1832.

Years.	Hats or Bonnets of Straw.				Plaiting of Straw.				Unmanufactured Straw.	
	Imported.	Exported.	Consumption.	Nett Revenue.	Imported.	Exported.	Consumption.	Nett Revenue.	Imported.	Nett Revenue.
	No.	*No.*	*No.*	*L.*	*Lbs.*	*Lbs.*	*Lbs.*	*L.*	*Lbs.*	*L.*
1828	384,072	8,377	274,906	77,784	5,502	283	5,100	4,335	4,199	420
1829	160,195	27,030	234,254	66,393	6,282	487	3,340	2,834	6,050	605
1830	162,660	34,132	168,525	47,760	6,183	756	7,884	6,669	18,586	1,859
1831	84,066	24,980	93,947	26,644	23,354	2,102	16,450	13,287	22,344	2,232
1832	169,433	35,271	60,830	17,280	19,109	1,605	17,911	15,174	48,054	811

For further particulars relative to straw hats, see M'Culloch's *Dictionary*, from which our information has been derived.

HATCH, or HATCHWAY, a square or oblong opening in the deck of a ship. Of these there are several, forming passages from one deck to another, and into the hold or lower apartments.

HATCHEL, or HITCHEL, in the manufactory of flax or hemp, a tool, not unlike a card, for dressing and combing them into fine hairs. Hitchels consist of sharp-pointed iron pins, or teeth, set orderly in a board. Of these there are several sorts, some with finer and shorter teeth, others with coarser and longer.

HATCHES, in mining, a term used in Cornwall to express openings of the earth either into mines or in search of them. The fruitless openings are called *essay-hatches;* the real mouths of the veins, *tin-hatches;* and the places where they wind up the buckets of ore, *wind-hatches*.

HATCHES also denote flood-gates set in a river, to stop the current of the water, and in particular certain dams or mounds made of rubbish, clay, or earth, to prevent the water issuing from the stream-works and tin-washes in Cornwall from running into the fresh rivers.

HATCHET, a small light sort of axe, with a basil edge on its left side, and a short handle, being used with one hand. Hatchets are used by various artificers, and more particularly in hewing wood.

HATCHING, the maturating fecundated eggs, whether by the incubation and warmth of the parent bird, or by artificial heat, so as to produce young chickens alive.

HATCHMENT, in *Heraldry*, the coat-of-arms of a person dead, usually placed on the front of a house, by which the rank of the deceased may be known; the whole being distinguished in such a manner as to enable the beholder to know whether he was a bachelor, a married man, or a widower. There are similar distinctions for women.

HATFIELD, a market-town of the county of Hertford, in the hundred of Broadwater, twenty miles from London. It stands on the side of a hill. The church is remarkably neat; but the most remarkable object is the magnificent seat of the Marquis of Salisbury, with the beautiful park in which it stands. It was formerly the palace of the Bishop of Ely, but has been much adorned and improved by the noble family that now possesses it. There is a good market on Thursday. The population amounted in 1801 to 2442, in 1811 to 2677, in 1821 to 3215, and in 1831 to 3593.

HATFIELD, a town of the west riding of the county of York, in the wapentake of Strafforth and Tickhill, 167 miles from London. A large chase once belonged to this town, a part of which was drained in the reign of Charles I. An extensive enclosure in 1811 has tended to increase and enrich the inhabitants. The population amounted in 1801 to 1301, in 1811 to 1487, in 1821 to 1948, and in 1831 to 2148.

HATFIELD-BROAD-OAK, a market-town of the county of Essex, in the hundred of Harlow, twenty-six miles from London. It receives the addition to its name from the great number of spreading oaks around it, in what was formerly a royal domain. The church is a fine old Gothic structure. The town had a market on Thursday, which has gradually decayed. The population amounted in 1801 to 1436, in 1811 to 1321, in 1821 to 1693, and in 1831 to 1825.

HATHERLEIGH, a market-town of the county of Devon, in the hundred of Black Torrington, 200 miles from London. It stands on the small river Towridge, at its junction with the Ock. It is an ancient borough, governed by a port-reeve, and had till within a few years some manufactures of woollen goods, which have gradually decayed. It has a market, which is held on Friday. The population amounted in 1801 to 1218, in 1811 to 1380, in 1821 to 1499, and in 1831 to 1606.

HATRAS, a town of Hindustan, in the province of Agra, the chief mart for the cotton produced in the province of Agra. It is thirty-three miles north-by-east from the city of Agra. Long. 78. E. Lat. 27. 40. N.

HATTEMISTS, in *Ecclesiastical History*, the name of a modern Dutch sect, so called from Pontian Van Hattem, a minister in the province of Zealand towards the close of the seventeenth century, who being addicted to the sentiments of Spinoza, was on that account degraded from his pastoral office. The Verschorists and Hattemists resemble each other in their religious systems, though they never so entirely agreed as to form one communion. The founders of these sects deduced from the doctrine of absolute decrees a system of fatal and uncontrollable necessity; they denied the difference between moral good and evil, and the corruption of human nature; and they concluded, that mankind were under no sort of obligation to correct their manners, improve their minds, or obey the divine laws; that the whole of religion consisted not in acting, but in suffering; and that all the precepts of Jesus Christ are reducible to this one, that we bear with cheerfulness and patience the events which happen to us through the divine will, and make it our constant and only study to maintain a permanent tranquillity of mind. Thus far they agreed; but the Hattemists further affirmed, that Christ made no expiation for the sins of men by his death, but had only suggested, by his mediation, that there was nothing in us that could offend the Deity. This, according to them, was Christ's manner of justifying his servants, and presenting them blameless before the tribunal of God. It was one of their principal tenets, that God does not punish men for their sins, but by their sins. These two sects, says Mosheim, still subsist, though they no longer bear the names of their founders.

HATTIA ISLE, an island in the province of Bengal, situated at the mouth of the Ganges, between the latitudes of 22 and 23 degrees north; and supposed to have been formed by the mud washed down that river and the Brahmaputra. It is estimated to be fourteen miles in length by ten in breadth; it is low in the surface, and great part of it is covered by the spring tides. There is here a manufactory of salt by the Company, which is of a very good quality, and brings a high price at the Company's sales. In 1607 the island was taken possession of by the Portuguese pirates, who retained it for several years; but it was recovered from them by the troops of the rajah of Arracan, and was retained for fifty years, till it was taken in 1664 by the nabob Shaista Khan. The climate is very unhealthy; and it is surrounded by sand-banks, and consequently difficult of approach from the sea.

HATTOCK, a shock of corn containing twelve sheaves, or, according to others, three sheaves laid together.

HAUL, an expression peculiar to seamen, signifying to pull a single rope, without the assistance of blocks or other such mechanical powers. When a rope is otherwise pulled, as by the application of tackles, or connection with blocks, the term is changed into *bowsing*.

To HAUL the Wind is to direct the ship's course nearer to that point of the compass from which the wind blows.

HAUM, HALM, or *Hawn*, amongst farmers, denotes the stem or stalk of corn, peas, beans, or other grain, from the root to the ear.

HAUNCH, or HANCH, the *Hip*, or that part of the body between the ribs and the thigh.

HAURANCA ISLE, one of the Amboyna Isles, in the Eastern Seas, about twenty-five miles in circumference. Long. 128. 40. E. Lat. 3. 40. S.

HAURIANT, in *Heraldry*, a term peculiar to fishes, and signifying their standing upright, as if they were refreshing themselves by sucking in the air.

HAUSRUCK, a circle in the Austrian province of the Upper Ens, extending over 360 square miles, containing two cities, eight market-towns, and 930 villages, with 12,378 houses, and 76,466 inhabitants.

HAUTBOY, a wind musical instrument, shaped much like the lute, only that it spreads and widens towards the bottom, and is sounded through a reed. The treble is two feet long, and the tenor goes a fifth lower when blown open; it has only eight holes, but the bass, which is five feet long, has eleven. The word is French, *haut bois*, or high wood; and this name is given to this instrument because the tone of it is higher than that of the violin.

HAUTE-FEUILLE, JOHN, an ingenious mechanic, was born at Orleans in 1647. Though he embraced the condition of ecclesiastic, and enjoyed several benefices, he applied almost his whole life to mechanics, in which he appears to have made great progress. He had a particular taste for clock-work, and made several discoveries in horology, which were of singular use. He claimed the discovery of moderating the vibration of the balance in watches by means of a small steel-spring, which has since been employed. He laid this discovery before the members of the Academy of Sciences in 1674; and the watches constructed on his principle are, by way of eminence, called *pendulum-watches*, not because they have real pendulums, but because they approach nearly to the justness of pendulums. Huygens perfected this happy invention; but the Abbé Haute-Feuille having declared himself the inventor, and obtained from Louis XIV. a patent for making watches with spiral springs, opposed the registering of this privilege, and published a pamphlet on the subject against Huygens. He wrote a great number of other pieces, most of which are small pamphlets, consisting of

Haüy.

a few pages, but very curious, as, 1. His Perpetual Pendulum, 4to; 2. New Inventions, 4to; 3. The Art of Breathing under Water, and the Means of Preserving a Flame shut up in a small Place; 4. Reflections on Machines for raising Water; 5. Opinion respecting the different Sentiments of Mallebranche and Regis, relating to the Appearance of the Moon when seen in the Horizon; 6. The Magnetic Balance; 7. A Placet to the King on the Longitude; 8. Letter on the Secret of the Longitude; 9. A New System on the Flux and Reflux of the Sea; 10. The Means of making Sensible Experiments that prove the Motion of the Earth; and many other pieces. He died in 1724.

HAUTPOUL, a town of the arrondissement of Castries, in the department of the Tarn, in France. It stands on a steep rock on the river Molle, and contains 676 houses, with 3340 inhabitants, who manufacture cassimeres, flannels, and other thin woollen goods.

HAUY, Rene' Just, a celebrated mineralogist, was born at St Just, a small country town of France, in the department of the Oise, on the 28th of February 1743. He had a younger brother, who became celebrated as the inventor of a method of instructing the blind. Their father was a small linen manufacturer, and his means were so slender, that but for the generosity of others, it is doubtful if his children would ever have learned any other profession than his own. Early in life the subject of this memoir evinced a singularly pious disposition; and from this circumstance arose the improvement of his fortune. Whilst yet a mere child, he took remarkable pleasure in religious ceremonies, especially in church music, a taste for which was blended with his devotional feelings. His regular attendance at church service attracted the attention of a prior, who placed the youthful devotee under the care of some monks, for the purpose of instructing him; and under their tuition he made so rapid progress, that his mother was induced to take him to Paris to complete his studies. Her means were scarcely sufficient to enable her to live a few months in the capital; but she preferred submitting to severe privations rather than relinquish the hopes which she had cherished respecting her son. For some time, young Haüy held the humble situation of a singing boy in a church, and by this means he gained a subsistence, limited indeed, but sufficient for him whose wants were so few and whose ardour was so great, whilst he also gratified his propensity for music. By the influence of his protectors at St Just, he at length procured a bursary in the college of Navarre, where he was enabled to prosecute his studies without interruption. His application and good conduct procured him the esteem of his superiors; and when the period of his probation as a scholar had terminated, he became a teacher in the establishment. He took his degrees, and commenced teaching at twenty-one years of age. Some time afterwards he was appointed preceptor to a higher class, and to this humble but honourable office his ambition seems to have been limited. His leisure hours were occupied in the study of botany; but by a fortunate accident his attention was withdrawn from plants to examine the structure of minerals. His mind had for some time been filled with ideas relative to the contrast presented by the vegetable and mineral kingdoms, inasmuch as in the complicated forms of flowers, fruits, and other organised bodies, a never-failing unity of form pertained to each individual plant or herb, whilst the same stone or salt, without its composition being changed in the slightest degree, exhibited itself in cubes, prisms, and other shapes. Occupied with these reflections, he accidentally dropt from his hand a beautiful specimen of calcareous spar, crystallized in prisms, one of which was broken in such a manner as to present a new crystal, differing in form from the prism, but having the surfaces not less smooth. On examination, the inclinations and angles were found to be similar to the rhomboid crystals of Iceland spar. He further examined pieces of spar crystallized in other forms, and he still found the same rhomboid which had first struck him, the fragments which fell from it being also small rhomboids. The importance of the discovery at once flashed upon his mind, and, like Archimedes starting from the bath, he exclaimed, "All is found." The important conclusion at which he arrived was simply this, that the molecules, or, as it were, component parts, of calcareous spar, have invariably the same geometrical figure; the variety of external forms which the masses assume arising from the manner in which the smaller crystals composing it are arranged. By examining a number of substances, Haüy completely established the fact that this was a law of nature which obtained universally. Each mineral was found to have identical constituent molecules, a nucleus always similar to itself, and laminæ, or accessory layers, producing all the varieties of external form.

Another condition, however, was to be fulfilled before the theory could be admitted as certain. If the nucleus and constituent molecule have each a certain invariable form, geometrically determinable in its angles, and in the relations of its lines, each law of decrement ought also to produce determinable secondary faces; and likewise, when the nucleus and the molecules are once given, the angles and lines of all the secondary faces which the decrements would produce, should be susceptible of calculation beforehand. Before Haüy could accomplish this, however, he required to study geometry, which he had almost forgotten. This he quickly learned, and having invented a method of measuring and describing the forms of crystals, he established beyond all doubt the true law of crystallization. This subject is treated of at length in the article Crystallization.

Haüy first made known his discoveries to his master M. Daubenton, by whom they were communicated to the celebrated Laplace. The young philosopher received the most flattering invitations to join the academy, but his modesty for some time kept him back. His scruples, however, having been at length overcome, he, on the 10th of January 1781, read his first memoir, in which he treated of the garnets and of calcareous spars. The members of the academy showed great eagerness to acquire him; and, on the 12th of February 1783, he was elected to the situation of adjunct in the botanical class, in preference to several learned botanists, who were candidates for the honour. His new colleagues bore flattering testimony to his merits, by requesting him to give oral explanations and demonstrations of his theory; and he also read a course of lectures on the subject, at which were present the most distinguished French philosophers of the day. The modes of calculation which he had invented, and the formulæ he employed, representing all the possible combinations of crystallography, will be found in the volumes of the academy for 1788 and 1789.

Objections were started to the theory of M. Haüy; but the only reply which he made to them consisted in more extended researches, and a more ample induction of facts. He also applied his principle in a new and remarkable manner to the discovery of the composition of minerals. If, reasoned he, each substance has a characteristic nucleus and constituent molecule, then the component parts of minerals, whose composition is unknown, may be discovered by the form of their crystals; and thus a new and powerful instrument of analysis may be employed in mineralogical and chemical investigations. His practical researches established the correctness of the conclusions at which he had arrived. At this time the most distinguished mineralogists confounded under the name of *schorl* a number of minerals, which, although possessing some characteristics in common, did not bear so remarkable a resemblance to one another as to warrant their being classified together as belonging to the same species. M. Haüy, therefore, suspecting that distinctive differences existed amongst them, commenced a series of experiments conducted on his own principle. He mechanically divided the substance called white schorl, and found in it the nucleus and molecule of felspar. By chemical analysis, it was found to be actually one of the felspars. Encouraged by his success, he continued his researches, and discovered amongst the schorls no less than fourteen species. From this moment M. Haüy ceased to be a mere experimenter in physics, and stood prominently forward as the great legislator of mineralogy. A new era in the science dates from the period of these researches; and, by the study of the crystalline structure of minerals, each year has produced some unexpected discovery.

It is, or at least was, a regulation in the university with which M. Haüy was connected, that when a professor had served twenty years, he was entitled to a retiring pension. With this, joined to the produce of a small benefice, although barely sufficient for his wants, he resolved to retire from public duty, and devote himself wholly to philosophical pursuits. His designs, however, were frustrated by the breaking out of the Revolution. After the overthrow of the monarchy, one of the first measures taken by the democratical party was the imprisonment of the priests; and M. Haüy, being naturally identified with them on account of his scrupulous piety, became a participator in their sufferings. He was surprised in his humble retreat by a body of armed men, who rudely demanded if he had any fire-arms. None but these, said he, drawing a spark from his electrical machine. This for a moment disarmed the intruders, but only for a moment. Fortunately, however, he did not share the fate of Archimedes. They spared his life, but he was ultimately thrown into prison. His confinement, however, was of short duration. The members of the academy, and other influential individuals, so interested themselves in his behalf, that they procured his deliverance just the day before the massacres of September. From this period he was no more disturbed, although, as a priest, he continued to perform his sacerdotal functions daily, and had even the courage to write in behalf of some individuals, amongst whom was the celebrated Lavoisier, who had been arrested by order of the Convention.

At the cabinet of the Conseil des Mines, and by the aid of that administration, M. Haüy prepared for the press his celebrated work on mineralogy, which appeared in 1801, in four vols. 8vo, with a quarto volume of plates. "This book," says Cuvier, "possesses in the highest degree two advantages which are very rarely found combined; the first of which is, that it is founded upon an original discovery, entirely resulting from the genius of the author; the second, that this discovery is followed out in it, and applied with incredible perseverance even to the varieties of minerals. Every thing is grand in the plan, precise and rigorous in the details; it is completed like the doctrine itself of which it contains the exposition."

In his determinations of mineral species, M. Haüy gave the chief rank to crystallization, although of course it was never intended by the author that chemical analysis should be neglected. He only maintained that it was inadequate to the determination of their species, "because," observes Cuvier, "it has no sure means of distinguishing the accidental from the essential substances; because it is not in a condition, with respect to certain classes of stones, to affirm that it knows their elements; and because it every day discovers elements which were previously concealed from it." By his indefatigable industry, M. Haüy determined the nucleus and molecules, with the measure of their angles, and the proportion of their sides, of almost every crystallized mineral at present known. In a word, he may be said to have placed mineralogy amongst the precise and methodical sciences, and to have done for it what Newton did for astronomy. On the demise of the professor of mineralogy to the Museum of Natural History, Dolomieu was promoted to the chair in preference to M. Haüy. But imprisonment, and afterwards a premature death, prevented that individual from occupying the chair; and on the 9th of December 1802, Haüy was appointed to the vacant professorship. A new life was now infused into the mineralogical department. Large additions were made to the collections, and every thing was arranged in the most perfect order, according to his own principles of classification. To the students he showed the utmost condescension and kindness, conversing familiarly with them, and even taking them to his own house, and opening up his private collections to their inspection. When the university was founded, Haüy's name was placed on the list of one of its faculties. Lectures were not expected from him; but, unwilling to bear a title without fulfilling its duties, he made the pupils of the normal school come to him; and, in conversation, he communicated to them his discoveries. By order of the government, he drew up a treatise on physics for the colleges. He had previously established a claim to be employed in the execution of such a work, by the ingenious manner in which he had applied physics to mineralogy, by the publication of several interesting memoirs on the electricity and double refraction of minerals, by his elegant exposition of Æpinus's theory respecting electricity and magnetism, and by the success which had attended a course of physics delivered by him at the normal school instituted in 1795 by the Convention, and which lasted only a few months. He was averse, however, to abandon his favourite mineralogical researches; and it was only after much hesitation that he consented to undertake the task. The treatise added little to his scientific reputation, but it did no injury to his literary fame. The same clearness and purity of style for which his Mineralogy was distinguished characterise this little work. It is calculated to inspire into the young a taste for the natural sciences, and it has passed through several editions.

M. Haüy was repeatedly urged to communicate to government what he wished to be done for him; and when he consented to petition, his humble request was, that things might be arranged so as to bring his family near him, in order that he might enjoy their society, as the solace of his old age and infirmities. Napoleon instantly complied with his wishes, by conferring a place upon the husband of his niece. The emperor likewise granted him a pension, and, on his return from Elba, decorated the crystallographer with the cross of the legion of honour. This was alike honourable to both parties, for Haüy had opposed the assumption of the imperial dignity by Napoleon. When the subsequent changes in the French government took place, the husband of M. Haüy's niece lost his situation; and he himself, when no longer capable of active exertion, was deprived of his well-merited pension. To add to his perplexities, his brother, who had gone to Russia for the purpose of gaining information relative to the instruction of the blind, returned without attaining his object, and with a constitution so completely broken, that he became a charge to his family. Thus, in his old age, M. Haüy was reduced to the extreme indigence which had been his lot during the early part of his career. A compensation, however, was afforded him in the kind attentions of his friends, and in the applause of Europe; whilst the enlightened of all ranks who visited Paris paid their respects to him. But these flatteries never corrupted the simplicity of his manners, and his benevolence continued conspicuous to the close of his life. Notwithstanding his feebleness, he attained the age of seventy-nine, having died on the 3d of June 1823.

The intellectual powers of M. Haüy are sufficiently attested by his works. In his moral character he was sincerely pious, and eminently benevolent. He seems to have regarded wealth only as the means of gratifying those sentiments of benevolence with which he was penetrated; and although the most beautiful gems of Europe passed under his review, they were by him considered valuable only as crystals which illustrated his theory. The works of M. Haüy are as follow :—1. Essai d'une Théorie sur la Structure des Cristaux, 1784, in 8vo; 2. Exposition raisonnée de la Théorie de l'Electricité et du Magnétisme, d'après les Principes d'Æpinus, 1787, in 8vo; 3. De la Structure considérée comme Caractère Distinctif des Minéraux, 1793, in 8vo; 4. Exposition abrégée de la Théorie de la Structure des Cristaux, 1793, in 8vo; 5. Extrait d'un Traité Elémentaire de Minéralogie, 1797, in 8vo; 6. Traité de Minéralogie, 1802, 4 vols. in 8vo, et planches in 4to; 7. Traité Elémentaire de Physique, 1803, in 12mo, deuxième edition, in 1806, 2 vols. 8vo; 8. Tableau Comparatif des Résultats de la Cristallographie, et de l'Analyse Chimique relativement à la Classification des Minéraux; 9. Traité des Pierres Précieuses, 1817, in 8vo; 10. Traité de Cristallographie, 1822, 2 vols. with engravings. M. Haüy also contributed papers to various scientific journals, particularly the Journal d'Histoire Naturelle, Annales de Chimie, the Journal de Physique, the Magasin Encyclopédique, the Annales du Muséum d'Histoire Naturelle, and the Journal des Mines. He also communicated several memoirs to various other scientific journals. (R. R. R.)

HAVANNAH, or Havana, the capital of the island of Cuba, in the West Indies. It is situated on the north coast, and is one of the most flourishing cities of the New World, carrying on about two thirds of the commerce of the island, which is extensive. It possesses a noble harbour, which, though narrow at the entrance, is without any bar or other obstruction, and within it expands into a capacious bay, capable of accommodating a thousand vessels of the largest size. The water is of sufficient depth to admit of their coming close up to the quay. Havannah has strong fortifications; the castles of Moro and Punto being remarkably so. The former is situated on the east, and the latter on the west side of the harbour, of which they completely command the entrance. The citadel is also a place of great strength; and the neighbouring heights are fortified so as to protect the city or port. Havannah stretches along the entrance to, and on the west side of the bay; and on the opposite side is the suburb called Regla. The city presents a splendid appearance from the sea, its numerous spires being intermingled with lofty and luxuriant trees. The churches are handsome, and richly ornamented; and several of the private mansions are built on a magnificent scale. The streets, however, are narrow, inconvenient, and not kept in good repair; but those of the suburbs, now as extensive as the city, are wider and better laid out. The arsenal and dock-yard, which are on a large scale, lie towards the western angle of the bay, to the south of the city. From its position, which commands both inlets to the Gulf of Mexico, its great strength, and excellent harbour, Havannah is, in a political point of view, by far the most important maritime station in the West Indies. Of late years the commerce of Havannah has rapidly extended, which has been ascribed to the freedom it now enjoys, as well as to the great increase of wealth and population in the city. The principal exports are, sugar, coffee, tobacco, and molasses; the imports consist of all those articles which an opulent community, in a tropical climate, and without manufactures, requires. In 1828, the trade of Havannah amounted to 15,807,395 dollars of imports, and 9,202,485 dollars of exports. During the same year, the exportation of sugar alone amounted to 107,434,400 pounds, and in 1832 it had risen to 111,978,800 pounds. In 1831 there entered the port of Havannah 990 ships of 157,146 tons burden, and there cleared out of it 1002 ships of 150,679 tons burden. The population, exclusive of troops and strangers, which may amount to 25,000, has been estimated at about 115,000. Havannah possesses several patriotic and literary societies, and there are seven journals published, one of which is in English. The Moro Castle, according to Humboldt, is situated in latitude 23. 8. 15. N. longitude 82. 22. 45. W. For further particulars regarding this city, see the article Cuba.

HAVANT, a market-town of Hampshire, in the hundred of Bosmere and division of Portsdown, sixty-six miles from London, on the borders of Sussex, and opposite to the Isle of Hayling. Its church is a venerable remain of architecture. There is a good market for all kinds of grain on Saturday. The population amounted in 1801 to 1670, in 1811 to 1824, in 1821 to 2099, and in 1831 to 2083.

HAVELBERG, a town of Prussia, in the province of Brandenburg. It stands at the junction of the river Havel with the Elbe. It was once a city, and is now a place of much traffic by both the rivers, and as a kind of entrepôt for Berlin and Hamburg. It contains 2140 inhabitants.

HAVERCAMP, Sigibert, one of the most celebrated philologists of the eighteenth century, was born at Utrecht in 1683. In the prosecution of his studies he greatly distinguished himself, and, by the time he left the university, deserved to be classed amongst the learned men who then illustrated Holland. He was soon afterwards appointed professor of Greek in the academy of Leyden; and when this chair was joined to those of eloquence and history, he filled all the three with distinction. He was excessively laborious; and the duties of his situation did not prevent him from applying himself to the preparation of important works, which succeeded one another with inconceivable rapidity. Having availed himself of a short interval of leisure to visit Italy, Havercamp, during his sojourn in that beautiful country, acquired a taste for medals, of which he afterwards formed a valuable cabinet. But the labours of this accomplished and indefatigable scholar were terminated by death on the 28th April 1742, at the age of fifty-eight, when much might still have been expected from his pen. Havercamp published, 1. Editions of the *Apologetica* of Tertulian, 1718, in 8vo; of Lucretius, 1725, in two vols. 4to; of the History of Josephus, 1726, in two vols. folio; of Eutropius, 1729, in 8vo; of Orosius, 1738, in 4to; of Sallust, 1742, in two vols. 4to; and, lastly, of Censorinus, 1743, in 8vo. 2. Dissertationes de Alexandri Magni numismate quo quatuor summa orbis terrarum imperia continentur, ut de nummis contorniatis, Leyden, 1722, in 4to. 3. Thesaurus Morellianus, Amsterdam, in two vols. folio. 4. Universal History explained by Medals, in Dutch, Leyden, 1736, in five vols. folio, incomplete. 5. Sylloge Scriptorum qui de Linguæ Græcæ vera et recta pronunciatione Commentaria reliquerunt, Leyden, 1736–1740, in two vols. 8vo. 6. Introductio in historiam patriæ a primis Hollandiæ comitibus usque ad pacem, Ultraject. et Radstad (1714), Leyden, 1739, in 8vo. 7. Introductio in Antiquitates Romanas, ibid. 1740, in 8vo. 8. Museum Wildianum in duas partes divisum, Amsterdam, 1740, in 8vo. 9. Museum Vilebrochianum, ibid. 1741, in 8vo. 10. Bronze Medals, large and small, in the Cabinet of Queen Christina, Hague, 1742, in folio. All that Havercamp left on the subject of Numismatics is now held in little estimation; the precipitation with which he piled volume on volume leaving him no time to bestow the requisite pains, or to employ the necessary criticism.

Haverfordwest || Haw.

Lastly, he published, in conjunction with Preyger, the *Sententiæ* of Seneca and Syrus, with a commentary of Gruter which had remained inedited, and might, without any loss, have been left so; and he translated into Dutch verse *Sabinus*, a tragedy of Richer. (A.)

HAVERFORDWEST, a town of the county of Pembroke, in South Wales, 264 miles from London. It is the capital of the county, where the assizes and elections are held. It is situated on the side of a hill overlooking the navigable river Dungleddy, on whose bank is a good wharf. In the upper part of the town the English language is spoken, and in the lower portion Welsh. Each of these divisions has its market; that in the upper town is held on Tuesday, frequented by English peasants; that of the lower town, on Saturday, is attended by the Welsh farmers. The English spoken here is said to be remarkably pure. Haverfordwest is a town and county of itself, governed by a mayor and common-councilmen; and the mayor is admiral, coroner, and escheator. It contains three parish churches, and several places of worship for dissenters. There are no considerable manufactures carried on, but a few cotton goods are made. The houses in the upper town are generally well built, but those in the lower are otherwise. The population amounted in 1801 to 2880, in 1811 to 3093, in 1821 to 4055, and in 1831 to 3915. The town returns one member to the House of Commons, who is chosen by about 540 voters.

HAVERHILL, a market-town of the county of Suffolk, in the hundred of Resbridge, fifty-eight miles from London, situated on the borders of Essex. It was formerly a place of greater extent than it is at present, and had manufactures of checks and fustians, which have dwindled away. It has a market on Wednesday, which, however, is but thinly attended. The population amounted in 1801 to 1104, in 1811 to 1216, in 1821 to 1421, and in 1831 to 1758.

HAVRE, in *Geography*. a French term of the same signification with haven or harbour.

HAVRE-DE-GRACE, a city of the north of France, in the department of the Lower Seine, and the capital of an arrondissement of its own name. It is strongly fortified on both the land and sea sides, and has a citadel. It stands on the right bank of the river Seine, which is of the breadth of more than three miles. There is a naval arsenal, where frigates and corvettes are built, and a marine school. By the river on which it stands communicating with the capital of the kingdom, it is the depôt of much foreign merchandise to supply Paris; and there are abundant stores for all kinds of goods, especially sugar, coffee, cotton, and other tropical commodities, as well as for the naval stores produced in the north of Europe. There are manufactures of sugar, soap, tobacco, pottery, beer, and twine; and many of the inhabitants subsist by the sea fisheries. The port is generally crowded with vessels from the French colonies, and from the United States of America; but from all other countries many repair to it, though it is by no means very secure as a harbour. The town is well built, with streets at right angles crossing each other, and has vastly improved since the return of peace. It contains 1640 houses, and 22,100 inhabitants. Long. 0. 6. E. Lat. 49. 29. 14. N.

HAW, a sort of berry, the fruit of several species of mespilus, thence denominated *hawthorns*.

Haw, amongst farriers, an excrescence resembling a gristle, growing under the nether eyelid and eye of a horse, which, if not timely removed, destroys it.

Haw, a small parcel of land, so called in Kent, as a *Hemphaw*, or *Beanhaw*, lying near the house, and enclosed for these uses. But Sir Edward Coke, in an ancient plea concerning Feversham in Kent, says *hawes* are houses.

HAWARDEN, or Harden, a market-town of the county of Flint and the hundred of Mold, in North Wales, 197 miles from London and seven from Chester. It has considerable manufactures of earthenware, made from a peculiarly-adapted clay, which abounds in the neighbourhood. This business, and that of an iron foundery, give the chief employment to the inhabitants. In its vicinity are many antiquities both of the Saxon and of earlier periods. There is a good market, which is held on Saturday. The population amounted in 1801 to 4071, in 1811 to 4436, in 1821 to 5159, and in 1831 to 5414.

HAWGH, or Howgh, signifies a green plot in a valley, such as is seen in the north of England.

HAWICK, a town of Scotland, in the county of Roxburgh, fifty-two miles from Edinburgh, on the Carlisle road, partly in the parish of Wilton, but chiefly in the parish of Hawick, is conveniently situated on the south bank of the Teviot, and transversely divided into two nearly equal portions by the confluent stream of Slitterick. The antiquity of the place appears from a singular conical mount called the Mote, supposed to be the spot where courts of justice were formerly held. In the border wars Hawick makes a considerable figure under its munificent patrons, the barons of Drumlanrig, from whom its charter, dated 1537, is derived; and in 1545, for its hospitality towards the unfortunate Mary, it received from her a royal confirmation of all its corporate rights. The town is governed by its own magistrates, independently of the superior, and has all the privileges of a royal burgh, parliamentary representation excepted. Two bailies, chosen annually by the burgesses, are assisted by a council, consisting of two representatives from each of the seven incorporated but now chiefly decayed trades, and fifteen burgesses, adopted into their number, as councillors for life. The municipal possessions, though mutilated by the ungenerous and rashly admitted claims of neighbouring proprietors, still yield a clear revenue of L.400 per annum. The town has greatly improved within these thirty years. The thatched roofs which disfigured it are disappearing, and more attention is paid to elegance in modern structures. The whole is well paved, and, with the shops, manufactories, and many of the private houses, illuminated with gas. An ample supply of excellent water is brought, at the expense of the corporation, from the neighbouring heights. The principal street, running east and west, is spacious and regular. The town-house, with a spire and clock, is small and inadequate. Beautifully situated on a commanding eminence near the centre of the town, stands the parish church, a clumsy edifice, and every way deficient in accommodation. There is also the parish church of Wilton, and four other public places of worship, viz. two Secession, one Relief, and one Friends' meeting-house. Hawick has long been the principal seat of the manufacture of lamb's wool hose in Scotland. The spinning-mills are all driven by water. Of these, the number would be greater, but for the policy of the Buccleuch family, whose domains surround the town, and which they decline to feu for building purposes. The trade of the town is nevertheless rapidly on the increase. The staple articles, besides hose, are blankets, flannels, plaidings, shawls, and woollen yarn; of which last large quantities are sold to Scotch and English manufacturers. Thongs and whips are also manufactured to a considerable extent. There is a weekly market held on Thursday, principally for grain. Branches of the British Linen Company, Commercial, and National Banks, assist the trade of the place. There are two good public libraries, two reading-rooms well supported, and a farmer's club, which meets monthly. The banks of the Tiviot are well wooded, and finely studded with gentlemen's seats, though these are considerably restricted by the large entailed estates of Buccleuch. The approach to the town on the east and west is embellished by extensive nurseries; and the picturesque line along the Tiviot is generally admired. The population of the town, including the suburb of Wilton, amounted in 1831 to 5340; and it is still on the increase.

HAWK. See Ornithology.

HAWKERS were anciently fraudulent persons, who went from place to place buying and selling brass, pewter, and other merchandise, which should have been exposed in open market. In this sense the word is mentioned in 25 Henry VIII. cap. 6, and 33 of the same king, cap. 4. The appellation of *hawkers* seems to have arisen from their uncertain wandering, like those who, with hawks, seek their game where they can find it. The term is now used as synonymous with pedlar, a person who travels about the country selling wares.

HAWKESBURY, a river of New Holland, which falls into Broken Bay, on the east coast. It is a large river, having its rise among the Blue Mountains far into the interior, and affording an outlet to the waters of an extensive tract of country. The banks of this river are thickly planted on each side with settlements; and it is navigable for large vessels of about 200 tons to the distance from the sea of about forty miles, and by the turnings of the river 120 miles. The country immediately adjoining the banks of the river is a rich alluvial mould; but beyond this is a stiff soil, composed of sand, earth, and clay, which improves, however, by cultivation. The river is subject to sudden rises after heavy rains, to the height of seventy or eighty feet, and overflows the adjacent country with wide inundations, carrying away flocks and herds, and sometimes the habitations of the settlers.

HAWKESWORTH, John, a celebrated English writer, was born about the year 1719; though, according to his epitaph, as we find it in the *Gentleman's Magazine* for August 1781, he must have been born in 1715. He was brought up to a mechanical profession, that of a watchmaker it is supposed. He was of the Presbyterian persuasion, and a member of the celebrated Tom Bradbury's meeting, from which he was expelled for some irregularities. He afterwards devoted himself to literature, and became an author of considerable eminence. In the early part of life his circumstances were rather confined. He resided some time at Bromley in Kent, where his wife kept a boarding-school. He afterwards became known to a lady who had great property and interest in the East India Company, and through her means he was chosen a director of that body. As an author, his *Adventurer* is his principal work; the merits of which, if we mistake not, procured him the degree of doctor of laws from Herring, archbishop of Canterbury. When the design of preparing a narrative of the discoveries in the South Seas was set on foot, he was recommended as a proper person to be employed on the occasion; but, in truth, he was not a proper person, nor did the performance answer expectation. Works of taste and elegance, where imagination and the passions were to be affected, were his province; not works of dry, cold, accurate narrative. However, he executed his task, and is said to have received for it the sum of L.6000. He died in 1773, some say of high living, others of chagrin at the ill reception of his *Narrative;* for he was a man of the keenest sensibility, and obnoxious to all the evils incident to such a temperament.

HAWKING, the exercise of taking wild-fowl by means of hawks. The method of reclaiming, manning, and bringing up a hawk to this exercise, is called *falconry.*

Hawking.

There are only two countries in the world where we have any evidence that the exercise of hawking was practised in ancient times. These are Thrace and Britain. In the former it was pursued merely as the diversion of a particular district, if we may believe Pliny, whose account is rendered obscure by the indistinctness of his own ideas of the matter. The original Britons, with a fondness for the exercise of hunting, had also a taste for that of hawking; and every chief amongst them maintained a considerable number of birds for that sport. To the Romans this diversion was scarcely known in the days of Vespasian, yet it was introduced immediately afterwards. Most probably they adopted it from the Britons; but we know certainly that they greatly improved it. In this state it appears amongst the Roman Britons in the sixth century. Gildas, in a remarkable passage in his first epistle, speaks of Maglocunus, on his relinquishing the sphere of ambition, and taking refuge in a monastery; and proverbially compares him to a dove, which hastens away at the noisy approach of the dogs, and with various turns and windings takes her flight from the talons of the hawk.

In after times, hawking was the principal amusement of the English. A person of rank scarcely stirred out without his hawk on his hand; and in old paintings this is the criterion of nobility. Harold, afterwards king of England, when he went on a most important embassy into Normandy, is painted embarking with a bird on his hand, and a dog under his arm; and in an ancient picture of the nuptials of Henry VI. a nobleman is represented in much the same manner. In those days, "it was thought sufficient for noblemen to winde their horn, and to carry their hawk fair, and leave study and learning to the children of mean people." The former were the accomplishments of the times. Spenser makes his gallant Sir Tristram boast,

> Ne is there hawk which mantleth her on pearch,
> Whether high tow'ring, or accoasting low,
> But I the measure of her flight doe search,
> And all her prey, and all her diet know.

In short, this diversion was, amongst the old English, the pride of the rich, and the privilege of the poor. No rank of men seems to have been excluded from the amusement. We learn from the book of St Alban's, that every degree had its peculiar hawk, from the emperor down to the holy-water clerk. Vast was the expense which sometimes attended this sport. In the reign of James I. Sir Thomas Monson is said to have given L.1000 for a cast of hawks. We need not wonder then at the rigour of the laws tending to preserve a pleasure which was carried to such an extravagant pitch. In the 34th of Edward III. it was made felony to steal a hawk; and to take its eggs, even in a person's own ground, was punishable with imprisonment for a year and a day, besides a fine at the king's pleasure. In Queen Elizabeth's reign, the imprisonment was reduced to three months, but the offender was to find security for his good behaviour for seven years, or lie in prison till he did so. Such then was the enviable state of the times of old England. During the whole day the gentry were given to the fowls of the air and the beasts of the field; in the evening, they celebrated their exploits with the most abandoned and brutish sottishness; and the inferior ranks of people, by the most unjust and arbitrary laws, were made liable to capital punishments, to fines, and loss of liberty, for destroying the most destructive of the feathered tribe. The love of game-laws runs in the blood of our territorial aristocracy; it has descended to them from very ancient times, and forms part of their inheritance.

According to Olearius, the diversion of hawking is more followed by the Tartars and Persians than ever it was in any part of Europe. "Il n'y avoit point de hutte," says he, "qui n'eust son aigle ou son faucon."

The falcons or hawks which were in use in these kingdoms are now found to breed in Wales, and in Scotland and its isles. The peregrine falcon inhabits the rocks of Caernarvonshire. The same species, with the gyrfalcon, the gentil, and the goshawk, are found in Scotland, and the lanner in Ireland. But we may here notice, that the Norwegian breed were, in old times, in high esteem in England, and were thought bribes worthy a king. Jeoffrey Fitzpierre gave two good Norway hawks to King John, to obtain for his friend the liberty of exporting a hundredweight of cheese; and Nicholas the Dane stipulated to give the king a hawk every time he came into England, that he might have liberty to traffic throughout the king's dominions. Hawks were also made the tenures by which some of the nobility held their estates from the crown. Thus Sir John Stanley had a grant of the Isle of Man from Henry IV. to be held of the king, his heirs, and successors, by homage and the service of two falcons, payable on the day of his or their coronation. And Philip de Hastang held his manor of Combertoun, in Cambridgeshire, by the service of keeping the king's falcons.

Hawking, though an exercise now much disused, does yet furnish a great variety of significant terms, which still obtain in our language. Thus, the parts of a hawk have their proper names. The legs, from the thigh to the foot, are called *arms;* the toes, the *petty singles;* and the claws, the *pounces.* The wings are called the *sails;* the long feathers of the wings, the *beams;* the two longest, the *principal feathers;* and those next thereto, the *flags.* The tail is called the *train;* the breast feathers, the *mails;* and those behind the thigh, the *pendant feathers.* When the feathers are not yet full grown, the falcon is said to be *unsummed;* when they are complete, it is *summed.* The craw, or crop, is called the *gorge;* the pipe next the fundament, where the fæces are drawn down, is called the *pannel;* the slimy substance lying in the pannel is called the *glut;* the upper and crooked part of the bill is called the *beak;* the nether part, the *clap;* the yellow part between the beak and the eyes, the *sear* or *sere;* the two small holes therein, the *nares.*

As to the furniture, the leathers, with bells buttoned on the legs, are called *bewits;* the leathern thong by which the falconer holds the hawk, is called the *lease* or *leash;* the little straps, by which the lease is fastened to the legs, *jesses;* and a line or packthread fastened to the lease, in disciplining the bird, a *creance.* A cover for the head, to keep the falcon in the dark, is called a *hood;* and a large wide hood, open behind, to be worn at first, is called a *rufter hood.* To draw the strings, that the hood may be in readiness to be pulled off, is called *unstriking the hood;* the blinding a hawk just taken, by running a thread through her eyelids, and thus drawing them over the eyes, to prepare her for being hooded, is called *seeling;* a figure or resemblance of a fowl, made of leather and feathers, is called a *lure;* the resting place, when off the falconer's fist, is called the *perch;* the place where the meat is laid is called the *hack;* and that in which the bird is set, whilst the feathers fall and come again, the *mew.*

Anything given to a hawk, to cleanse and purge the gorge, is called *casting;* small feathers given to make the bird cast, are called *plumage;* gravel given to help to bring down the stomach, is called *rangle;* the throwing up of filth from the gorge after casting, is called *gleaming;* the purging of grease, or other matter, *enseaming;* being stuffed is called *gurgiting;* inserting a feather in the wing in lieu of a broken one, is called *imping;* giving a leg, wing, or pinion of a fowl to pull at, is called *tiring* The neck of a bird the hawk preys on is called the *inke;* and what the hawk leaves of its prey is called the *pill* or *pelf.*

There are also proper terms for the several actions of the bird. When a hawk flutters, as if striving to get away, either from the perch or hand, it is said to *bate;* when, standing too near, they fight with each other, it is called *crabbing;* when the young ones quiver and shake their wings in obedience to the elder, it is called *cowring;* when the bird wipes its beak after feeding, it is said to *feak;* when it sleeps, it is said to *jouk;* from the time of exchanging the coat, till the bird turn white again, is called *intermewing;* treading is called *cawking;* when the hawk stretches one wing after the legs, and then the other, it is called *mantling;* the dung is called *muting;* when the hawk mutes a good way behind, it is said to *slice;* when it does so directly down, instead of jerking backwards, it is said to *slime,* and if it be in drops, it is called *dropping;* when the bird as it were sneezes, it is called *sniting;* when it raises and shakes itself, it is said to *rouze;* and when, after mantling, it crosses its wings together over its back, it is said to *warble.*

When a hawk seizes, it is said to *bind;* when, after seizing, it pulls off the feathers, it is said to *plume;* when it raises a fowl aloft, and at length descends with it to the ground, it is called *trussing;* when, being aloft, it descends to strike the prey, it is called *stooping;* when it flies out too far from the game, it is said to *rake;* when, forsaking the proper game, it flies at pyes, crows, and the like, it is called *check;* when, missing the fowl, the bird betakes itself to the next check, it is said to *fly on head.* The fowl or game it flies at is called the *quarry;* the dead body of a fowl killed by the hawk is called a *pelt.* When the bird flies away with the quarry, it is said to *carry;* when, in stooping, it turns two or three times on the wing, to recover itself ere it seizes, it is called *canceliering;* when it hits the prey, yet does not truss it, it is called *ruff.* The making a hawk tame and gentle, is called *reclaiming;* the bringing one to endure company, *manning;* an old stanch hawk, used to fly and set example to a young one, is called a *make-hawk.*

The reclaiming, manning, and bringing up a hawk to the sport, cannot easily be brought under any precise set of rules. It consists in a number of little practices and observances, calculated to familiarize the falconer to his bird, and the latter to the falconer.

When the hawk comes readily to the lure, a large pair of luring bells are to be put on; and the more giddy-headed and apt to rake out the hawk is, the larger must the bells be. Having done this, and the bird being sharp-set, ride out in a fair morning, into some large field unencumbered with trees or wood, with the hawk on your hand; then having loosened the hood, whistle softly, to provoke her to fly; unhood, and let the bird fly with its head into the wind; for by that means it will be the better able to get upon the wing, and will naturally climb upwards, flying a circle. After the hawk has flown three or four turns, then lure her with your voice, casting the lure about your head, having first tied a pullet to it; and if your falcon come in and approach near you, cast out the lure into the wind, and if she stoop to it, reward her.

You will often find, that when she flies from the hand, she will take stand on the ground. This is a fault which is very common with soar-falcons. To remedy it, fright her up with your wand; and when you have forced her to take a turn or two, take her down to the lure, and feed her. But if this does not succeed, then you must have in readiness a duck sealed, so that she may see no way but backwards, and that will make her mount the higher. Hold this duck in your hand, by one of the wings, near the body; then lure with the voice to make the falcon turn her head; and when she is at a reasonable pitch, cast your duck up just under her; when, if she strike, stoop, or truss the duck, permit her to kill it, and reward her by giving her a reasonable gorge. After you have practised this two or three times, your hawk will leave the stand, and, delighted to be on the wing, will be very obedient.

It is not convenient, for the first or second time, to show your hawk a large fowl; for it frequently happens that they escape from the hawk, and the bird not recovering them, rakes after them. This gives the falconer trouble, and frequently occasions the loss of the hawk. But if she happens to pursue a fowl, and, being unable to recover it, gives it over, and comes in again directly, then cast out a sealed duck; and if the bird stoop and truss it across the wings, permit her to take her pleasure, rewarding her also with the heart, brains, tongue, and liver. But if you have not a quick duck, take her down with a dry lure, and let her plume a pullet and feed upon it. By this means a hawk will learn to give over a fowl that rakes out, and on hearing the falconer's lure, will make back again, and know the better how to hold in the head.

Some hawks have a disdainful coyness, proceeding from their being high fed. Such a hawk must not be rewarded though she should kill; but you may give her leave to plume a little, and then taking a sheep's heart cold, or the leg of a pullet, when the hawk is busy in pluming, let either of them be conveyed into the body of the fowl, that it may savour of it; and when the hawk has eaten the heart, brains, and tongue of the fowl, take out what is enclosed, call her to your hand, and feed her with it. Afterwards give her some of the feathers of the fowl's neck, to scour her, and make her cast.

If your hawk be a stately high-flying one, it ought not to take more than one flight in a morning; and if the bird be made for the river, let her not fly more than twice. When she is at the highest, take her down with your lure; and when she has plumed and broken the fowl a little, feed her, by which means you will keep her a high-flyer, and fond of the lure.

So much for the technicalities of hawking, which, from change of times and manners, has now in a great measure fallen into disuse. The reader, however, will find some admirable descriptions of this national sport in the novels of Scott, who appears to have understood it thoroughly, and who, on this, as on many other subjects, has brought the past, as it were, before us, rendering us familiar with its habits, customs, and amusements, and deeply engaging our sympathy in favour of the feelings, notions, and even prejudices, with which these were associated.

HAWKINS, Sir John, an industrious writer, was born at London in the year 1719, where his father was employed as a builder and surveyor. He received an education for the same profession, but afterwards became clerk to an attorney; and as his employment consisted chiefly in copying, he improved his mind in knowledge by rising early, and had made considerable advances by the time that his clerkship ended. He was soon afterwards admitted as an attorney, and his taste for music procured him admission into the Academy of Ancient Music. Having attained a degree of celebrity by publishing the words of two sets of cantatas, the music of which was furnished by Stanley, he was introduced to some acquaintances, who assisted him in carrying forward his professional views. In 1749 he was introduced as a member of a tavern club which had been instituted by Dr Johnson, and the connection thus formed between that great man and him was only dissolved by death. In 1753 he married a daughter of Mr Peter Storer, by whom he obtained a handsome fortune; and this being augmented by the death of his brother, he laid aside the profession of attorney, and lived as an independent gentleman. He afterwards became a justice of the peace for the county of Middlesex, and was both an active and an useful magistrate. Being extremely fond of angling, he became the editor of Walton's *Complete Angler*, which he enriched with notes of his own, and a life of the author, a work which has since been frequently republished.

His Observations on the Highways brought him a liberal share of public approbation, and it has served as a model for all the acts which have since been passed. In 1765 he was chosen chairman of the quarter sessions, and, in the year 1772, he obtained the honour of knighthood. Some of the notes to the edition of Shakspeare by Johnson and Steevens were furnished by Sir John, who was for many years engaged in writing the history of music, which he completed in 1776, in five vols. 4to. It abounds with curious and original information, and may be considered as a repository of many useful things not elsewhere to be met with. His valuable library was destroyed by fire, which interrupted his literary labours, but made no change in the tranquillity of his mind. In the year 1787 his Life and Works of Dr Samuel Johnson appeared in eleven vols. 8vo. This life is a garrulous miscellany of anecdote, in which the author frequently wanders from his subject; yet it contains many facts respecting that extraordinary man which his admirers could wish had been concealed. After this he prepared for the termination of his own life, which he perceived approaching; and he died in the month of May 1789, being then about seventy years of age.

HAWKSHEAD, a market-town of the county of Lancaster, 277 miles from London, and thirteen from Lancaster. It is situated in the hundred of Lonsdale, at the extremity of the county, and at the head of the beautiful lake of Esthwaite. A market is held on Monday. The population amounted in 1801 to 1585, in 1811 to 1710, in 1821 to 2014, and in 1831 to 2060.

HAWSE, or Hause, is generally understood to imply the situation of the cables before the ship's stem, when she is moored with two anchors out forward, viz. one on the starboard, and the other on the larboard bow. Hence it is usual to say, *she has a clear hawse*, or *a foul hawse*. This term also denotes any small distance a-head of a ship, or between her head and the anchors employed to ride her, as, He has anchored in our hawse, The brig fell athwart our hawse, and so on.

A ship is said to ride with a clear hawse when the cables are directed to their anchors, without lying athwart the stem, or crossing or being twisted round each other by the ship's winding about, according to the change of the wind, tide, or current. A foul hawse, on the contrary, implies that the cables lie across the stem, or bear upon each other, so as to be rubbed and chafed by the motion of the vessel. The hawse accordingly is foul, by having either a cross, an elbow, or a round turn. If the larboard cable, lying across the stem, points out on the starboard side, whilst the starboard cable at the same time grows out on the larboard side, there is a cross in the hawse. If, after this, the ship, without returning to her former position, continues to wind about the same way, so as to perform an entire revolution, each of the cables will be twisted round the other, and then directed out from the opposite bow, forming what is called a round turn. An elbow is produced when the ship stops in the middle of that revolution, after having had a cross; or, in other words, if she rides with her head northward with a clear hawse, and afterwards turns quite round so as to direct her head northward again, she will have an elbow.

Hawse-Holes, certain cylindrical holes cut through the bows of a ship on each side of the stem, through which the cables pass in order to be drawn into or let out of the vessel, as occasion requires. They are fortified on each side by the hawse-pieces, a name given to the foremost timbers of a ship, whose lower ends rest on the knuckle-timber, or the foremost of the cant-timbers. They are generally parallel to the stem, having their upper ends sometimes terminated by the lower part of the beak-head; and otherwise by the top of the bow, particularly in small ships and merchantmen.

HAWSER, a large rope which holds a middle place between the *cable* and *tow-line*, in any ship to which it belongs, being a size smaller than the former, and as much larger than the latter.

HAY, a market-town of South Wales, in the county of Brecon, 157 miles from London. It stands on a hill overlooking the valley in which the river Wye flows, where are remains of an ancient castle, which have been converted into a modern dwelling. There is a tolerable market held on Saturday. The inhabitants amounted in 1801 to 1170, in 1811 to 1341, in 1821 to 1649, and in 1831 to 1959.

HAYDN, Francis Joseph, a celebrated musical composer, was born at Rohrau, a small town fifteen leagues distant from Vienna, in the year 1732. His father was a cartwright, and his mother, before her marriage, had been cook in the family of Count Harrach, the lord of the village. Haydn's father had a fine tenor voice, and played a little on the harp. On holidays, after church, he used to accompany his wife whilst she sung; and, when only five years old, Haydn was wont to stand by his parents, and join the concert in his own way, with two pieces of wood, one of which served for a violin, and the other for a bow. When loaded with years and honours, the great symphonist would often recall the music of this domestic performance; so deep an impression had its simple strains made on his soul. A cousin of the cart-wright, whose name was Frank, a schoolmaster at Haimburg, came to Rohrau one Sunday, and assisted at the *trio*. He remarked that the child, then scarcely six years old, beat the time with astonishing exactness and precision. This Frank was well acquainted with music, and proposed to his relations to take little Joseph to his house, and teach him. They accepted the offer with joy, hoping to succeed more easily in getting Joseph into holy orders, if he should understand music. Chance brought to Frank's house Reuter, *maestro di capella* of St Stephen's, the cathedral church of Vienna. He was in quest of children to recruit his choir. The schoolmaster soon proposed his little relation to him; and when he came Reuter gave him a *canon* to sing at sight. The precision, purity of time, and spirit with which the child executed it, surprised him; but he was more especially charmed with his voice, which was naturally sonorous and delicate. He only remarked that he did not shake, and asked him the reason with a smile. The boy smartly replied, "How should you expect me to shake, when my cousin does not know how to do it himself?" "Come here," said Reuter, "and I will teach you." He then took him between his knees, showed him how he should rapidly bring together two notes, hold his breath, and agitate the palate. The child immediately made a good shake. Reuter, enchanted with the success of his scholar, took a plate of fine cherries, which Frank had ordered for his illustrious brother professor, and emptied them all into the child's pocket. The delight of the young musician may be readily conceived. Haydn often mentioned this anecdote, adding with a smile, that he fancied he had these beautiful cherries in his mouth whenever he happened to shake.

Young Haydn was now placed in the hands of Reuter, and accompanied him to Vienna. Haydn, in afterwards speaking of his studies under this master, said he did not remember to have passed a single day without practising sixteen or eighteen hours daily, and this he did of his own accord, for the children of the choir were not compelled to practise more than two hours. It was by this unwearied assiduity, aided by the inspirations of his genius, that Haydn, almost in the dawn of life, laid the foundation of his future eminence.

Mozart at twelve years of age composed a successful opera; but, less fortunate, Haydn, at thirteen, produced a mass, which his worthy master ridiculed. Convinced, after comparing his work with the compositions of others, that Reuter was right, and that nature without art was like an eagle unfledged, Haydn resolved to apply himself to the study of counterpoint. But Reuter did not teach composition; and none of the masters in Vienna were so generous as to instruct an unknown and unpatronised boy. But to this misfortune Haydn perhaps is indebted for his originality. Under a master he might have avoided some of the errors he has fallen into when he subsequently wrote for the church and for the theatre; but, upon the whole, he would certainly have been less original. He purchased the theoretical works of Mattheson, Fux, Emanuel Bach, and Kirberg, which he studied most assiduously, labouring alone, and exercising every scientific intricacy; and so great was the pleasure he experienced in his pursuits, that, poor as he was, shivering with cold, and oppressed with sleep, seated by the side of an old worn out harpsichord, he declared himself never to have been happier at any period of his life.

At eighteen Haydn's voice broke, and he left the class of *soprani* at St Stephen's. Obliged to seek for a lodging, chance threw him in the way of a poor peruke-maker named Keller, who received him as a son. Haydn, in the quiet obscurity of his new dwelling, was enabled to pursue his studies without interruption. His residence here had, however, a fatal influence on his future fortune. Keller had two daughters, and his wife and he arranged that one of them should marry Haydn, who, absorbed in his studies, and thinking little about love, made no objection to the proposal. He adhered to his engagement honourably in after life, but the union was an unhappy one.

Haydn now began to compose short sonatas for the piano-forte, which he sold at low prices to his few female pupils. He also wrote *minuets*, *allemands*, and *waltzes* for the *Ridotto*. By performing in concert with two of his friends a sererada in the streets, he attracted the attention of Curtz, the director of the theatre of Carinthia, who employed him to write music, which was performed with the happiest success. But Haydn's talent was not for the stage, and he chose his own proper ground when in his twentieth year, and produced six trios, which, from their striking originality, at once brought him into notice. Shortly after this he published his first quartett, which every musical amateur soon had by heart. Leaving the house of Keller, Haydn went to lodge with Martinez, and became acquainted with Metastasio the poet, who taught him Italian, and instructed him in the fine arts.

Haydn struggled long against want, but at last his genius brought him into notice, and he received employment from Prince Antony Esterhazy, and his successor Nicholas, for whom Haydn composed a number of pieces for the baryton, an instrument now scarcely ever used. Haydn did not forget his promise to his benefactor Keller; and being now in better circumstances, he married his daughter Ann, from whom he afterwards separated, on account of her bad temper and conduct.

Placed now at the head of a full and excellent orchestra, and attached to the service of a rich patron, Haydn found himself in that happy union of circumstances which gives opportunity to genius to display all its powers. From this moment his life was uniform and fully employed. He rose early in the morning, dressed himself very neatly, and placed himself at a small table by the side of his pianoforte, where the hour of dinner usually found him still seated. In the evening he went to rehearsals, or to the opera which was performed in the prince's palace four times every week. Sometimes, but not often, he devoted a morning to hunting. The little time he had to spare on common days was divided between his friends and Mademoiselle Boselli, a singer of eminence. Such was the course of his life, for more than thirty years; and this can alone account for the prodigious number of his productions in instrumental music, church music, and operas. In fifty years he produced no less than five hundred and twenty-seven instrumental compositions, and in the whole of these pieces he has never copied or imitated himself, but when it was his intention to do so.

Haydn wrote his best music with some labour, not from any want of ideas, but from the extreme delicacy of his taste, which he could with difficulty satisfy. A symphony would sometimes cost him a month, and a mass perhaps two. His manuscripts of one piece sometimes contain passages enough for three or four pieces. But although it seemed labour, it was not so; for he was wont to say that he never felt so happy as when at work. Nothing troubled him till the death of his patron Prince Nicholas, in the year 1789, and the subsequent demise of his favourite Boselli; circumstances which induced him to come to England, upon the solicitations of Salomon. This musician was about to give concerts in London, and offered Haydn fifty pounds for each performance, which terms he accepted. Haydn was then fifty-nine years old, and he resided in England upwards of a year, and brought out there some of his finest instrumental pieces.

From England Haydn went to Germany, but he returned for a short time in 1794. He was honoured with the diploma of doctor of music by Oxford. He afterwards went to Austria, and did not return again to England. He was in his sixtieth year when he commenced his *Creation*, to which he devoted two years. When urged to hasten its completion, he calmly said, he had been a long time about it, because he intended it to last a long time. It was finished in 1798, and performed in Vienna with enthusiastic approbation. All Germany rang with its praises; in a few weeks it was printed, and spread over Europe with a rapidity before unheard of. Two years after, he composed his oratorio of the *Four Seasons*, of which Haydn used to say, "It is not another *Creation*, and the reason is this: in that oratorio the actors are angels, in the *Four Seasons* they are peasants." This work terminated his musical career; the labour of it exhausted him, and he complained that he was forced to seek ideas which used to come to him formerly unsought. He wrote, however, subsequently a few quartetts, and arranged nearly three hundred Scotch songs, which produced him about six hundred guineas. At last he grew so weak, that a vertigo seized him the moment he sat down to the piano. He now seldom quitted his house and garden at Grumpendorff, and he became feeble in mind and body. On the morning of the 31st of May 1809 he died, aged seventy-eight years and two months. He was privately interred at Grumpendorff; for Vienna was at that time in the occupation of the French. Haydn's heir was a blacksmith, to whom he left the bulk of his fortune. His manuscripts were purchased by Prince Esterhazy. He left no posterity. Cherubini, Pleyel, Newkomm, and Weigl, may be considered as his disciples.

Haydn, in his symphonies, stands first in the list of the greatest instrumental authors. In sacred music he opened a new path, by which he placed himself on a level with the most celebrated composers for the church. In theatrical music he was least successful. In that department he was only an imitator. His instrumental music consists of chamber symphonies for a greater or less number of instruments, and of symphonies for a full orchestra. The first of these divisions comprehends duets, trios, quartetts, sestetts, octetts, and divertimentos; sonatas, the *fantasie*, variations, and *capricci*. In the second are contained the symphonies for the grand orchestra, concertos for different instruments, serenades, and marches.

The *allegros* of his symphonies are in general full of life and spirit. They generally begin with a short, easy, and intelligible theme. Gradually, and by a procedure full of genius, this theme, repeated by the different instruments, acquires a character of mingled heroism and gaiety. There is more variety in the slow movements; in these the lofty style is majestically displayed. The phrases or musical ideas in his *andantes* and *adagios* are finely and nobly developed. Sometimes the composer is carried away by his copiousness and power; but this excess of vigour does not exclude passion and sentiment. His *minuets* are admirable, being rich in harmony and accumulated beauties. The general character of Haydn's instrumental music is that of romantic imagination. "Haydn," says Carpani, "è l'Ariosto della musica. Passeggia il suo genio per tutte le regioni dell' arte. La sua immaginazione apre i tesori d'ogni bellezza, e ne dispone a sua voglia." As a composer of symphonies and quartetts, he may be considered as the first who moulded them into that form which Mozart, Beethoven, and others, have adopted. The famous seven instrumental pieces, called *Die Sieben worte des Heylandes am Kreuze*, were esteemed by the composer as his best works.

The oratorio of the *Creation* is replete with grandeur, sublimity, and beauty. The *Seasons*, with less sentiment and learning than the *Creation*, is equally admirable as an expressive and delightful composition. The ideal part of Haydn's masses is brilliant and dignified: the style is noble and full of fire. His *Agnus Dei* is full of tenderness; the *Amens* and *Hallelujahs* breathe all the reality of joy; the fugues display all the exultation of an enraptured mind. (*Le Haydine* de Carpani.) (z. z.)

HAYES, Charles, a very singular person, whose great erudition was so concealed by his modesty, that his name is known to few, though his publications are familiar to many. He was born in 1678, and became distinguished in 1704 by a Treatise of Fluxions, in folio, the only work to which he ever set his name. In 1710, he published a small quarto pamphlet of nineteen pages, entitled A New and Easy Method to find out the Longitude, from observing the Altitudes of the Celestial Bodies; and in 1723, The Moon, a Philosophical Dialogue, tending to show that the moon is not an opaque body, but has original light of her own. During a long course of years, the management of the Royal African Company was, in a manner, wholly committed to Mr Hayes, who was annually chosen either sub-governor or deputy-governor, notwithstanding which, he continued his pursuit of general knowledge. To considerable skill in the Greek and Latin, as well as modern languages, he added a knowledge of the Hebrew; and published several pieces relating to the translation and chronology of the Scriptures. The African Company being dissolved in 1752, he retired to Down in Kent, where he gave himself up to study. In 1753, he began to compile in Latin his *Chronographia Asiatica et Egyptiaca*, which he lived to finish, but not to publish. The work, however, was afterwards published. In 1758, he left his house in Kent, and took chambers in Gray's-Inn, where he died on the 18th of December 1760, in his eighty-second year.

HAYNAU, a town of the district of Liegnitz, in the Prussian province of Silesia, on the river Dreichsel. It contains two Catholic churches, one Lutheran, and 360 houses, with 2870 inhabitants, chiefly employed in woollen manufactures. Near to the town are some good veins of fuller's earth.

HAYWARD, the person who keeps the common herd or cattle of a town. He is appointed by the lord's court; and his office is to take care that the cattle neither break nor crop the hedges of enclosed grounds.

HAZAEL, an officer belonging to Benhadad, king of Syria, who caused that prince to be put to death, and reigned in his stead. He defeated Joram, Jehu, and Jehoahaz, kings of Israel; and, after his death, was succeeded by Benhadad his son, before Christ 852.

HAZARD, a game on dice, without tables. It is played with only two dice; and as many may play at it as can stand round the largest round table.

Two things are chiefly to be observed, main and chance; the latter belonging to the caster, and the former, or main, to the other gamesters. There can be no main throw above nine, nor under five; so that five, six, seven, eight, and nine, are the only mains thrown at hazard. Chances and nicks are from four to ten. Thus four is a chance to nine, five to eight, six to seven, seven to six, eight to five, and nine and ten a chance to five, six, seven, and eight; in short, four, five, six, seven, eight, nine, and ten, are chances to any main, if any of these nick it not. Now nicks are either when the chance is the same with the main, as five and five, or six and twelve, seven and eleven, eight and twelve. Observe, however, that twelve is out to nine, seven, and five; eleven is out to nine, eight, six, and five; and ames-ace, and deuce-ace, are out to all mains whatever.

HAZEBROUCK, an arrondissement of the department of the North, in France, extending over 275 square miles, divided into seven cantons, and those into fifty-three communes, with 100,936 inhabitants. The capital is the city of the same name. It is situated on the river Borre, and on a canal. It is an ill-built place, with 961 houses and 7354 inhabitants, who carry on manufactures of linen, twine, sail-cloth, lace, and cottons, and also refineries of salt, and make snuff and starch. Long. 2. 27. E. Lat. 50. 44. N.

HAZLITT, William, a very distinguished writer on miscellaneous subjects, was a native of Shropshire, and the son of an Unitarian clergyman. The date of his birth has not been ascertained; but he received his education at the College at Hackney, belonging to the religious persuasion with which his father was connected. After finishing his academical studies, Mr Hazlitt commenced life as a painter, and by this means gained such a knowledge of the principles of art as qualified him for criticising works of that description, in which he greatly excelled. That he would ever have become eminent as an artist is doubtful; for his love for the fine arts was throughout his life intense; and if he had felt himself capable of producing a work which might have raised him to fame, it seems highly probable that he would have persevered. However, some of his copies from pictures in the Louvre, by Titian and Raffaelle, have been spoken of as spirited and beautiful. Mr Hazlitt was induced, from some cause or other, to quit the pencil for the pen. His first acknowledged literary production was an essay on the "Principles of Human Action;" a work in which he displayed considerable originality and acuteness. In 1808 he published, in two vols. 8vo, "The Eloquence of the British Senate," being a selection of the best speeches of the most distinguished parliamentary orators from the beginning of the reign of Charles I. to the present time, with notes, biographical, critical, and explanatory. Shortly after this work appeared, Mr Hazlitt obtained an introduction to Mr Perry, then editor of the Morning Chronicle newspaper, by whom he was engaged to report parliamentary speeches, and furnish original articles. To this newspaper he contributed a series of able theatrical and dramatic criticisms. As a political writer he is said to have showed himself somewhat intemperate, and his compositions required to be carefully weeded of strong expressions. In the art of reporting he is said to have displayed but little skill; indeed, a man of his peculiar temperament was not likely to submit to the drudgery which that occupation requires before excellence can be attained. Accordingly, a separation took place between him and Mr Perry; and, besides being engaged upon another morning paper, he was employed by the booksellers in contributing to various periodical publications.

In 1810 appeared a work of his entitled a "New and Improved English Grammar, for the use of Schools," in which the discoveries of Mr Horne Tooke, and other modern writers, on the formation of language, are incorporated. This work was printed in 12mo, with another upon the same subject; and an abridgment of it appeared in 1812. In 1817 appeared "The Round Table," a collection of Essays on Literature, Men, and Manners. These papers had already been published in a periodical work, in a series of weekly essays. During the same year, his "Characters of Shakspeare's Plays" appeared in one volume 8vo; and in 1518 he published a "View of the English Stage," containing a series of dramatic criticisms. Mr Hazlitt was in 1818 engaged to deliver, at the Surrey Institution, lectures upon English poetry, which he afterwards published in one vol. 8vo. He subsequently gave to the world, at different intervals, "Table Talk;" the "Spirit of the Age," being criticisms upon the talents and character of the most conspicuous men of the day; and "The Plain Speaker," being a collection of articles of his which had previously appeared in different periodical works. He also published "Political Essays and Sketches of Public Characters;" an "Account of British Galleries of Art;" a "Letter to William Gifford, Esq.;" "Wine and Walnuts, or after-dinner chit-chat," two vols. 8vo; the "Literature of the Elizabethan Age;" the "Modern Pygmalion;" and the "Life of Napoleon," in four volumes. This last is his largest and most elaborate production; and although strongly tinged with party feeling, and partaking more of a series of reflections upon events than a minute detail of them, it is a work of much power, and evinces no ordinary degree of philosophical penetration. His last works were, "Notes of a Journey through France and Italy," and "Conversations of James Northcote, Esq.," the latter of which appeared at the moment of his death, which took place at London, on the 18th of September 1830. He was twice married, and left an only son. Amongst the periodical works to which Mr Hazlitt lent the assistance of his pen, was the *Edinburgh Review*, to which he contributed various articles, some of them possessing extraordinary merit. The article on the "Fine Arts" in this work was also written by him.

The writings of Mr Hazlitt display much originality and genius, united with great critical acuteness and brilliancy of fancy. In the fine arts, the drama, and dramatic literature, he was considered as one of the ablest critics of the day. But he was rather acute than profound; and he displayed an excessive fondness for paradox, united with a somewhat prejudiced adherence to his own opinions. He was impatient of mental drudgery; and in his haste to reach conclusions, he often dispensed with the labour of previous investigation. Hence the theories which he proposes are seldom brought out with that elaboration and logical precision which carries conviction. There is also a want of sequence or continuity in his style; and he rarely produces a strong or lasting impression upon the mind of the reader. He gives, in abrupt and striking sentences, the results of his thoughts; but he does not, by means of proof, convincingly develope his critical doctrines. In reasoning to establish any given point, his arguments do not naturally grow out of each other; and his sentences, though brilliant, and, when taken separately, pregnant with meaning, are only connected together by a very obscure chain of relation. There seems to have been a want of proportion, of balance, and of harmony in his powers. His mind was essentially imaginative, and, aspiring after ideal beauty and goodness, he frequently fell into extravagance and mysticism. His imagination was powerful, and he possessed a rich store of ideas, which were profusely scattered over every page he wrote, without much regard to either order or propriety. He is said to have read but little; but this can only apply to him in the latter years of his life. That he had read attentively the standard English authors, is evident from his writings;

and that they had made a strong impression upon his mind; is evinced by the frequency with which he quotes them, sometimes to the detriment of his style, which, in consequence, assumes an appearance of patchwork. In politics, Mr Hazlitt warmly espoused liberal principles; and the ardour with which he wrote in their defence exposed him to much contumely and ridicule. His prejudices were strong; and he displayed considerable caustic bitterness of style, when personally attacked. He was, we believe, himself rarely the aggressor; and although wayward and self-willed, his temper is represented as being placable and mild. An able writer thus speaks of him: "His mind resembles the 'rich stronde' which Spencer has so nobly described, and to which he has himself likened the age of Elizabeth, where treasures of every description lie, without order, in inexhaustible profusion. Noble masses of exquisite marble are there, which might be fashioned to support a glorious temple; and gems of peerless lustre, which would adorn the holiest shrine. He has no lack of the deepest feelings, the profoundest sentiments of humanity, or the loftiest aspirations after ideal good. But there are no great leading principles of taste to give singleness to his aims, nor any central points in his mind, around which his feelings may revolve, and his imaginations cluster. There is no sufficient distinction between his intellectual and his imaginative faculties. He confounds the truths of imagination with those of fact, the processes of argument with those of feeling, the immunities of intellect with those of virtue. Hence the seeming inconsistency of many of his doctrines."[1] But with all these drawbacks and imperfections, Mr Hazlitt was a powerful and an eloquent writer; and whether his opinions are just or profound, no one can deny that they are strikingly expressed. His article upon the Fine Arts, in this work, is one of the ablest and most striking that the subject ever called forth, and would alone entitle him to high distinction amongst the writers of his time. His lectures on the dramatic literature of the age of Elizabeth form his best work of literary criticism. His admiration for the writers of that period was intense, and he descants upon their beauties with the most eloquent and joyous enthusiasm. But his Life of Napoleon, with all its manifold imperfections, is perhaps his greatest work, and will probably remain the most enduring record of the strength and versatility of his genius. (R. R. R.)

HEAD, the uppermost or foremost part of the body of an animal.

Head-Borow, or *Head-Borough*, signifies the person who is the chief of the frank-pledge, and who had anciently the principal direction of those within his own pledge. He was also called *burrow-head*, *burshoulder*, now *borsholder*, *third-borrow*, *tything-man*, *chief-pledge*, and *borowelder*, according to the diversity of speech in different places. This officer is now usually called a *high-constable*. The head-borow was the chief of ten pledges; the other nine were called *hand-borrows*, or *plegii manuales*, and the like.

Head-Pence, an exaction of a certain sum formerly collected by the sheriff of Northumberland from the inhabitants of that county, without any account to be made to the king. This was abolished by the statute 23 Henry VI. cap. 7.

Head-Dress, amongst the Jewish, Grecian, and Roman ladies, as amongst ourselves, was various, according to the different periods of time, and the fluctuation of fashion. In general, it consisted principally of their hair differently tricked out. It was usually divided before with a bodkin, into two equal parts; sometimes it was covered with a net, or put into a kind of purse, or tied behind in the form of a knot, or bound back and plaited with ribands. It was washed with great care; essence and perfumes were applied to it, and gold dust was sometimes made use of as powder. Pearls and jewels formed part of their ornaments; and pendants were worn in the ears.

HEALFANG, Healsfang, or Halsfang, in our ancient customs, signifies *collistrigium*, or the punishment of the pillory. The word is compounded of two Saxon words, *halp*, neck, and *pangen*, to contain: *Pœna scilicet qua alicui collum stringatur*. The healfang, however, cannot signify a pillory in the charter of Canutus, *De Forestis* (cap. xiv.): *Et pro culpa solvat regi duos solidos, quos Dani vocant* halfehang.

Healfang is also taken for a pecuniary mulct in commutation of the punishment of the pillory; and is to be paid either to the king or the chief lord. *Qui falsum testimonium dedit, reddat regi vel terræ domino* healfang.

HEALING, in its general sense, includes the whole process of curing or removing a disorder, and recovering health. In this sense medicine is defined the art of healing. In its more restricted sense, as used in surgery, healing denotes the uniting or consolidating the lips of a wound or ulcer.

HEALTH is a right disposition of the body, and of all its parts. The Greeks and Romans deified Health, representing it under the figure of a woman, whom they supposed to be the daughter of Æsculapius. We find the name of the Goddess *Salus*, or Health, on many medals of the Roman emperors, with different inscriptions; as, Salus Publica, Salus Reipublicæ, Salus Augusti, and so on.

HEARING, the act or faculty of perceiving sounds. Hearing is reckoned among our external senses. Its organ is the ear, and particularly the auditory nerve diffused through the same; and its object, certain motions or vibrations of the air. Hence hearing may be more scientifically defined a sensation, by which, from a due motion impressed on the fibrillæ of the auditory nerve, and communicated thence to the sensorium, the mind obtains the idea of sounds.

HEARSE, the name of a well-known carriage, used for conveying the dead to the grave. The word is also used by Shakspeare in his Henry VI. for a monument erected over a grave.

HEART. See Anatomy.

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[1] *Edinburgh Review*, No. lxviii. p. 440.

HEAT.

Definition || Nature of Heat.

The term **Heat**, in common language, is applied both to the sensation excited in us by the approximation of a warm body, and to the cause of that sensation. To obviate this ambiguity, chemists and other cultivators of physical science have employed the word *caloric* to designate the cause of heat; but as there are few disquisitions in which this distinction is material to perspicuity, in this article we shall use either term to signify the cause of the sensation.

SECT. I.—NATURE OF HEAT.

One of the first inquiries that suggests itself is, what is *caloric?* Two opinions on this subject have divided philosophers. The most generally received opinion is, that heat, or caloric, is a material agent of a peculiar nature, highly attenuated, and, from its affinity or attraction for all other matter, universally distributed amongst the particles of bodies, in quantities proportional to their mutual attractions, or, as it has been termed, the *capacities* of different substances for heat; whilst its tendency to diffuse itself amongst contiguous bodies has been explained on the supposition of its own particles being repellent of each other. The other opinion, which has been maintained by Bacon, Boyle, and several other philosophers, considers heat as a mere quality of matter, and ascribes it to a vibratory movement among the intimate particles of bodies; an idea which was adopted by Rumford, to explain his curious experiments on the excitation and communication of heat by friction. This opinion, however, seems vague and unsatisfactory. If we say that heat is motion amongst the particles of matter, still we have no explanation of the manner in which this motion is produced; for we cannot conceive any movement without an impulse, nor an impulse without a material agent. Heat pervades all sorts of matter: it remains in some circumstances dormant, or, as it is termed, *latent*, and may be again elicited from bodies by various means. Did it consist in vibrations or motions of the particles of other matter, it should pervade elastic bodies with the greatest celerity; which we know not to be the fact. It will, for instance, pervade a rod of lead, or of the softest copper, far more readily than an equal length of glass or of marble. If we mingle together equal quantities of water at different temperatures, the resulting temperature will be an exact mean between the extremes. But if heat consisted in such vibrations, there ought to have been a loss of heat, as in all other communicated motions. If we mix together equal quantities of different substances at different temperatures, the resultant temperature is not a mean: one body has lost more heat than the other has appeared to gain, or a part of the heat of the one has become latent in the other, and that in a constant ratio to the power of each substance of absorbing heat, as tried by comparing each with a third body in the same manner. It is very difficult to conceive this species of interchange, if heat merely consisted in vibrations amongst the particles of matter. Still more difficult is it to conceive how a permanent temperature could subsist among a great system of bodies, as the planets, if heat were nothing more than a vibration of the particles of bodies; for the original impulse ought to diminish with each communication.

It is possible, however, to modify this theory, by supposing that heat is produced not merely by the motions of the particles of the heated substance, but by the vibrations or undulations of a very subtile matter existing in all bodies. This will approximate the vibratory theory to that which has been generally considered as its antagonist, will accord well with some recently discovered facts, and will assimilate the vibratory hypothesis of heat to the undulations now so generally received as explanatory of the phenomena of light, to which heat has so intimate a relation.

Caloric, like light, has been proved to be capable of radiation, of reflection, and refraction, whilst recent investigations have distinctly proved that refracted heat is susceptible of polarisation. But it is transmitted, reflected, refracted, and polarised by different substances in a different manner and degree from light; and hence some have inferred that light and heat are not the same agent, but are produced by different kinds of matter. Other philosophers have regarded them as modifications of the same matter, depending on the greater celerity or velocity of the undulations that produce them. Such speculations, however, are not yet susceptible of any direct proof; and, in the present state of our knowledge, it is safer to consider light and heat as produced by different but intimately connected agents.

These views lead us to the conclusion that the phenomena of caloric are owing to the movements of a subtile matter, universally diffused throughout other bodies, the particles of which are strongly repellent of each other, and have an affinity for those of all other bodies, differing in force according to each kind of matter. We may further conceive, that heat or caloric is the cause why the particles of the most solid bodies are not in absolute contact. If we diminish the temperature of a bar of iron, for instance, it shrinks in all its dimensions, *i. e.* its particles approximate; and the more we reduce the temperature, the nearer they approach. Each particle of matter would seem to be surrounded with an atmosphere of heat, which remains *latent* or quiescent, until disturbed by the approach of bodies of a different temperature, when the vibrations or undulations of the subtile matter of heat are induced, by the tendency of this matter to produce an equilibrium of temperature; and then we become sensible of the existence of heat.

The subtilty of the matter of heat is such, that we cannot ascertain its accumulation in any body by the nicest balance; its fluidity may be considered as proved by the ease with which it insinuates itself amongst the particles of matter; its affinity for other matter is shown by its being universally contained in all bodies, in proportions differing in each kind of substance; its repulsion amongst its own particles is proved by its tendency to exist in a state of equilibrium in contiguous bodies.

Our knowledge of the laws which regulate the distribution of caloric was very imperfect when we possessed no other measure of heat than our sensations. The susceptibility of the sense of touch varies in different individuals, and in the same individual at different times. We can even make the same object feel warm and cold to the same person, by previously cooling one hand, whilst the other is immersed in a warm fluid. Hence sensation could never afford any tolerable measure of varying degrees of heat; and we are indebted for more accurate notions on the subject to the invention of *thermometers.* The principle of these instruments depends on the expansion of solids, fluids, or gaseous bodies by heat, and their subsequent contraction on cooling. The construction of these useful instruments will be described under the article Thermometer. It will be here sufficient to state, that though the thermometer affords us indications of the changes in the sensible heat of bodies, it does not give us any information respecting their latent caloric, nor the absolute quantity of heat they may contain. This must be sought for by other modes, which we shall shortly explain, after we have considered the modes in which caloric is diffused amongst bodies, and its general effects on different kinds of matter.

SECT. II.—DIFFUSION OF HEAT.

The tendency of heat to diffuse itself equally amongst bodies is so great, that we are unable permanently to accumulate it in any substance. All that can be effected in this way by the most skilful contrivances, is to produce some retardation of this dissipation. The mode in which it is diffused through solids, liquids, and gases, is different, and demands a separate consideration.

I. *Diffusion of Heat by Communication.*

1. *Diffusion in Solids.*—When we place a heated solid in contact with a colder body, the superabundant caloric of the first immediately begins to flow into the latter. The nearest particles are first heated, and they communicate a portion of their caloric to the second series, and these last to a third, until both bodies acquire a common temperature; and this equilibrium will be established amongst all contiguous bodies. If a bar of iron twenty inches long be heated at one end, it will require four minutes for the smallest sensible increase of temperature to be perceived at the other. Biot has endeavoured to ascertain the rate of this transmission. He employed a bar of iron several feet in length, and bent into a right angle, at one end of which a steady heat of 216° Fahrenheit was applied. Thermometers were placed in holes drilled for the purpose, at intervals of four inches along the top of the bar. In four hours all the thermometers became stationary, the difference between the first and second = 21°·50; between the second and third, = 11°·25; between the third and fourth, = 7°·25; between the fourth and fifth, = 5°; between the fifth and sixth, = 4°; between the sixth and seventh (beyond which no sensible effect was perceptible), = 1°·75; which, allowing for the unavoidable errors in such investigations, would show, that, taking the distances in arithmetical progression, the decrease of temperature follows a geometrical ratio in penetrating solids. In such cases, the heat seems to be communicated from particle to particle, and is said to be *conducted* through the body.

All bodies do not *conduct* heat with equal celerity. If we place equal thermometers on equal cubes of metal, ivory, marble, and glass, heated by the same source, we shall find that the thermometer placed on the metal will rise soonest; next, that placed on the marble, then those on the ivory and the glass. The most dense bodies conduct heat, in general, more readily than rarer bodies; but experiment shows that their conducting power is not always in the ratio of their density, but probably depends also on their affinity for caloric. Spongy and light bodies are found to be extremely bad conductors of caloric. Silk, cotton, and wool, are especially so; and hence their utility in preserving our animal heat in cold climates. Count Rumford made a series of experiments on the conducting power of different substances of this nature, and found that raw silk, fur, and eider-down, were remarkably bad conductors of heat. They give to us the sensation of warmth, not by communicating heat to our surface, but because their bad conducting power prevents the waste of our animal heat by the ambient air. Their stopping the transmission of heat seems partly to depend on the air they entangle; for, by twisting them, *i. e.* by expelling a portion of the air contained in such bodies, their conducting power is increased.

Diffusion of Heat.

The facility with which bodies conduct heat is not exactly in proportion to any of their sensible qualities, but is more nearly in the direct ratio of their density than any other quality. This may be ascribed to the greater intensity of the repulsive energy of the atmospheres of caloric surrounding each particle of dense bodies (by reason of their greater proximity) conveying each fresh addition of temperature with greater celerity through such substances. But if we conceive "heat to be a material agent," this quickness of conducting power may also be modified by the different degrees of affinity between caloric and each kind of matter. However this may be, scarcely any two substances conduct heat with equal facility. Solids conduct much more readily than liquids. Of the former, the best conductors are the metals; and amongst these, the very best are gold, silver, platinum, and copper, whilst iron and lead are among the worst. The rapidity with which silver conducts away heat is well illustrated by wrapping a piece of muslin smoothly round a spoon of that metal, when the muslin may be held in the flame of a candle or a lamp, so as to boil water in the spoon, without burning the muslin.

The following table of the conducting power of different metals and other bodies is given by Despretz (*Ann. de Chim. et Phys.* xxxvi.):—

Gold	1000	Tin	303·9
Platinum	981	Lead	179·6
Silver	973	Marble	23·6
Copper	898·2	Porcelain	12·2
Iron	374·3	Clay	11·4
Zinc	363		

2. *Diffusion in Liquids.*—The extreme slowness with which liquids conduct heat is shown by a beautiful experiment of Count Rumford. Freeze a little water in the bottom of a tube, and then pour water over the ice: by inclining the tube, the flame of a lamp may be applied to the surface of the liquid, so as to cause it to boil; and by slowly moving the flame towards the ice, we may raise the water to ebullition in successive portions; yet this ebullition will almost reach the ice before it shows any signs of melting. The same fact is exhibited by fixing an air thermometer in a vessel filled with water to one or two tenths of an inch above the ball of the thermometer, and pouring a little æther on the surface of the water. On kindling the æther, it will burn with a copious flame, without affecting in the slightest degree the submersed thermometer. This extreme slowness of liquids in conducting heat induced Count Rumford to suppose that they were absolute non-conductors of caloric; but this inference is not warranted by his own experiments, and was fully refuted by the investigations of Hope, Murray, and Traill, which proved, that though liquids conduct heat slowly *downwards*, they are not absolute *non-conductors* of caloric.

If, however, we apply heat to the lower part of a vessel containing any liquid, it rapidly acquires a higher temperature. This, however, is in a different manner from *conduction.* The liquid is heated by the *transportation* of its particles in quick succession. In this case the particles nearest the heating cause become specifically lighter by receiving heat; they therefore ascend through the fluid, to which they impart part of their caloric, while their place is supplied by another series of particles, which become heated, and ascend in their turn; and this succession continues until, by these rapid changes, the whole body of the fluid attains its boiling point, if the heat be sufficient for that purpose. These motions may be rendered visible by throwing into the vessel a few particles of matter a little heavier than water, such as powdered amber.

It is by this transportation of their particles that liquids are principally heated; and the rapidity with which a piece of ice melts when it floats in a jar containing hot water, compared to the extreme slowness of the melting of a similar mass of ice fixed in the bottom of a jar, and defended from the immediate contact of the hot water by a thin film of ice-cold water, exhibits, in a striking manner, the difference between the heating of fluids by *transportation* and by *conduction.*

3. *Diffusion in Gases.*—The conducting power of gases is not so easily ascertained, because it is difficult to separate their conducting power from the effect of radiation of heat through them. The experiments of Professor Sir John Leslie and of Dr Dalton, however, decidedly show a difference in the conducting power of gases, which is also more nearly in the direct ratio of their specific gravity than of their other properties; hydrogen having the lowest conducting power, atmospheric air one considerably higher, and carbonic acid the greatest of all the gases subjected to this examination.

The difference of bodies in conducting heat is a most important subject, as on it depends not only many of our contrivances to concentrate artificial heat, and apply it to numerous purposes in the useful arts, as the obtaining of metals from their ores; but on it also depend the methods of defending our bodies against external cold. The living system has within itself the power of supporting a nearly equable temperature, notwithstanding the perpetual tendency of contiguous bodies to a common temperature; but if the naked surface be exposed to the elements in our climate, the heat of the body would soon be reduced below what is consistent with health or comfort. To preserve the animal heat, we surround our bodies with bad conductors of caloric, such as woollen, silk, or cotton; and the more imperfectly these defences conduct heat, the less will our temperature be reduced. Hence the worst conducting substances are the most suitable garments for a cold climate; and, in hot latitudes, the comfort of man requires that the coverings of his body should be of the kind that would most rapidly abstract his redundant animal heat.

Nature has beautifully adapted the covering of the lower animals to the climates they inhabit. The thick fur of the Greenland bear, the musk ox, and the arctic hare, adapts them to the rigours of their native climate; whilst the short and sleek hair of the antelope, the giraffe, the leopard, and the lion, proclaims them denizens of the warmer regions of the earth. Even in the same species inhabiting a changeable climate, nature adapts their covering to the season. The glossy sleekness of the horse, and of our domestic cattle, diminishes toward the close of autumn. The bear, the fox, and the weasels of northern regions, assume a longer and more shaggy coat on the approach of winter; and the sheep, which in Europe is covered with a thick fine wool, an extremely bad conductor of heat, in the burning plains of Africa is clothed only by a short and coarse hair, that presents comparatively a small obstacle to the evolution of animal heat.

In the vegetable kingdom a similar care is bestowed to defend plants from excessive cold. Plants of cold climates, which are perennial, are protected by a considerable thickness of bark; a substance which experiment proves to be a bad conductor of heat. In high latitudes they are further defended against the excessive cold of the climate by a spongy covering of snow, which, until it begin to melt, is found to be a very bad conductor of heat; and therefore tends to preserve the juices of plants from being frozen. Thus trees are more seldom killed by the freezing of their sap, when a fall of snow has preceded an intense frost; an accident not uncommon, even in the temperate climates of the earth, in a long continuance of what is termed a *black frost.* Recent voyages of discovery have also shown that the Esquimaux find the excessive rigour of their inhospitable climate very endurable in houses built of frozen snow.

II. *Diffusion of Heat by Radiation.*

The diffusion of heat by the means already noticed is a comparatively slow process, and is limited to bodies in contact with each other. But heat is capable of being diffused among bodies not in contact. A heated body suspended *in vacuo* emits its excess of heat in all directions; and in air, though much of its caloric apparently passes off with the ascending currents which it produces in the ambient air, the emanations of heat also pass off in directions contrary to these aerial currents. Thus a person standing before a fire perceives its warmth, though a light body like a feather will show that there is a current of air perpetually flowing toward the fire. This emission of heat is termed *radiation,* and is analogous to the emanations of light from a luminous object; each point of the heated surface emitting divergent rays, which are subject to the same modifications as those of light, by reflection from polished surfaces, and by refraction through transparent media.

When the rays of heat fall on a bright metallic surface, they are *reflected.* As early as 1682, Mariotte showed that "the heat of a fire is reflected from a burning mirror, so as to be sensible in its focus; but that it is intercepted by a plate of glass interposed between the mirror and the fire." The next important step was made by Lambert, who discovered that the heat might be so increased, by employing two concave mirrors, and a charcoal fire placed in the focus of the one, that a combustible might be kindled in the focus of the other. But the most successful cultivator of this branch of science during the last century was Scheele of Sweden, who proved that metallic surfaces are the most powerful reflectors of radiant caloric; that glass is far inferior in this respect; that if we cover the surface of the metallic mirror with a film of lamp-black, it does not reflect heat, but actually absorbs it; that radiant heat is separated from light by interposing screens of glass; and that it passes through air, without suffering any obstruction from the direction of the aerial currents through which it radiates.

Saussure and Pictet repeated the experiments of Lambert. They showed the instantaneous transmission of heat by radiation; that it was in such experiments material to place the heated body and the thermometer in the focus of each mirror; and that, a very little beyond the focus, the effect was trifling, although the thermometer was nearer the heated body. When the heated body was a red-hot cannon bullet, combustibles were speedily kindled in the focus of the other mirror at the distance of several feet. These researches were greatly extended by Pictet, who showed that a flask of hot water radiated heat which could be concentrated in the focus of a metallic mirror, and thus rendered sensible by a thermometer, showing that the invisible rays of heat might be reflected, as well as those emanated from a hot luminous body.

The experiments on radiant heat may be exhibited by means of a pair of concave mirrors of well-polished tinned iron, hammered into segments of spheres of about one foot in diameter; but still better with mirrors of thick brass plate, hammered, on Sir John Leslie's plan, into a parabolic form. The writer of this possesses a pair twenty-two inches in diameter, hammered into a parabolic curve with surprising accuracy, by Mr Alexander Kilpatrick of Edinburgh, with which he has repeatedly melted lead by collecting the sun's rays in one of them. This form of mirror is the best; because the rays which fall on the mirror parallel to its axis are reflected, not divergingly, but so as to meet in the focus of the parabola.

Pictet found the sensibility of the thermometer much increased by painting its ball black; and he showed that glass screens intercepted the rays of caloric from burning bodies or a heated bullet; but it was found that the ra-

Diffusion of Heat.

diant heat in the sun's rays was not intercepted by a plate of glass, or even by a sheet of tin, which completely intercepts heat derived from other luminous bodies.

Such was the state of our knowledge of radiant heat, when our veteran astronomer, Sir William Herschel, discovered, toward the close of the last century, that rays of heat exist, independently of those of light, in the solar spectrum. When he received the solar rays through a prism of flint-glass, he found that a row of delicate thermometers placed in the coloured spectrum were differently affected at its two extremities. In the violet ray it only rose 2°, in the red ray it rose 7°; but his most interesting discovery was, that half an inch beyond the red ray it was still hotter. These very important results were fully confirmed by Sir Henry Englefield. In one of Englefield's experiments, the following results were obtained:—In the blue rays, in 3′ the thermometer rose 2°; in the green, in 3′ it = 4°; in the yellow, in 3′ it = 6°; in the middle of the red, in 2′·5 it = 16°; in the outer edge of the red, in 2′·5 it = 17°·5; and beyond the spectrum, in 2′·5 it = 18°. When the bulbs of the thermometers were previously blacked, the full red ray raised the thermometer in three minutes 22°; and just beyond the spectrum it rose 33°. Even half an inch beyond the spectrum altogether, the rise was 6° more than in the red ray.

These experiments show that the refrangibility of the rays of heat and light are different, and that the former are less refrangible than the latter.

The experiments of Berard and of Leslie confirmed the fact, that the point of greatest heat in the solar spectrum is in the red rays; and Leslie states the result of his experiments to have made the difference between the violet and red as one to sixteen; but neither of these philosophers detected any heat altogether beyond the spectrum. The conclusions of Herschel have, however, been confirmed by more recent investigations; and Seebeck has shown that prisms of different substances produce a different refraction of the rays of heat. With a hollow prism filled with water, the greatest heat is in the full yellow light; with sulphuric acid it is in the orange; with crown glass it is in the dark limit of the red.

We may here state, that not long after Herschel's discovery, Ritter, Wollaston, and Beckmann, simultaneously discovered the existence of other invisible rays in the solar spectrum, which are only known by their chemical effects in decomposing some metallic saline compounds, as the nitrate of silver. These *chemical rays* are the most refrangible of all, and exist in greatest abundance toward the violet end of the spectrum, and even entirely beyond it. Thus the solar spectrum would seem to consist of three species of rays, the luminous, the calorific, and the chemical; all differing in their refrangibility, and in their apparent effects: and if we consider white light as composed of red, yellow, and blue rays, we have five kinds of rays in the solar beam, three of which are visible, and two invisible. In the solar beams these are intimately blended, but may be in some degree separated by refraction through diaphanous prisms. The separation of the luminous and calorific rays may be made by black opake bodies, through which the sun's heat will penetrate without admitting a single ray of light. The sun's rays, however, pass through all transparent media, without a separation of light and heat. Glass and ice intercept the rays of terrestrial heat, the first partially, the latter wholly; yet the sun's rays passing through and collected in the focus of a lens of glass, produce the most intense heat; and Scoresby and others have shown, that a lens of *ice* will concentrate the sun's rays, so as to ignite inflammable substances.

The publication of Sir John Leslie's *Inquiry into the Nature of Heat*, in 1804, forms an important era in the history of the radiation of caloric. This very original and able philosopher, by the simplicity and delicacy of his apparatus, and the ingenuity of his well-devised experiments, did more than has been accomplished by any other individual to develop the laws which regulate the transmission and reception of this mysterious agent; and his work will remain a land-mark in the history of this branch of physical science. In his experiments, a single mirror only was employed; and the source of heat generally used was a cube or square canister of tinned iron placed before the mirror, at the distance of three or four feet, whilst the ball of an air thermometer was placed in the focus of the mirror. The air thermometer employed by him was his own modification of that figured by Sturmius. (*Colleg. Curios.* p. 53, 1676.)

In the instrument of Leslie, termed by him a *differential thermometer*, both limbs of the instrument, as well as both balls, are equal; and instead of being joined with cement, the *recipient ball* is united by the blowpipe to the same piece with the *sentient ball.* These changes give additional delicacy and accuracy to the instrument; in which the coloured fluid is sulphuric acid tinged with carmine.

Leslie's principal object was the relation of different surfaces in emitting and receiving calorific rays. Of his cubical canister, one side was polished, or, as it is termed by workmen, *planished;* the second was covered by a plate of glass; a third with white paper smoothly pasted on; the fourth was painted with lamp-black mixed with *size.* The cubes he used were from four to ten inches, and were filled with boiling water. When the polished side was turned toward the thermometer, placed at four feet from the mirror, the increase of temperature was no more than 12°; when the glass side was presented, the differential thermometer under the same circumstances rose to 90°; when the papered side was the radiating surface, the temperature was 98°, and the painted side indicated 100°; when the polish of the planished side was destroyed, by ploughing it in one direction with a fine-toothed plane, its propelling or radiating power rose to 19°; and when scratched in one direction with a fine file, its effect was as much as 26°. On covering one of the surfaces smoothly with gold and silver leaf, the effect was about equal to the surface of polished tin; a plate of polished iron gave 15°; a surface of fresh lead 19°; but when the same became tarnished, its effect was equal to 45°; and painting it with red oxide of lead raised it to 80°. An amalgam of mercury and tin, when fresh, gave no more than 20°.

Leslie then investigated the relative *receiving power* of different surfaces, by coating the *sentient ball* of the differential thermometer with different substances. When that ball was smoothly coated with tinfoil, the effect of the blackened side of the canister was only 2°·5, or about one fifth of what it produced on the naked ball; and he found, that of either side of the canister the effect was now just one fifth of that observed with the naked ball. On the other hand, when the ball was covered with a coat of china ink, or formed of a black enamel, the effect of either side of the canister was greatly increased.

The power of surfaces in reflecting heat was also investigated. In fact, it was shown by the last series of experiments with the coated ball; but he proved it also by varying the reflecting surface. When a glass concave mirror, two feet in diameter, was substituted for the metal reflector, the effect of the blackened side of the canister on the naked ball was but just perceptible; and if a film of china ink be spread over the surface of the mirror, even this slight effect totally disappears. If, however, the concave surface of the glass mirror be smoothly coated with tinfoil, the effect of the black side of the canister will be ten times more than with the naked glass surface. Removing the silvering from the back of the mirror produced no effect on its reflecting the calorific rays, neither was this affected by roughening the back of the mirror. Hence Leslie infers, that reflection of heat takes place at the surface of the glass mirror, or principally so.

A polished tin reflector had its power diminished one third by being coated as smoothly as possible with tinfoil, evidently by the imperfection of the smoothness of its surface. Scratching its surface with sand-paper diminishes its effect one tenth; and he found that the mirror seemed to have its reflecting power more impaired when the scratches were all in one direction, than when they crossed. A film of tallow on the surface of the mirror reduced the effect of the blackened side from 100° to 8°; but if held before the fire until all that could be thus removed had run off, the effect of that side rose to 37°. When the surface of the mirror was covered with a very thin iridescent film of isinglass, the blackened surface gave an effect of 80°; but when that film was only $\frac{1}{1000}$th of an inch, the effect was reduced to 15°.

The results of his experiments with other reflecting surfaces gave the following proportions:—A reflector of polished brass = 100°, of the same coated with tinfoil = 85°, of steel = 70°, of fresh lead = 60°, of glass = 10°.

The inference from these investigations is, that the reflecting power of various surfaces bears some inverse proportion to their propelling and absorbing powers. The numerical results of Leslie's experiments would give the ratio between metallic surfaces and glass, in reflecting power as ten to one; in propelling power as one to eight; in absorbing power as one to five. It was, however, supposed that some minute circumstances, of which it is difficult to estimate the effect, interfered in the two last processes, and that the propelling and absorbing powers are equal in all bodies: we shall find this to be incorrect.

One of the most interesting parts of Leslie's investigations was the effect of screens of different kinds, interposed between the sources of heat and the thermometer. When he interposed a screen of tinfoil, the effect of the blackened side of the canister was 0°; a thin sheet of crown-glass was = 20°; a sheet of common writing paper, placed about two inches from the cube, was = 23°. If the screen of any material was placed one foot from the cube, the effect was only one thirtieth of what it was at the distance of two inches. From this he inferred, that the screen prevents all transmission of radiant heat until it becomes itself heated; and then it radiates from its other surface toward the thermometer. This was confirmed by substituting a plate of ice (a substance the temperature of which cannot rise above 32° F.) for the screen, when the effect was 0°. This view he considered as confirmed by his beautiful contrivance of the *double* or compound screen. He coated one side of two plates of glass with tinfoil; when the coated sides were outermost, the thermometer did not rise; when the glass surfaces were outwards, the thermometer rose to 18°. He blackened one surface of two plates of tinned iron; when the blackened surfaces were outwards, the effect was 23°; but if the plates were separated from each other, the thermometer fell back to its former station. When the tinned surfaces were outermost, the thermometer was not at all affected.

Leslie included his whole apparatus in a trough of water, in such a way as to be able to fill the canister with hot water after the whole was adjusted; but there was no radiation of caloric.

The inference which this philosopher drew from his investigations is, that heat is an elastic substance, extremely fluid and active; and he advanced strong arguments against the theory which ascribes all the phenomena of heat to vibrations in the particles of matter. (*Vide Inquiry*, p. 139 to 150.) Yet he is disposed to consider the phenomena of radiation as depending on certain undulations, produced by radiating surfaces in the ambient air. This view has been ably combated by the late Dr Murray, with the sagacity which distinguished that philosopher. But the limits of the present article will not allow us to enter into this part of the subject, for which we must refer the reader to Leslie's *Inquiry*, and Murray's *Chemistry*.

The more usually-received theory of radiation is, that from heated bodies emanate rays of caloric in all directions, which proceed through gaseous bodies with little or no sensible interruption, and with amazing velocity; that these rays are absorbed by dark and rough surfaces, and are reflected by polished bright surfaces.

There is, however, one curious experiment, which is rather difficult of explanation, namely, the seeming *radiation of cold*. The Florentine philosophers of the *Academia del Cimento* found, that when a mass of snow was placed in the focus of one mirror, the thermometer placed in the focus of the other sunk, or indicated cold. This subject has been investigated by Pictet and by Leslie. The latter observed that his canister, filled with snow, produced the greatest effect when its blackened side was towards the thermometer and the mirror, and the least when its polished side was in that direction. The effect of screens, in retarding the influence of the cold body, he found analogous to their effect on the radiation from the hot water.

These facts were considered by Leslie as proving the existence of what he denominated cold pulses from the snow towards the mirror, "on the wings of the ambient air;" but the explanation of Pictet appears to account for it well, without the necessity of inferring the existence of frigorific particles, which is a highly improbable supposition. On this view, radiation is considered as only taking place amongst bodies unequally heated. He conceived that bodies at the same temperature do not radiate heat to each other, because in this state caloric exists in them all in an equality of tension; but when a cool body is introduced, all radiate heat towards it, and consequently their temperature falls. Hence radiation is nothing more than the tendency of caloric to establish an equilibrium of temperature. The rays of heat enter into the snow from the surrounding matter, and, amongst others, from the thermometer, which is now a radiating body; and these collected in the mirror pass in right lines to the snow, with a celerity in proportion to their absorption by the cold body. Hence the caloric of the thermometer will more rapidly leave it when the blackened side of the cold canister, that is, its most absorbent side, is turned to the thermometer.

Leslie explains this phenomenon by his theory of aerial pulsations. He considers the cold surface as abstracting part of the caloric of the contiguous stratum of air, which induces a momentary contraction of that portion; and this contraction produces pulsations, accompanied by a discharge of heat, in a continued chain from the thermometer and the mirror to the snow.

The effect of surface on the refrigeration of bodies, an important part of the consequences of radiation, has been ably examined both by Sir John Leslie and Count Rumford. The experiments of both show, that to preserve the heat of any liquid, a bright metallic vessel is the best; and Rumford has pointed out many important economical purposes to which these principles may be applied. Thus, where it is of consequence to preserve the heat of liquids, of steam, or of hot air, they should be conveyed in vessels and tubes of polished metal. On the other hand, if we wish to have the greatest radiant heat from a stove or grate, its surface next the room should be dark and rough, as these are the most favourable for radiating heat into the apartment. The same principles show why a silver tea-pot makes better tea, and keeps it longer warm, than a china one.

One of the most beautiful applications of the principle of the radiation of heat, is Dr Wells' explanation of the phenomena of dew and hoar-frost. Dr Wilson of Glasgow had observed, that bodies upon which dew and hoar-frost formed, were always *colder* than the surrounding air. This cold he ascribed to these depositions; but an attentive examination of facts led Dr Wells to draw an opposite conclusion, and to infer that the coldness of the bodies was the *cause* of the deposition of dew and hoar-frost. This he successfully established, by proving that, before any dew formed, the surface on which it condensed was uniformly cooler than the ambient air. And it was reserved for this accomplished man to offer a theory of those meteors, complete in almost all its parts, and perfectly satisfactory. He ascribed it to the radiation of heat, without any return from the air to the surface of the earth. He observed, that it was chiefly in serene, clear nights, that dew was formed; that exposure to the open clear sky favoured the formation of dew; and that cloudy skies were unfavourable to its formation. These phenomena he beautifully explained on the theory of radiation. The upper regions of the atmosphere are well known to be the abodes of perpetual congelation, as is seen whenever mountains reach a certain altitude, differing, it is true, in different climates, but yet invariable over the earth. When we have a clear atmosphere at night, the surface of the earth rapidly parts with the heat it had acquired during the day, by radiation to the superior regions, whence it can receive no heat in return. In this case, the empyrean regions act the part of the snow in the Florentine experiment; and the earth's surface may represent the thermometer. But if fleecy clouds intervene, they act the part of screens, intercepting the passage of radiant caloric from the earth, and consequently retarding the nocturnal cooling of its surface. Air at an increased temperature contains more water than cool air, and on the reduction of its temperature deposits its surplus water. Now, as the radiation from the earth's surface cools it more rapidly than the air during serene nights, its temperature rapidly falls, as the thermometer shows; and the consequence is the cooling of the stratum of air in immediate contact with the ground, and the deposition of its superabundant moisture, in the form of dew or hoar-frost, according to the celerity and intensity of the refrigeration.

This theory is experimentally proved by placing substances absorbent of moisture, along with thermometers, below and above screens, and then noting the temperature and the increase of weight. If, for instance, a light table, about three feet high, be placed in a garden on a clear night, and a few grains of wool, previously weighed, be laid under the table, and as much on its upper surface, with a thermometer by each parcel of wool, it will be found that the upper thermometer will indicate the greatest degree of cold, and the wool on the table will have imbibed much more moisture than that below. The table, in such experiments, acts the part of clouds in intercepting the discharge of radiant heat, and preventing the cooling of the earth's surface. The theory agrees with the fact, that dew is heaviest in our climate in serene nights, after a hot day; and that the dews of hot climates are far heavier than with us, so as, in clear weather, in the south of Europe, to drench the clothes of persons exposed to the air about sunset. The slight anomalies which sometimes occur in such experiments are easily explicable by the different *conducting power* of substances in regard to heat, by which the influence of radiation may be in some degree modified; but undoubtedly the principal effect is due to *radiation*.

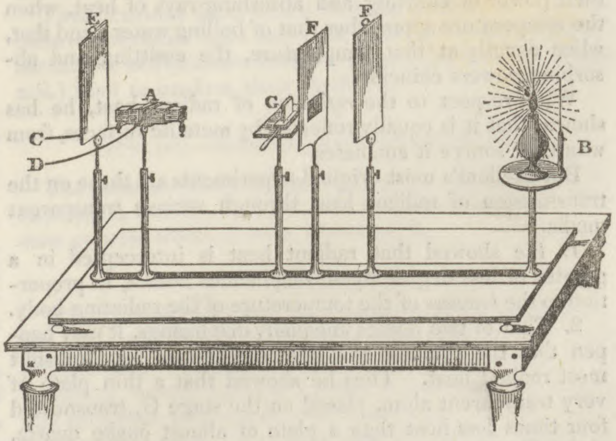
The influence of a clear sky in reducing the temperature of the earth's surface, and the effect of clouds in preventing this change, are beautifully illustrated by Leslie's elegant invention, the *Æthrioscope*. (See, for the description of the æthrioscope, the article CLIMATE.) This instrument is so delicate, that it instantly indicates cold on presenting its uncovered ball to the clear sky; but if a passing cloud cross the zenith, even momentarily, the movement of the fluid in its stem immediately shows an increase of temperature. If one walk in a clear night, with this instrument in one hand and a parasol in the other, it may be kept in a perpetual state of fluctuation, by alternately projecting it beyond and drawing it under the parasol.

Diffusion of Heat.

The radiant heat afforded by the sun's rays is the most important phenomenon of this class. Light and heat are in these rays so united, that experiment would seem to prove the one to be always in proportion to the other. This is by no means the case with the light and heat of common combustibles, or what we may term *terrestrial*, in contradistinction to *solar* emanations of light. Phosphorus gives an intense light during combustion, but a feeble heat; whilst hydrogen, which has a very feeble light, excites a high temperature by its combustion. Solar light and heat, on the other hand, are uniformly proportional. There are more marked differences between solar and terrestrial radiant heat. Screens of glass greatly interrupt the passage of the latter, but do not sensibly intercept that of the sun. A plate of the most diaphanous ice totally intercepts terrestrial radiant caloric, but does not impede the sun's heating rays. This has, with considerable reason, been supposed to depend on the different velocities of the two species of calorific emanations. Sir John Leslie considered "that the phenomena of solar radiation proved *heat to be only light in a state of combination*." (*Essay*, 162.)

For thirty years after the publication of Leslie's *Experimental Inquiry*, little appears to have been attempted on this subject, until within a recent period, when the experimental researches of Melloni and of Nobili, particularly of the former, opened a beautiful field of investigation, which has already been cultivated with success by Professor James Forbes of Edinburgh. Melloni has, by means of a thermo-magnetic combination, invented a very delicate test of minute degrees of heat, wholly inappreciable by any thermometer, and has successfully applied it to investigate the laws of radiant heat. By uniting fifty small bars of antimony and bismuth into one bundle, about three fourths of an inch square, and about 1·17 inch in length, and connecting this with a galvanometer, he obtained an apparatus so sensible to heat, that the warmth radiating from the human hand, at the distance of several inches from the end of the bars, is indicated by the deviation of the needle of the galvanometer.

Melloni's instrument is represented in the adjoining figure, where a firm sole of wood is seen, provided with a groove, in which the different parts of the apparatus slide to adjust



their relative distances. A is the bundle of metallic bars, enclosed in a square case of brass; B is the source of the heat; C, D are the wires proceeding from the bars, to convey their thermo-magnetism to the nearly neutralized needle or galvanometer, which is not here represented; G is the stage for occasionally supporting various substances, the effect of which on the calorific rays it is intended to ascertain; FF are screens of brass, moveable on joints, for cutting off at pleasure the radiant heat, or for obviating the influence of extraneous sources of heat. In F is a hole through which the heat radiates to A when the screen is removed.

This apparatus has been employed by Melloni to investigate the laws of radiant heat; and he has not only confirmed the general results of Leslie, but extended greatly our knowledge of this mysterious agent.

Melloni found, that the radiant and absorbent power of surfaces were not always proportional, as the following tables show.

The radiant power of surfaces of

Lamp black............	= 100
Carbonate of lead......	= 100
China ink	= 85
Isinglass................	= 91
Lac........................	= 72
A metallic surface.....	= 12

The absorbent power of surfaces of

Lamp black............	= 100
Carbonate of lead......	= 53
China ink..............	= 96
Isinglass................	= 52
Lac	= 52
A metallic surface.....	= 14

Melloni also found, that the absorbent powers of the surfaces varied considerably, according to the *source* of the radiation, and the *temperature* of that body. Thus, radiation from incandescent platinum wire, from copper at 400° and copper at 100° centigrade, gave the following results.

	Incand. Platinum.	Copper 400°	Copper 100°.
Lamp black....=	100	100	100
Carb. of lead...=	56	89	100
China ink......=	95	87	85
Isinglass ....=	54	64	91
Lac.............=	47	70	72
Metal. surface =	13·5	13	13

This experiment proves,

1. That bodies do not always agree in their emitting and absorbent powers, though generally nearly so.

2. That their absorbent power varies very remarkably with the origin and intensity of the calorific rays.

3. That they approach each other more and more in their power of emitting and absorbing rays of heat, when the temperature approaches that of boiling water; and that, when exactly at that temperature, the emitting and absorbing powers coincide.

With respect to the *reflection* of radiant heat, he has shown, that it is equally reflected by metallic surfaces, from whatever source it emanates.

But Melloni's most original experiments are those on the transmission of radiant heat through various transparent media.

1. He showed that radiant heat is intercepted in a greater or less degree by all diaphanous bodies, in proportion to the *lowness* of the temperature of the radiating body.

2. That of two bodies unequally diaphanous, it may happen that the thickest and least diaphanous may transmit most radiant heat. Thus he showed that a thin plate of very transparent alum, placed on the stage G, transmitted four times less heat than a plate of almost opake quartz, about 100 times as thick; but he found that in the *same* substance the transmission of radiant heat is diminished by the thickness of the plate interposed, and this diminution is proportional to the lowness of the temperature of the radiant body.

3. That there are combinations of two media, which allow a notable quantity of light to pass, but totally intercept radiant heat; whilst others transmit heat, but wholly intercept light.

4. That in traversing a transparent plate, radiant heat undergoes certain modifications, variable with the nature of the plate; a change which renders it more or less susceptible ultimately of being transmitted through other diaphanous substances. Melloni instances this last property in glass, in crystallized citric acid, and in alum.

Delaroche had inferred, from his experiments, that it was a general law of radiant heat, that the permeability of plates to this agent depended upon the intensity of the source of the caloric; and in this way he explained the instant permeability of glass and ice to the calorific rays of the sun, whilst they retarded those from terrestrial sources of heat; but Melloni has discovered one substance which he found to be equally pervious to heat, from whatever terrestrial source, whether proceeding from the brightest flame, or from water far below the boiling point.

The power of penetrating glass and other media increasing in proportion as the radiating heat approaches the state of light, had been used by Delaroche as an argument for their identity; but the anomaly of rock-salt destroys the universality of the supposed law on which the argument is founded. Yet Mrs Somerville has ingeniously employed the unlooked-for analogy between light and heat, in the equal transmission of the latter, however eliminated, through rock-salt, as an argument for their being modifications of the same principle. The condition of visibility or invisibility, she contends, may depend on the construction of our eyes, not on the nature of the agent producing the sensations of vision and of heat.

"The sense of seeing, like that of hearing, may be confined within certain limits; the chemical rays beyond the violent end of the spectrum may be too rapid, or not sufficiently excursive in their vibrations to be visible to the human eye; and the calorific rays beyond the other end of the spectrum may not be sufficiently rapid, or too extensive, in their undulations, to affect our optic nerves, though both may be visible to certain animals or insects."

She has traced the analogies between light and heat in their reflection by polished surfaces, their refraction through transparent media, with their concentration by concave and dispersion by convex mirrors; and since the publication of her beautiful essay on the connection of the physical sciences, Professor Forbes has drawn the analogy closer, as we shall presently see.

But to return to Melloni. This able philosopher has shown that radiant caloric is susceptible of refraction; and when it arrives at the second surface of the refracting angle, with a certain obliquity, it is, like light, reflected toward the interior of the prism, and issues at the opposite face.

By interposing the same plate of glass, he ascertained the influence of transmission on the absolute power of different radiating surfaces thus:

	Before the interposition of the plate of glass.	After ditto.
Lamp-black....................	= 100	100
Carbonate of lead............	= 53	24
China ink	= 96	100
Isinglass	= 52	45
Lac	= 43	30
A metallic surface...........	= 14	17

Melloni, however, failed to detect the polarisation of radiant heat: indeed, he states that the direction in which we slice crystallized bodies does not exert any influence upon the quantity of radiant heat immediately transmitted by them; and adds, that radiant heat is *not polarised* by transmission through tourmaline. In this, however, Melloni was deceived; and it was reserved for our countryman Professor Forbes of Edinburgh to complete the analogy between light and heat, by demonstrating the polarisation of the latter.

Since the characteristic phenomenon which marks the polarisation of light is its variable susceptibility as to reflection or transmission, under circumstances in which common light would be reflected or transmitted, it will appear that the correlative fact in the case of heat would be indicated by a diminished effect on the thermometer, where the intensity of light, under similar circumstances, would be a *minimum*, and *vice versa*. The importance of establishing this effect with regard to heat is far greater than the mere addition of such facts to our knowledge; for, as the corresponding facts in the instance of light have been completely brought into the domain of *analysis* by Fresnel, the polarisation of heat must be considered as almost decisive of its nature.

Mr Forbes employed Melloni's apparatus; and by interposing two plates of tourmaline, cut parallel to the axis of the crystal, and mounted on two slips of thin glass, he made a series of successive observations under the two conditions of the axes parallel and perpendicular to each other. Two measures of intensity in the position in which least light is transmitted were noted, and in the following table this position is indicated by *dark*; their mean is given, which is then compared with the intervening observation, in the position of greatest illumination, which is marked *light*.

The source of heat was a small oil lamp placed on the stage, six inches from the centre of the pile of Melloni's apparatus; the numbers indicate the degrees of the galvanometer.

Dark.	Mean.	Light.	Ratio.
4¼			
	4·5	5·2	86 : 100
4¾			
	5·0	6·0	83 : 100
5¼			
	5·2	6·0	86 : 100
5			
	5·4	6·5	83 : 100
5¾			

He afterwards obtained the polarisation of heat from various luminous and non-luminous sources, such as brass heated by a spirit lamp to 390° centigrade. The quantity of heat from different sources, polarised by the tourmalines, was as follows:—

With Argand lamp	=	16 per cent.
...... Oil lamp	=	11 do.
...... Incandescent platinum	=	12 do.
...... Brass at 390° cent.	=	3 do.

The most convenient way of polarising heat is by transmitting it through a bundle of extremely thin laminæ of mica, inclined to the incident ray at the polarising angle; mica having the property of transmitting heat very readily. The amount of polarisation is indicated by the relative quantities of heat reaching the pile, or thermo-magnetic combination of the instrument, through a second bundle of thin plates of mica, placed alternately in a parallel or perpendicular position to the first. With such an apparatus Mr Forbes demonstrated, in the most decisive manner, the polarisation of heat; and obtained this effect, even with water below 200° F. as the source of heat. The quantity polarised, however, always bears a proportion to the temperature of the source of the radiant heat, as is seen by the following tabular results.

General Effects of Caloric.

Sources of Heat.	Rays out of 100 polarised by the mica plates.
Argand lamp with a glass chimney	29
Oil lamp with a square wick	24
Alcohol lamp	36
Incandescent platinum	40
Brass heated to about 700° F.	22
Mercury in a crucible at about 500° F.	17
Water under 200° F.	6

Mr Forbes next proceeded to attempt the polarisation by *reflection;* and in this also he succeeded by the use of reflecting surfaces of mica, as in the corresponding case of light.

The success of these investigations, and the analogy of light, led him to the more delicate problem of the *depolarisation* of heat by plates of mica. By interposing a film of mica between the two bundles of mica plates already mentioned, having their planes of incidence at right angles to each other, and marking the difference of the heat transmitted to the galvanometer, when the principal section of the film of mica was parallel to the plane of primitive polarisation, or inclined to it at an angle of 45°, he succeeded in demonstrating the polarisation of the rays of heat, even when heat without light was employed. In these experiments, when the principal section coincided with the plane of polarisation, the depolarising effect was *nil;* but when it was inclined at the angle of 45°, he obtained the following proportions in one series of experiments.

100 : 118 : : — 100 : 120 — 100 : 120 — 100 : 113 —

The depolarisation is still more marked with incandescent platinum; as the results were

100 : 126 — 100 : 138 — 100 : 138.

One of the most striking proofs of the depolarising power of mica is obtained, when the two bundles of mica plates are crossed, so as to intercept most heat, and we interpose a very thin plate or film of mica as above mentioned; then the galvanometer moves towards zero, or the thin plate evidently stops more heat than it depolarises; but if we substitute a much thicker plate of mica for the film, the instrument will indicate a higher temperature than when no mica at all is interposed, or the thick plate depolarises more heat than it intercepts.

These experiments were varied in a great variety of ways, so as to establish the fact of the depolarisation of heat; and if we admit that it depends on a similar cause to the analogous phenomena of light, it follows that the rays of caloric are susceptible also of *double refraction;* that the two pencils are polarised in opposite planes, and that they become capable of *interference* by the action of the analysing plate.

These curious facts would indicate at least a great similarity between light and heat; and the concluding observations of Professor Forbes's paper (*Edin. Phil. Trans.* xiii.) tend to confirm their identity.

SECT. III.—GENERAL EFFECTS OF CALORIC.

The general effects of heat applied to other matter are, expansion, fluidity, vaporization, and incandescence. The *most* general effect of heat, however, is,

1. *Expansion.*

When a body is heated, it expands in all its dimensions; but when the heat is withdrawn, the body returns to its original size. This is well shown by having a turned rod of metal, loosely fitted to a gage, to ascertain its length, and provided with a hole which first allows it, when cold, to pass through. This expansion is small in solids, but has been most accurately measured by philosophers, for the important purposes of ascertaining with precision the true length of the pendulum vibrating seconds in any latitude, and for obtaining a perfect standard of length. This difficult subject engaged the attention of Ellicot, Smeaton, Roy, Troughton, Lavoisier, and Laplace. The latest experiments were made by the two last-mentioned philosophers, and were first published by Biot in the following table, which shows the expansion which different solids sustain, in passing from the freezing to the boiling point of water, in fractions of their own lengths.

Steel, not tempered	0·00107915	= $\frac{1}{927}$
Steel, tempered and annealed	0·00123956	= $\frac{1}{807}$
Silver, cupelled	0·00190974	= $\frac{1}{524}$
Silver of Parisian standard	0·00190868	= $\frac{1}{524}$
Copper	0·00171733	= $\frac{1}{582}$
Brass	0·00187821	= $\frac{1}{532}$
Tin of Malacca	0·00193765	= $\frac{1}{516}$
Tin of Cornwall	0·001217298	= $\frac{1}{462}$
Iron, forged	0·00122045	= $\frac{1}{819}$
Iron, wire-drawn	0.00123504	= $\frac{1}{812}$
Gold, pure	0·00146606	= $\frac{1}{682}$
Gold, standard, annealed	0·00151361	= $\frac{1}{661}$
Gold, standard, unannealed	0·00155155	= $\frac{1}{645}$
Platina	0·00085655	= $\frac{1}{1167}$
Lead	0·000284836	= $\frac{1}{351}$
Mercury, in volume	0·01847746	= $\frac{1}{54}$
Flint-glass, English	0·00081166	= $\frac{1}{1248}$
Glass, French, with lead	0·00087199	= $\frac{1}{1147}$
Glass tube, without lead	0·00089694	= $\frac{1}{1115}$
Plate glass	0·00089089	= $\frac{1}{1122}$

A very elaborate and interesting set of experiments on the expansion of building materials by heat, with a view to determine how far the changes produced by temperature may affect the stability of edifices into which these different materials enter, were lately laid before the Royal Society, by Alexander J. Adie, Esq. civil engineer. He exposed square rods of these substances, twenty-three inches in length, and either half an inch or an inch in diameter, in a pyrometer of his own invention, to a heat of 212°. The increments in length were accurately determined by a microscope-micrometer, attached to the instrument; and the following table gives the increase of the whole length produced by 180° of heat, in decimals of an inch:—

	Decimals of an Inch.
Sandstone of Craigleith Quarry, Edinburgh	·0011743
Greenstone of Ratho, Edinburgh	·0008089
Arbroath paving flag	·0008985
Caithness paving flag	·0008947
Penrhyn slate	·0010376
Aberdeen gray granite	·00078943
Peterhead red granite	·0009583
Galway black marble	·00044519
Carrara white marble	·0011928
Best stock brick	·0005502
Cast iron, half inch square	·00114676

The expansion of solids at different temperatures appears to be nearly equable, as far as we can ascertain. The ratio of their expansion really *increases* with their temperature; but their whole expansion is so inconsiderable, that the increasing rate is inapplicable, except in the nicest investigations.

The expansion of liquids is much more considerable. In passing from the freezing to the boiling point of water, the expansion of several is as follows:

Mercury	0·00200	= $\frac{1}{50}$
Water	0·00456	= $\frac{1}{21·5}$
A saturated solution of common salt	0·00500	= $\frac{1}{20}$
Sulphuric acid	0·00600	= $\frac{1}{17}$
Muriatic acid	0·00600	= $\frac{1}{17}$
Oil of turpentine	0·00700	= $\frac{1}{14}$
Æther	0·00700	= $\frac{1}{14}$
Olive oil	0·00800	= $\frac{1}{12·5}$
Nitric acid	0·1100	= $\frac{1}{9}$
Alcohol	0·1100	= $\frac{1}{9}$

The inequality of the expansion of fluids by heat has long been known to form an obstacle to the accuracy of thermometers. Deluc found, that of all fluids mercury was the most equable in its expansions, which is probably owing to the great distance between its freezing and boiling points; for it is found that those liquids which have a low boiling point are the most irregular in their expansion at ordinary temperatures; and hence alcohol is not a suitable fluid for thermometers.

The expansibility of liquids is not in proportion to their density; but it is more nearly in the inverse ratio of their density than of any other known property.

The expansion of gases by heat is much more considerable than that of the other two forms of matter.

The higher increasing ratio in the expansibility of liquids with their augmenting temperature, than in solids, led philosophers at first to infer, that the inequalities of the gaseous bodies, in this respect, would be still more considerable; but the elaborate researches of General Roy have disproved this idea; and some experiments of the late Dr Murray of Edinburgh, and of Dr Dalton, would rather indicate a *decrease* in the ratio with the increased temperature. This, however, may probably be owing to the imperfection of our best thermometers, and to the difficulty of estimating the expansions of the glass containing the air examined.

Dr Dalton has ascertained that all gases expand equally by equal increments of heat; a conclusion which has been confirmed by Gay-Lussac. They have shown that, between the freezing and boiling point of water, 100 cubic inches of atmospheric air expand to 137·50, that with hydrogen the result was 137·52, with oxygen gas 137·48, and with nitrogen 137·49; differences so slight as to be within the probable limits of experimental error.

The force opposed to expansion would appear to be cohesion. Expansion is least in solids where the cohesion is strongest; it is more considerable in liquids where the cohesion is greatly weakened; and it is greatest in gases, in which cohesion is wholly overcome.

The expansion of bodies by heat, and their contraction on the reduction of the temperature, would show that the atoms of bodies are not in absolute contact. In fact, we may suppose them surrounded by *atmospheres of heat*, which prevent, by the repulsive energy of caloric, their absolute contact; whilst the force of cohesion limits the diffusive influence of the contained caloric. In some, the superior force of cohesion gives rise to solidity. When more heat is introduced, the cohesion is weakened, and the body becomes a liquid; and a further addition of caloric destroys cohesion altogether, separates the atoms, and the body becomes a gas.

The expansion of bodies by heat proves the mutual repulsion of their particles; but this limits the repulsive energy of heat to insensible distances. In 1824, Libri endeavoured to prove, from the movements of globules of water along fine wires, that the repulsive power of heat was exerted also at sensible distances. But his experiments are not conclusive; for the motions may have arisen from the formation of vapour at one end of the globule. Fresnel attempted to prove this point by bringing discs of foil or of mica, on the end of a delicately suspended magnet, into contact with fixed discs *in vacuo*, and marking the effect of heat collected from the sun's rays. The moveable discs sensibly receded; but this may have arisen from some change produced by the heat in the form of the discs. Professor Forbes has happily applied the repulsive energy of heat acting at *sensible distances*, to explain the curious vibrations of the metal bars in Trevelyan's experiments. Still more lately Professor Powell of Cambridge has demonstrated the repulsion of heat at sensible distances (*Phil. Trans.* for 1834), by the changes produced, on the approximation of a heated body, in the Newtonian coloured rings of plates of glass which are pressed together. When, for instance, a flat plate is laid on a slightly convex surface of glass, the rings appear. On bringing a heated body near the upper surface of the plates, the rings instantly contract, and again enlarge on withdrawing the heated body. On repeating the experiment with the colours formed under the base of a prism placed on a lens of small convexity, he found the repulsion of heat acting at distances, which Sir J. Herschel has calculated at $\frac{1}{1100}$th of an inch.

Expansion is so general an effect of heat, that there are only two known exceptions, viz. in clay, and in water at a certain limited range of temperature. It is well known that porcelain clay contracts in baking, and ever afterwards retains its contracted dimensions. It was this quality which induced Wedgwood to employ its contractions as a pyrometer. (See THERMOMETER and PYROMETER.) This property, however, seemingly depends on heat producing in the heterogeneous substance clay, a more intimate union of its parts, or a partial conversion of this mechanical mixture into a chemical compound.

The exception of water between 42° and 32° Fahrenheit, is, however, real. When water is cooled down from the ordinary temperature, say 60°, it regularly contracts by the cooling, until it has attained 42°; but whilst passing from that point down to its freezing point, it continues to expand gradually, until converted into ice.

The important purposes which this constitution of water serves in the economy of nature, the immense quantity of heat which is by this contrivance saved to our lakes and other collections of water, are strikingly pointed out by Count Rumford in his Essays; and this peculiarity in water has been confirmed by the well-devised experiments of Professor Hope and Dr Murray.

Many liquids at the moment of congelation *expand*, from the crystalline arrangement of their parts. This is familiarly known in the floating of ice in water, in the bursting of water pipes by frost, and in the splitting of masses of rock by the congelation of the water which has insinuated itself into their fissures. This force is well known to be enormous, as was shown by the experiments of the Florentine academicians, of Huygens, and of Major Williams at Quebec (see *Edin. Phil. Trans.*). The same cause produces the expansion of cast iron at the moment of becoming solid; and it is to this property that we are indebted for the sharpness of the casts obtained from this metal. In these instances we do not find an exception to the law of contraction by diminished heat. It is wholly owing to a crystalline arrangement of the particles, by which interstices are left between them, and consequently the solid occupies more space than if solidification took place without crystallization. Hence lead expands not in cooling, though cast iron does.

Many operations in the arts depend on the contraction of metals as they cool. It is in this way that the tyers of coach wheels are fitted tightly to the fellies. The expansion of metals by heat seemed at one time to form an insurmountable bar to the perfection of the going of a pendulum clock; but the ingenuity of an English artist showed how, by a combination of bars of metals of unequal expansibility, this property might be applied to keep the pendulum, at all temperatures, of precisely the same length. This first produced the gridiron pendulum; and more lately the compensation pendulum, with a mercurial cistern at the end of a metallic rod. Similar principles have been successfully applied to the balance-wheels of pocket chronometers.

2. *Liquefaction, or Fluidity.*

When solids are heated, they first expand, and then melt. This is a very general effect of caloric, the exceptions to which are disappearing, as we discover new sources of intense temperature. The oxyhydrogen blowpipe has fused almost all the most refractory substances; and the sun's rays collected by immense lenses, or metallic mirrors, have melted, or even dissipated in vapour, many bodies, which were long regarded as incapable of fusion. We are therefore entitled to regard solidity as the natural state of all matter, and its two other modifications as resulting from its union with caloric.

Those bodies always fused at the ordinary temperatures are no exception to this law, since, by artificial cold, we have reduced most of them to a solid state. Thus mercury, at about — 40° of Fahrenheit, becomes a solid metal with the lustre of silver; and alcohol, which has not yet been frozen, may be considered as having its melting point lower than any yet discovered artificial cold. The point at which bodies become fluid differs widely in different substances, but remains uniformly the same in the same fluid under similar circumstances. Thus ice always melts at 32°.

It was long believed, that when solids began to melt, they were converted into liquids by a small increase of heat; and that they might again return to the solid state by a small diminution of their temperature. An attentive consideration of the process of liquefaction convinced the celebrated Dr Joseph Black of the insufficiency of the commonly-received opinion; and he promulgated in 1757 more philosophic views of this subject, which he illustrated by a beautifully simple experiment.

He introduced equal quantities of water into two thin glass flasks of the same form and weight. One of them he froze, by placing it in a freezing mixture; the other he reduced by similar means to the temperature of 32°, or its freezing point, but without allowing it to become solid. When removed from the freezing mixture, the flask of ice soon acquired the same temperature as the ice-cold water, and both were suspended in a room at 47°. In half an hour the thermometer in the ice-cold water had risen to 40°, but it required twenty-one half-hours to raise the temperature of the flask which had been frozen to the same point. As both were exposed to the same medium, equal quantities of heat must have been imparted to each in equal times; but it required twenty-one times as long to raise the frozen flask 8°, as sufficed to impart 8° to the ice-cold water. Dr Black inquired what had become of this quantity of caloric, which was not indicated by any rise in the thermometer? He inferred that it had entered into the ice during its liquefaction; and as the quantity so absorbed was not indicated by the thermometer, he denominated it

Latent Heat.—In repeating the experiment with much care, he found that a pound of ice required twenty times as long to rise through 7°, as did as much ice-cold water; and therefore inferred, that during the conversion of that ice into water, as much heat disappears, or is absorbed, as would have elevated a pound of ice-cold water 140°. This absorption of heat during liquefaction is easily shown. If we add a pound of boiling water to a pound of ice, the temperature of the mixture will still remain at 32°; but if to a pound of water at 32°, we add a pound of boiling water at 212°, the temperature of the mixture will be found about 122°, or a mean between the extremes of temperature.

Similar absorptions of heat take place during the melting of tallow, bees-wax, and of the metals.

General Effects of Caloric.

When liquid bodies congeal, or become solid, their latent heat is again given out.

It is possible, by nice management, to cool down water considerably below its freezing point. The principal circumstance necessary for this experiment is to leave it at perfect rest, in an atmosphere from 10° to 15° below 32° (Dalton succeeded in this way in cooling water as low as 5° without freezing); but on slightly agitating it, the water suddenly freezes; and if a thermometer has been suspended in it, the instrument suddenly rises to 32°, owing to the conversion of latent into sensible heat.

Another experiment shows this fact in a striking point of view. Into a glass flask introduce a mixture of sulphate of soda and water, in such proportions that it will form a saturated solution about the point of ebullition. When this is heated to that point, pour a little oil on its surface, introduce a thermometer, and remove it from the fire. When quite cold, drop into it a small crystal of sulphate of soda, and the solution will speedily crystallize into a solid mass, during the formation of which the thermometer will be seen to rise, indicating the evolution of sensible heat, during the conversion of the liquid into a solid.

The absorption of sensible caloric on the liquefaction of bodies forms the basis of most of the processes by which we obtain artificial cold. When to some salts, such as sulphate of soda, we add nitrous acid diluted with an equal part of water, the salt rapidly melts, and the temperature is reduced to the beginning of Fahrenheit's scale. Diluted acid added to snow rapidly melts it, and the temperature is greatly reduced. A mixture of common salt and snow, which is the mixture generally employed to procure ice-cream, will sink the temperature to the beginning of Fahrenheit's scale. Dry muriate of lime added to dry snow will reduce the temperature, during their liquefaction, so low as to freeze mercury. In all these instances it is the absorption of heat caused by the liquefaction, or the conversion of sensible into latent caloric, that produces the cold.

Dr Black applied his theory of latent heat to explain many phenomena. The ductility of a body appears to be owing to the presence of latent caloric; for if we hammer a piece of iron smartly, it becomes intensely hot, by parting with its latent caloric, and at the same time has its ductility greatly impaired. This ductility is only restored by again heating the metal in the fire, by which it re-acquires latent heat, that may again be forced out by a repetition of the hammering.

The absorption of heat by bodies whilst melting is an important law in the economy of nature. Had it merely been necessary, for the immediate conversion of ice or snow into water, to raise the atmospheric temperature a few degrees, the sudden formation of water would have deluged the earth on every occurrence of a thaw. On the other hand, had the slightest lowering of the temperature of the air below 32° been all that was requisite to convert water into ice, the sudden expansion of the congealing juices of vegetables must have burst their sap-vessels, and rent asunder the strongest ornaments of the forest. But the law of the gradual absorption and emanation of caloric during these transitions from the solid to the liquid, and from the liquid to the solid state, produces those changes tranquilly and beneficially. The melting snow gradually augments the sources which fertilize the valleys; whilst the soil, loosened by the expansion produced by the previous frost, when softened by the succeeding thaw, is fitted for the reception of the roots of plants.

The influence of these processes on climate is not inconsiderable. The absorption of heat during the liquefaction of ice on tropical mountains, sends down into the heated valleys copious sources of cool water, which by its immediate contact, and still more by its evaporation, assuages the fervour of a broiling climate; and in high latitudes the caloric, eliminated on the freezing of water, tends to mitigate the rigours of an arctic winter.

3. *Vaporization.*

When liquids are heated, the first effect is expansion; but if the application of heat be continued, they assume the aeriform state, or pass into *vapour;* and when the caloric is abstracted, they again assume the liquid form. When water is heated to 212° Fahrenheit, it boils, and is converted into an invisible aeriform fluid, which remains perfectly transparent and colourless as long as its temperature is not below 212°; but what in common language is called steam, is this elastic fluid partially recondensed into water, by the loss of a portion of its heat. The invisible elastic vapour is capable of occupying space and expelling atmospheric air, as is shown by corking a flask when boiling, and opening it under water; when the flask will be suddenly entirely filled with the water, which condenses the steam.

Liquids, however, pass also into vapour by a more gradual process. If exposed to the air, water, for instance, gradually disappears; and if the process be carried on under a glass vessel, the included air becomes charged with moisture, which may be again abstracted from it by dry quicklime, or other substance having a strong affinity for water. The process by which liquids are thus converted into vapour is termed *Spontaneous Evaporation;* an important operation in nature, as on it depends the charging of the atmosphere with water, for the formation of clouds, mist, rain, and dew; all elastic fluids, however, are not capable of being condensed into liquids by any decrease of temperature we can command. Thus, no artificial cold has hitherto been discovered capable of converting atmospheric air into a liquid.

The common property of all aeriform fluids is *elasticity,* or the tendency, when forcibly compressed, to resume their former bulk. Thus, if we throw air, by means of a forcing pump, into an air-tight cistern, provided with a small orifice commanded by a stop-cock; on opening the latter, the air will issue out with great force, until the air has regained its former volume.

But vapours, or those aeriform bodies which are not permanently elastic, may, by strong pressure, even whilst their temperature is above their vaporific point, be condensed into liquids.

The elasticity of all aeriform bodies is increased by augmentation of temperature. In atmospheric air this increase has been found equal to $\frac{1}{480}$th of its volume for every 1° Fahrenheit; and the elasticity of steam, or the vapour of water, is nearly doubled by 30° of increased temperature above 212.

We are indebted to the celebrated Dr Dalton for accurate ideas as to the elasticity of aeriform bodies at different temperatures. He showed that the vapour of water, under a barometrical pressure of thirty inches at the boiling point, is just equal to the elasticity of atmospheric air under the same pressure; that the ratio of increase is rather less than a geometrical series, when the temperature is taken in an arithmetical progression; and, what was less obvious, that the elasticity of all vapours is precisely the same with the elasticity of the vapour of water, at the same number of degrees above the boiling point of each liquid. Thus water, under a mean barometrical pressure, boils at 212°; and the elasticity of its steam at 220°, or 8° above its boiling point, was found by Dalton to be = 34·99 inches: alcohol boils at 175°, and the elasticity of its vapour at 183°, or 8° above its boiling point, is just = 34·99.

General Effects of Caloric.

The bulk of a body is very much increased by its conversion into vapour. Dr Black and Mr Watt made experiments to ascertain this increase. They boiled water in a flask, and, as the last drop was converted into steam, accurately closed the flask, which was then carefully weighed; on opening the flask below the surface of water, the quantity of water which rushed in was easily ascertained by a second weighing of the flask. The mean of several experiments showed that water, in the state of vapour, occupied 1800 times the space it filled as water. When heat is applied to solids, its first effect is expansion, next liquefaction, and, lastly, conversion into vapour. A few solids pass at once into the state of vapour, as carbonate of ammonia.

Different liquids acquire different degrees of heat for their vaporization. Thus æther becomes vapour at 104°, alcohol at 175°, water at 212°, and mercury requires a temperature about 692°. The vaporific point, however, remains constantly the same, in the same liquid, under the same barometric pressure. If, however, we diminish the pressure, the liquid will boil at a lower temperature. This is easily shown by the air-pump, in the exhausted receiver of which æther will boil at a temperature considerably below the freezing point of water. It is also strikingly exhibited by the following experiment: If a portion of water, say two ounces, be boiled in a flask capable of holding eight or ten, and if it be corked whilst briskly boiling, a vacuum will be formed on its surface, by the condensation of its vapour, on removing it from the lamp. As the steam condenses, the liquid in the flask will begin to boil more briskly as the flask cools; and if we pour *cold* water on this flask, the more will the pressure of the vapour in the flask be removed, and the more violently will the contained water boil. If now we pour *boiling* water on the flask, more steam will be formed, and the boiling will cease, but will be again renewed on a second application of the *cold* water. This may be alternated for several times if the flask be well corked.

As the boiling point of liquids varies exactly in the ratio of the barometrical pressure, it is obvious that the height of mountains may be ascertained by noting the thermometrical degree at which liquids boil on them. A portable instrument, constructed for this purpose, was devised by the Reverend F. Wollaston.

We cannot heat any liquid beyond its boiling point in an open vessel. Water placed on the fire soon rises to 212°, but a thermometer plunged in it remains at this point, however long it boils; but if the vessel be provided with a steam-tight cover, the temperature of the liquid may be much increased, according to the strength of the vessel. The elasticity of the steam in such cases is enormous; and experiments with steam under high pressure are hazardous, unless the vessel be of great thickness. The Marquis of Worcester seems to have burst a cannon by this means; and the frequent explosions of steam-engine boilers is a familiar instance of the same. Dr Black and Mr Watt heated water in a strong copper vessel to 400°; and in some of Perkins' experiments lead was melted, it is said, in water subjected to strong pressure; yet in an open vessel we cannot heat water to more than 212°.

Dr Black sagaciously and happily applied his doctrine of *latent heat* to explain the conversion of liquids into vapour. He remarked, that when a kettle was placed on the fire it soon rose to 212°; but though the same heat continued to be applied, it rose no higher. In one of his beautifully simple and conclusive experiments, a vessel containing some water, at temperature 50°, was placed on a red-hot iron plate; in four minutes it began to boil, but it required twenty minutes to convert the whole into vapour. In the first four minutes it had acquired an increase of 162° of temperature; and as the heat was uniform during the whole time of the experiment, it must have received an equal quantity of heat during the whole interval; or, during the other sixteen minutes, 810° must have flowed into it, yet during the whole time a thermometer in it rose no higher than 212°. Black naturally inferred that this large quantity of heat, which disappeared, had entered into the vapour in a *latent form.*

A series of experiments were undertaken by him, and by his friend Mr Watt, from which they inferred, that when water is converted into steam, it unites with 940° of heat, which the thermometer does not indicate; or, in Black's phraseology, that quantity becomes *latent* in the steam. This determination nearly coincides with the experiments of Lavoisier, who estimated the quantity which thus disappears at 1000° Fahr.

The absorption of heat during the formation of vapour is easily demonstrated. A piece of muslin moistened with any liquid, laid on the bulb of a thermometer, sinks the temperature; and if that liquid be very evaporable, the temperature thus produced will be low in proportion. The evaporation of æther will freeze water under the receiver of the air-pump; and the evaporation of the fluid called sulphuret of carbon is so rapid, that, in a well-exhausted receiver, it will freeze the mercury in the bulb of the thermometer.

A liquid may even, by particular management, be frozen by its own evaporation. This is the principle of Wollaston's philosophic toy, called the *cryophorus;* and it was ingeniously applied to an important practical purpose by the late Sir John Leslie, viz. the production of ice at a cheap rate in all climates. The apparatus employed by this philosopher is a powerful air-pump, which can at once exhaust from three to six flat receivers about twelve inches in diameter. These are fitted to different plates, each connected with the pump, and each provided with its own stop-cock. A shallow glass dish, nearly the width of the receiver, intended to hold a thin stratum of sulphuric acid, is introduced under each receiver, and a cup of porous earthenware, supported on a glass tripod about an inch above the surface of the acid, is under each receiver. Water is to be poured into this cup, which is to be placed on its tripod, and the whole covered by the receiver. By working the air-pump, each receiver may be exhausted in succession. The withdrawing of the atmospheric pressure causes the rapid evaporation of the water, the vapour of which is immediately absorbed by the sulphuric acid; and thus the vacuum is sustained. The latent heat necessary for the conversion of the water into steam or vapour is derived from the water itself; its temperature therefore falls; and the absorption of the vapour by the acid, as quickly as it is formed, keeps up the vacuum, and speedily reduces the whole water to the freezing point, when it soon forms a cake of ice. By a full-sized machine of this kind, about a quarter of an hour's labour will set the process in full operation; and within the period of an hour afterwards six pounds of solid ice may be obtained. During this process, the water loses only about one fiftieth of its bulk; and the acid will be sufficiently strong for repeated operations of the same kind.

Leslie showed, that any substance which is powerfully absorbent of watery vapour, may be substituted for the acid; and he found that highly toasted *oat meal*, or well-dried powder of *greenstone*, had very considerable power to produce ice, when employed instead of sulphuric acid. He even showed, that by enclosing a globule of mercury in a small pyriform mass of ice, suspended over the acid in a good vacuum, the mercury might easily be frozen.

The latent heat of steam may be shown by the large quantity of water which may be rapidly heated by a small

General Effects of Caloric.

quantity of steam. The elegant distillatory apparatus figured (No. 46) in Henry's Chemistry readily proves this. In an experiment with a similar apparatus, the condensation of one ounce of steam heated eight ounces of water from 60° to 180°; that is, the whole water gained 120° of temperature; consequently that ounce of steam had lost as much caloric as would have elevated an ounce of any fluid, capable of being so heated, to 960°.

The same phenomena attend the condensation of all other vapours; and we are to regard the discovery of Black, *that during the conversion of solids into liquids, or of liquids into vapours, heat is absorbed, which is again given out on their recondensation*, as a general law, and one of the highest importance, both in its practical application, and in explaining the phenomena of nature.

With regard to those aeriform bodies which we cannot condense, or, as they are called in chemical language, permanently elastic fluids or *gases*, we have every reason to consider them but as vapours, of which the point of generation is so low, that we have not yet found any means of exhibiting them in their unelastic state. This view is supported by analogy, and by recent discoveries. Some of the gases which a few years ago were reckoned permanently elastic, have been, by a great pressure, reduced to the state of liquids. This has been shown in the case of chlorine, muriatic acid, ammonia, and carbonic acid. It can also be shown that gases contain latent caloric. Thus, if we suddenly compress atmospheric air in a small tube fitted with a piston, so much heat is given out as to ignite touchwood. The sudden expansion of air, too, is always attended with the absorption of heat. Thus, on discharging an air-gun, the sudden expansion of the air produces a sensible degree of coolness in the condenser.

The same facts are shown when chemical action of the gases with each other produces condensation, or when they are evolved from their combinations.

The qualities of vapour are applied to many important purposes in the useful arts; and, on account of its economical fitness, the vapour of water, or *steam*, is that almost always employed.

The application of steam to domestic purposes is familiar to all; and it is frequently employed to communicate an equable heat, when a temperature above 212° would be injurious or dangerous. Thus steam, confined in metallic tubes, is used to dry some delicate articles of manufacture; and in some instances, where there is risk of explosion from even a moderate increase of temperature, the same contrivance is adopted. Steam has also been employed to warm apartments. It is employed to heat the dye-vats in calico-printing, and other species of dyeing, and has likewise been used for heating warm baths. For these last purposes, the steam is usually allowed to escape into the fluid to be heated by numerous small apertures in pipes coiled in the bottom of the vessel; which may thus be made of less costly materials than if it were necessary to subject it to the fire.

The most important application of steam, however, is as a moving power in the most stupendous of human inventions the *steam-engine*, the perfecting of which has conferred an enviable immortality on the name of WATT. The application of this noble discovery to the moving of machinery of every sort, from the ponderous hammers of the *forge* to the slender needles of the *tambouring frame*, to the drawing out and twisting the gossamer filaments of the cotton factory, to the weaving of cloth with a celerity that gives the process the air of enchantment, the winged velocity of the locomotive engine on the railway, and the stately mechanism which renders navigation independent of the winds, belongs to different branches of practical mechanics.

The conversion of liquids into vapour is the foundation of the important arts of *evaporation* and *distillation*. By the first we obtain salts from their solutions; by the latter, the spirituous or more volatile particles of compounds. See EVAPORATION and DISTILLATION.

4. *Incandescence.*

When the temperature of a body is raised to a certain pitch, it begins to emit light as well as heat; and this is termed *incandescence*, or glowing heat; a designation preferable to *ignition*, which may be confounded with *combustion*; a process totally different from that treated of in this section, inasmuch as it is accompanied by important chemical changes in the body acted on; whereas incandescence may be repeated innumerable times with the same body, merely by raising its temperature. The point at which this takes place would seem to be the same in all bodies, and has been approximated by Newton; but as the determination depends on the acuteness of the eye, and the degree of obscurity in the apartment where the experiment is made, it is not easily fixed. According to his calculations, a good eye can perceive a body faintly luminous about 635° Fahrenheit; it shines with a full red in the dark about 752°, it is luminous in twilight at 884°, and glows in broad day-light when its temperature has reached 1000°. The experiments of Irvine, who found that mercury, which boils at 660°, is not in the slightest degree luminous at that point, prove that Newton fixed the point of incandescence too low. On the other hand, the determination of Wedgwood appears too high. In general the point of incandescence may be stated at about 800° Fahr. Its lowest pitch is at first a dull red, which becomes a full red with an increased temperature, or the least refrangible rays first meet the eye; if the heat be increased, these rays become mingled with the yellow; and, when the temperature is raised to the utmost, all the other rays of the spectrum are evolved in the proportions which constitute *white light*.

All solids which are not volatilized by heat may be rendered incandescent; and all liquids may be heated to redness, provided we can repress their volatility. But it has been doubted whether gases be capable of incandescence. Dr Fordyce had remarked that the extremity of the flame of a blowpipe, which was itself invisible, heated a thin rod of glass to a white heat; and some experiments of Mr T. Wedgwood prove that air, heated in a bent tube passing through a crucible filled with red-hot sand, was not luminous, although a gold wire suspended in the heated air became red. The speculations of Sir Humphry Davy on flame show that his opinion inclined to consider flame as luminous gases; but in all such cases there is reason to consider the light as derived from the combustible. Incandescence can be excited by the mere percussion of hard bodies against each other. Thus, two pieces of quartz struck together will produce light; the same will take place with two fragments of porcelain; and the light produced by the collision of flint and steel is partly incandescence, partly a species of combustion of the steel.

It has been supposed that incandescence affords a probable evidence of the identity or convertibility of heat into light. But this is not a legitimate deduction; for we may conceive that light and heat, though two distinct fluids, may have an intimate affinity for each other, or a tendency to unite, that both may exist united in all matter, that heat is most easily separated by percussion and friction, but that, when the percussion is violent, both are given out.

SECT. IV.—QUANTITY OF HEAT IN BODIES.

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Equal weights of the same body, at the same temperature, contain equal quantities of heat; and when their tem-

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peratures are unequal, their heat is in proportion to their temperature. But it is very different with dissimilar bodies, which can be shown to contain unequal quantities of heat at the same temperature. The following is the method of proving these positions. If we mix a pound of water at 40° with a pound of water at 112°, the resultant is 76°, the mean between the extremes of temperature.

But if we mingle a pound of water at temperature 112° with a pound of mercury at 40°, the resultant temperature will not be 76°, the mean, but 109°. Here the temperature of the water has only been diminished 3°, yet that of the mercury has risen 69°. If we reverse the experiment, and take water at 40° and mercury at 112°, the product will be 43°; the mercury losing 69°, whilst the water only acquires 3°; or the same quantity of heat which can elevate the temperature of mercury 23° will only augment that of water 1°. If a similar experiment be made with spermaceti oil, Dr Thomson has shown (*System of Chemistry*) that the quantity of caloric which will elevate the temperature of the oil 2° can only raise that of water 1°.

Dr Black was undoubtedly the first who promulgated the idea of the absorption of heat during liquefaction and the formation of vapour; and this doctrine was publicly taught in his lectures in Glasgow university from 1757 to 1764. His pupil, Dr Irvine, continued these experiments at his suggestion, and ascribed the absorption to a change in the *capacity for heat*. These experiments were made between 1765 and 1770; and in 1779 Dr Adair Crawford published his treatise on *Animal Heat*, in which the capacities of numerous substances are given, which were corrected in his edition of 1788, from the results of most elaborate experiments. Professor Wilcke of Stockholm published some valuable experiments on the same subject, in the Stockholm Transactions for 1781. This philosopher introduced the term *specific heat* for what Irvine named *capacity for heat*. Various experiments on the same subject were made by Lavoisier and Laplace, with the instrument called a *calorimeter*, in which the specific caloric was estimated by the quantity of snow melted by different substances heated to the same pitch. The subject of experiment in their investigations was introduced into a wire cage suspended within a vessel of tinned iron. This vessel was filled with snow or ice; and to secure that snow from being melted by the external air, the vessel containing it was placed within another exterior case, and the space between them also filled with snow; and the whole covered by a lid, likewise covered with snow. Thus, if water in passing from 212° to 32° melted one pound of ice, and the same weight of oil melted a half pound; if the specific caloric of water be termed 1·0, that of oil will be 0·5.

A considerable series of experiments on this curious subject were made by Dr Dalton (*New System of Chemical Philosophy*). In these investigations Dalton pursued a method, also employed by Leslie, namely, to observe the comparative rates of cooling, as was proposed by Meyer. This would be preferable to the other modes of ascertaining the specific caloric, were we sure that the cooling of bodies is not influenced by other circumstances than their capacity; but in this method it is difficult to obviate the effects of radiation and conducting power on refrigeration. In all these determinations there are to be found discrepancies inseparable from the difficulties attending such delicate investigations; but they have sufficient accordance when we attempt to estimate the capacities of solids and of liquids. It is a far more difficult and delicate problem to determine the specific caloric of gaseous bodies, from the minute quantities of matter to be operated on in such experiments, and the difficulty of obviating the chance of accidental error where the changes of temperature are necessarily very minute. Crawford found the difference in the specific heat of the gases rarely to exceed $\frac{1}{10}$th of a degree of Fahrenheit. He employed two equal hollow spheres of brass, united by a bar of the same metal, and furnished with stop-cocks, and an adapting piece, to be screwed to an air-pump. One of these was filled with the gas to be tried, and the other was exhausted of air. Each ball had cemented into it a very delicate thermometer; both were heated to the same pitch by exposure to the same source of heat, conveyed by cylinders surrounded with warm water. They were then simultaneously plunged into separate vessels containing each equal quantities of cold water, and the elevation of temperature of the water in both vessels ascertained by delicate thermometers, indicating as small a change as $\frac{1}{30}$th of a degree of Fahrenheit. The temperature communicated by the vacuum being subtracted from that given out by the other ball, the difference exhibited the heat communicated by the included air alone; and the accuracy of the method was afterwards tested by again comparing them when the exhausted vessel was filled with atmospheric air.

Quantity of Heat in Bodies.

The specific caloric of gases has been again investigated by Berard and Delaroche in 1813. They passed a current of each gas, at a given temperature, through a spiral tube, fixed in a cylinder of thin copper filled with water and then closed. The temperature communicated, by the passage of the gases from a gasometer through the spiral, to the surrounding medium in a given time, being proportional to the excess of temperature each gas acquires from the source of heat above that of the medium in the cylinder, the comparative specific heat of each gas may be ascertained.

For the success of such experiments the current of gas must be uniform, and the temperature of the gas, when entering and escaping from the cylinder, must be accurately ascertained, as well as that of the water in the copper vessel.

The conclusions of these philosophers are directly at variance with those of Crawford, and, indeed, would tend to overturn some of the most important points of the philosophy of heat now generally received. But these experiments, though highly ingenious, are not more satisfactory than those of Crawford. The only objection to his conclusions is derived from the smallness of the quantities operated upon in his experiments; but the simplicity of his apparatus, the delicacy of his instruments, and the apparent care of his manipulations, more than fully counterbalance that objection; whilst the complexity of the apparatus of Berard and Delaroche, the acknowledged difficulty of keeping up an equable current through the spiral tube, the impossibility of obviating in such investigations the influence of changes in the medium during the experiments, and the nicety requisite to ascertain the temperature of the entering and escaping currents, present sources of error of which it is almost impossible to estimate the amount. On these grounds we may consider the conclusions of Crawford as not yet overturned.

The deductions of these gentlemen would lead to the conclusion that all the gases, with the exception of hydrogen, have an inferior specific gravity to water; and they even make steam *inferior* in capacity to water in the ratio of 847 to 1000. If this last were true, instead of an absorption of heat when steam is generated, we should have an extrication of caloric from it; and water in the *worm-tub* of a still, or in the *condensing-back* of a steam-engine, ought not to increase in temperature. It may be added, that more recently the conclusions of Berard and Delaroche have been controverted by Delarive; and his experiments, as well as those of Clement, support the opinions of Crawford.

Mr Haycraft (in a paper in *Trans. Royal Soc. Edin.* x.)

has endeavoured to show that all gases at the same temperature, when perfectly freed from moisture, have the same specific heat; and that when they are saturated with water, their specific caloric is a certain ascending arithmetical ratio, in proportion to the quantity of moisture they contain. These views are rendered not improbable by the well-ascertained fact, that the elasticities of all the gases are the same at the same temperature.

The capacities of bodies are more nearly in the inverse ratio of their density, than of any other sensible property. Thus solids in general have less capacity for caloric than liquids, and liquids less than vapours or gaseous bodies. In the same body a change of capacity accompanies a change of volume. Thus gases compressed have their capacity diminished, and heat is extricated; and when they expand, their capacity is increased, which is the cause of the coldness felt on a sudden expansion of the air. Crawford endeavoured to show that this was also the case with liquids; but his experiments are scarcely to be relied on as establishing that point. The contraction of Wedgwood's pyrometrical pieces would seem to diminish sensibly their capacity for heat. The capacity of bodies is not, however, exactly in the inverse ratio of their density, which probably arises from the effect of density on capacity for heat being modified by a difference in the force of affinity between caloric and various substances. There seems also to be some relation between capacity and power for conducting heat, as the former is nearly in the inverse ratio of the latter. If these views be correct, we may assume that the capacity of all bodies for caloric is directly as their volume and their affinity for heat, and inversely as their conducting power and their density.

When a body changes its form of existence, its capacity for heat is also changed. When a solid is melted, its capacity is increased, and the specific heat of the same substance is still further increased when it is converted into vapour. Thus, according to the best experiments, the capacity of ice is 0·9000, that of water being 1·000, and that of steam 1·500.

This important law was applied by Dr Irvine to explain the liquefaction of solids. Dr Black regarded the liquefaction as owing to the absorption of heat; Dr Irvine ascribed this absorption to a change in the capacity of the body. The first ascribed the melting of the solid to the absorption of the heat, whilst the other attributed the absorption to the change of form. As the change of form and the absorption or extrication of caloric are in such cases simultaneous, it is obvious that the question cannot be decided by direct experiment. It has been objected to Irvine's theory that it assigns no cause for the change of form, whilst Black's ascribes the change to the ingress of caloric. On the other hand, Black's theory does not explain why the heat is absorbed. When we heat a solid, the first effect is expansion, and this expansion keeping pace with the increasing temperature, a point will be attained when the expansion has so far overcome the cohesion of the solid that its particles move freely among each other, that is, when the body will become liquid. Thus far the change may be attributed to sensible heat; but the capacity of the body for heat has all the time been increasing, and, to satisfy this increased capacity, sensible heat has become latent. This appears the simplest view of the subject, ascribing the change of capacity to the expansion by the sensible heat; and the difference between the solid and fluid states may be conceived to depend on the prevalence of one of two opposing forms, the cohesive attraction of the particles of matter for each other, and the repulsive energy of caloric.

Dr Black has supposed that latent heat is retained in bodies by an affinity superior to that between sensible caloric and the particles of matter, and liquefaction is ascribed to this more intimate union. This opinion is scarcely perhaps reconcilable with the immediate effect of mixing ice cooled to 20° and water a little above the freezing point, when the water parts with its latent heat to raise the temperature of the ice; or with the effect of mechanical pressure in causing gases to part with their latent caloric.

Absolute Quantity of Heat in Bodies.

It will be sufficiently obvious, that neither by the thermometer nor by the capacity of bodies do we determine the whole heat which they contain at any temperature. The first is evidently nothing more than an indication of changes in a scale, of which the two extremes are unknown; the last mode affords us but the relative quantity of caloric required to elevate the temperature of other bodies compared to water, but it does not point out how many degrees any given temperature is above that point at which a body is deprived of all its heat. Irvine appears to have first conceived the idea of ascertaining by calculation the absolute zero, or deprivation of all heat, on the supposition that the whole heat in any body is proportional to its capacity. If this be granted, the whole caloric it contains at a given temperature may be found by ascertaining the quantity of heat it absorbs when passing from the solid to the liquid state. Thus ice has the capacity of 9 to water as 10, and, when both are at temperature 32°, water will contain one tenth more heat than the same weight of ice; but this excess is given out when water freezes, and as much is again absorbed when it melts. According to Black's experiment, ice absorbs as much caloric, whilst passing into water, as would elevate an equal quantity of ice-cold water 140° Fahrenheit. Therefore $10 \times 140 = 1400°$, will give the *natural zero*, or the point of the absolute deprivation of heat. Almost the same result is obtained by comparing the capacity of steam and water, viz. 1·0 and 1·5. Water, in passing into steam, absorbs 940° of sensible heat, and $940 \times 1·5 = 1410$.

The following general formula, as applicable to this investigation, is given by Professor Robison in his notes on Black's Lectures. Let the capacity of water be 1. Let the quantity of water be W, and its temperature be w. Let the quantity of the body whose capacity is tried be B, and its temperature be b, and the temperature after mixture be m. Then the

capacity of $\mathrm{B} = \dfrac{\mathrm{W} \times \overline{m - w}}{\mathrm{B} \times \overline{m - b}}$. Or if the water be the hottest of the two bodies mixed, the formula is

$$\mathrm{B} = \frac{\mathrm{W} \times \overline{w - m}}{\mathrm{B} \times \overline{m - b}}.$$

The accuracy of this conclusion, however, depends on three points: first, the perfect determination of the specific heat of water, and of its two other forms of existence, to which it is probably impossible to obtain any more than an approximation; secondly, on the assumption that the whole heat of bodies is retained in them by their capacity; and, lastly, on the supposition that while the body retains its form of existence, its capacity remains unchanged. Until these points be established, the theory is but an amusing speculation, in which the estimates of other philosophers do not materially differ from those of Irvine. Rumford, from experiments on the heat extricated by the combination of hydrogen and oxygen, placed the natural zero at 1552° Fahrenheit below the freezing point; Gadolin, from the cold produced by dissolving muriate of soda in water, inferred it to be at — 1432°.

Variations of Temperature.

SECT. V.—VARIATIONS OF TEMPERATURE.

1. *Artificial Means of Increasing Temperature.*

Caloric may be excited by the sun's rays collected by a lens or by a concave mirror, by friction and percussion, and by chemical action.

1. When we collect the sun's rays by a lens, it is well known that combustibles may thus be fired; and if the lens be large, it produces the most intense temperature we can command. In the focus of the powerful lens made in London for Mr Parker (which measured three feet in diameter, three inches thick at the centre, and weighed 212 lbs.), the most infusible metals were instantly melted and dissipated in vapour, and most stony substances were vitrified. Another, constructed at Paris, is described in the *Memoires* of the French academy. Lenses of great power have been also made of two curved plates of glass joined together, and filled with spirit of wine. A remarkable lens of this sort, formed by bending two plates of glass on a parabolic mold, and filling the cavity between them with ninety quarts of spirit, was constructed by Rossini of Gratz, in Styria. The diameter of the plates was 3 feet 3 inches, and they were united by a strong ring of metal. The whole was mounted on a heliostat, which, with the lens complete, weighed 550 lbs. This fine instrument cost about L.1000, but became, a few years ago, the property of the French government for L.338. In its focus a diamond was instantly kindled and dissipated; and a piece of platinum, twenty-nine grains in weight, was melted and thrown into violent ebullition.

Concave metallic mirrors are capable also of concentrating the sun's rays, so as to produce a powerful heat. Mirrors of hammered brass, or tinned iron, are used for experiments on the radiation of heat. It was by some combination of mirrors that Archimedes is said to have fired the Roman fleet at the siege of Syracuse; and Kircher, having found a description in Tzetzes, of the device of Archimedes, from which it would seem that the mirrors were placed on *hinges*, in order to adjust them to a focus, constructed a compound burning mirror of this kind possessing considerable power; but Buffon, by combining as many as 168 plane glass mirrors, six inches broad, showed that silver might be fused at the distance of sixty feet by such an instrument.

2. The capability of friction between two solids to excite heat is well known. In Rumford's experiments water was made to boil by the friction in boring a cannon; and the simple experiment of rubbing a smooth metallic button on a board, by which much heat is produced, is familiar to every school-boy. The firing of carriage-wheels, and of different kinds of machinery, whose parts, moving against each other, are not well oiled, is well known. This extrication of heat takes place *in vacuo* as well as in the air, and appears to be owing to the compression employed forcing the particles of the solid more closely together, and extricating their latent caloric. Berthollet showed that this extrication of caloric is not unlimited, as Rumford erroneously supposed; but that, if we repeatedly compress any body, the quantity of heat extricated rapidly diminishes by each application of the compressing force.

Percussion acts in precisely the same manner. A piece of iron, by smart hammering on an anvil, may become so hot as to fire combustibles. This process evidently diminishes the capacity of the iron for heat, its specific gravity becomes greater, and the loss of its latent heat renders it stiff and brittle. A similar change takes place in *wire-drawing* metals; so that, to restore pliability and ductility, we must subject them to the fire, which restores their latent heat, and renders them again ductile.

3. Chemical action is a fruitful source of increase of temperature. If we mingle together equal parts of sulphuric acid and water, or of alcohol and of water, the bulk of the mixture diminishes, and heat is given out. The temperature produced by chemical action will often ignite inflammables. Thus a drop of sulphuric acid on a mixture of chlorate of potassa and sugar will set the mixture on fire. Indeed, the process of combustion, the great source of artificial heat, is nothing more than the chemical union of the oxygen of the air with the combustible body. The source of the temperature is the liberation of the latent heat of the oxygen, on its entering into union with the carbonaceous matter of the fuel; and the increase of the temperature is in proportion to the air consumed in a given time. If we wish a higher temperature, we increase the quantity of air that passes through the fuel; hence the utility of bellows, and of the blowpipe, in exciting a higher temperature than the spontaneous combustion of the burning body would afford.

The construction of furnaces for the melting of metals depends on this principle; namely, that of causing a large quantity of air to pass through the fire in a short period.

The heating of apartments by an open fire-place partly depends on somewhat different principles. We must not only secure a proper draught of air up the chimney to consume the fuel, but we must secure the *radiation of heat* into the room. Dark and rough surfaces radiate much of their communicated heat; and therefore, when any part of the grate is intended to afford the heat it receives from the fire to the air of the room, it should be of cast iron with some pattern on its surface, not of bright polished metal. This also forms the best material for a stove; but in open fire-places the heating of the apartment not only depends on what is radiated into the room, but also on what is *reflected*. As bright surfaces reflect best, the *covings* of the grate should be of bright and polished metal, and placed at about an angle of 45° to the back of the grate. By this disposition the heat of the fire, falling on the covings, is reflected at the same angle into the room; and we thus obtain a more considerable effect from the same expenditure of fuel.

For large apartments, and for public buildings, heat has been more effectually conveyed by the hot-air stoves of Dr Murray, and of Mr Strutt as improved by Sylvester. The principle of these inventions is to heat a current of air, by passing it between an interior *cockle* or furnace containing the fuel, and an exterior case, at the distance of a few inches from the cockle. The air so heated is admitted into the space to be warmed, and diffuses an equable warmth through the building. The only objection to hot air so introduced is the empyreumatic odour which the heat of the cockle, when not well managed, is apt to communicate to the air. But this objection is obviated by the contrivance of Mr Perkins, in which hot water is made to circulate through wrought iron tubes; and when more heat is required, these tubes are coiled up in several convolutions in the place where the most heat is wanted. In this city, the large premises of Messrs Cadell and Company, booksellers, are so heated; and the General Register House will in a short period be warmed by a similar apparatus.

2. *Artificial Means of Diminishing Temperature.*

There are three methods by which we can cool bodies; by placing them in contact with colder substances, by the evaporation of liquids, and by the liquefaction of solids.

1. The first method is very familiar, and depends on the tendency of caloric to an *equilibrium* in contiguous bodies.

2. The conversion of a body into vapour causes, by the increase of its capacity for heat, an absorption of caloric.

Thus the evaporation of water from the ball of a thermometer causes the mercury to fall. If we apply a still more evaporable fluid, æther, the fall of the thermometer will be still lower; and, if we accelerate this process by an air-pump, the cold produced will be intense; the degree of the absorption of heat, or, in other words, the production of cold, being in proportion to the quickness of the evaporation.

3. The most powerful means of reducing temperature is by what are termed *freezing mixtures.* All these depend on the rapid melting of solids by the addition of various substances. Many experiments have been made on this subject by Lowitz of Petersburg, and by Mr Walker of Cambridge. Salts are the solids most commonly used, and they are in general either mixed with snow or with acids. Thus, if we mix common salt and snow together, the temperature falls to 0° of Fahrenheit. If we pour two ounces of nitric acid diluted with an equal quantity of water on three ounces of sulphate of soda, the temperature sinks below the beginning of Fahrenheit's scale. Equal parts of strong muriatic acid and of snow will produce a cold of — 30° Fahrenheit; and the same proportions of diluted sulphuric acid and snow, if previously cooled down to 20°, will cause the freezing of mercury, reducing the temperature to — 60°. Dry muriate of lime and dry powdery snow, in the proportions of two of the former to one of the latter, if previously cooled by immersion in salt and snow, will sink the temperature to — 66°; and three parts of muriate of lime and two of snow, similarly treated, will reduce the temperature to — 73°.

In all these experiments, it is the sudden conversion of sensible into latent heat that lowers the temperature of the mixtures; the substances assume the liquid form, their capacity for heat is increased, and the disappearance of the sensible heat is manifested by the sinking of the thermometer.

3. *Natural Variations of Temperature.*

The temperature of the earth is affected by the absorption of the solar rays. The revolution of the earth on its axis brings successive portions of its surface under the immediate influence of the sun, and this portion is greatly extended on either side of the equator by the beautifully simple yet stupendous contrivance of the inclination of that axis to the plane of its orbit. These causes produce variations in natural temperature; and as they are uniform and constant in their operation, the temperature of any place is liable to little change, if compared for a series of years, however subject to inequalities in short intervals of time.

The mean temperature of any climate cannot be ascertained by a few observations on the heat of the air; but experience has shown that the mean temperature of the month of April, in our latitudes, will afford a near approximation to that of the whole year. The surface of the ground absorbs the heat of the sun, and becomes thereby warmed; but much of the heat so acquired is lost by radiation during the night, as we have already explained. The surplus heat is slowly transmitted downwards. The experiments made by Mr Ferguson, at Raith, in Fifeshire, by burying very large thermometers at different depths in his garden, showed that during summer the increasing heat penetrated through the ground about five feet each month, or about two inches daily; so that the whole heat of the summer six months would penetrate to about thirty feet, which agrees remarkably with the experiments made by Saussure on the banks of the Arve, near Geneva. There the heat of summer took six months to penetrate thirty-one feet; and beyond that depth the temperature of the earth underwent no change from the summer's heat or the winter's cold. Hence deep caves, or springs whose sources are from a considerable depth, may be considered as affording a tolerable approximation to the mean annual temperature of the places where they occur. This, however, is not always true. The writer of this article, during several years, occasionally took the temperature of the largest spring in Great Britain, *St Winifred's*, at Holywell, in Flintshire; and the temperature of its water was always considerably higher than 50°, the mean temperature of that part of the island. In three successive years it was about 57°, and never but once, after heavy rain, observed so low as 55°, whilst another very copious contiguous spring, the sacred well of *Finnon Asa*, was no more than 50°.

Latitude must exert a great influence on the temperature of the earth, as is sufficiently obvious; but the extremes of temperature, at different times, in the same place, are less within the tropics than toward the polar limits of the temperate and in the frigid zones; for the difference of heat at different seasons must be less, in those regions where the sun is twice vertical annually, than in higher latitudes.

There are two other causes which exert no small influence on the heat of a climate, the vicinity of the ocean, and elevation above its level.

From the enormous mass of the ocean, its waters, except in the vicinity of land or polar ices, have a remarkable uniformity of temperature in almost every climate; and hence the ocean may be considered as the *great equalizer of heat* over the globe, tending to mitigate the fervour of tropical climates, and the rigour of the polar regions.

When cold air sweeps over the surface of the ocean, it tends to cool the particles of water at the surface; but by this process their specific gravity is increased, and they sink, whilst their place is supplied by fresh particles from below, which, becoming cooled in their turn, give rise to internal motions in the water. From its immense mass, it is evident that no partial application of cold air can reduce the mean temperature of its whole waters; and hence we find that the temperature of islands in our latitudes is not so low in winter as that of continents under the same parallel. Thus, the severity of winter in Britain bears no proportion to that of France or Germany in the same parallels of latitude. The most northern of the Orkney Islands is nearly in the latitude of Petersburg, yet in the former a continued frost for three or four days is a rare occurrence, whilst in the latter the rapid and spacious Neva is completely frozen over for several months every season.

On the other hand, the ocean exerts a great influence in mitigating the heat of tropical regions. It is true that when the upper particles of water become heated, the internal motions from unequal temperature cease; but the rarefaction produced sets a current in motion, which, aided by the trade winds, becomes very manifest amongst the West Indian islands in the *Gulf Stream;* the place of which is supplied by currents of cooler water perpetually setting in from the polar regions. But this is not all. The temperature of the atmosphere is mightily diminished by the increased evaporation from the water in warm latitudes; and we have seen, that during this conversion of water into vapour, as much heat becomes latent as would raise the temperature of an equal quantity of other matter by at least 900° Fahrenheit. Hence tropical islands are less warm than continents under the same parallel; and the intersection of continents by gulfs and seas tends to mitigate the extremes of temperature. The extended form of the old continent towards the eastern regions of Asia renders the inequalities of temperature much greater than under the same parallels in Europe. Thus, at

Pekin, the thermometer in winter often descends far below the freezing point, and averages, during the night, for several months, 20° Fahrenheit: yet this place is under the same parallel of latitude as the finest provinces of Southern Italy and the centre of Spain.

But of all the causes influencing the temperature of a country, there is none more important than that of elevation above the level of the sea. In every climate, as is well known, the temperature diminishes as we rise in the atmosphere; and if mountains be very lofty, their summits are the abode of perpetual winter. This is best explained by the fact, that as we rarefy air, its capacity for caloric is increased; the consequence of which is, that its temperature falls as its sensible is converted into latent heat. In passing through air, the sun's rays do not sensibly heat it; but when they impinge on the opake surface of the earth, they are retained, raise its temperature, and a part of this increased heat is communicated to the contiguous stratum of air, which expands, ascends, and has its place supplied by a cooler stratum, which ascends in its turn. Thus the earth warms the air near the surface; but as the pressure of the column of air diminishes by its ascent, its redundant heat becomes latent as the volume of the air augments; so that, at moderate elevations, the atmosphere receives no genial influence from the warmth imparted to the earth; and very lofty mountains, in all climates, are covered with perennial snow, and where the temperature is steadily below the freezing point, there is perpetual congelation. The point at which this takes place is different in different latitudes. The limit is highest under the equator, and descends as we approach the poles. It is obvious too that the influence of the seasons, especially in those countries where there is a great difference between the temperature of summer and winter, will alter the limit of perpetual congelation. In such climates it will fluctuate with the seasons between two points, which form what are termed the *higher and lower limits* of congelation. The difference between these limits is least in tropical regions, but increases toward the poles. This circumstance is of great importance, inasmuch as it influences the formation of the stupendous glaciers, which excite the curiosity and admiration of the traveller, in the elevated regions of the temperate, and on the acclivities of the arctic circle.

The ascent of heated air from the heated surface of the earth might be supposed to warm the superior regions of the atmosphere, were not this counteracted by the increased capacity of rarefied air for heat, by which much more is absorbed than the ascending air can carry with it; but, on the other hand, the too great loss of heat in the lower strata of air is provided against, by the change of capacity which takes place as cool air descends to supply the place of that which has ascended. Its density is increased by increasing pressure, consequently its capacity for heat is diminished; and the heat thus extricated is imparted to the contiguous strata of air. That these two processes counterbalance each other is very obvious, from the uniformity of mean temperature in any spot.

The influence of elevation above the level of the sea is capable of countervailing the effect of low latitudes on the vegetable productions of such regions. Tournefort had remarked the succession of plants on the ascent of Mount Ararat, which gave him, in Armenia, the vegetable forms of different parts of Europe. In Wahlenberg's *Flora Lapponica*, this distribution of vegetable forms into zones is well characterized. The same is remarked in Ramond's examination of the botany of the Pyrenees; and the illustrious traveller Humboldt has given a striking illustration of the same distribution, in his examination of the equinoctial Andes. After rising through various parallel belts or zones of vegetation, each marked by some characteristic plants, if the mountains be sufficiently high, in all latitudes we arrive at the region of stunted shrubs, and of Alpine plants and grasses, amongst which the genera *gentiana*, *ranunculus*, and *saxifraga*, are conspicuous; and, finally, we trace *byssi*, *hepaticæ*, and *lichenes*, the last outskirts of vegetable life, to the very verge of perennial winter.

Variations of Temperature.

These various causes affecting natural temperature render it impossible to estimate the mean heat of any country by its latitude; and as every formula hitherto devised for calculating the mean temperature of any region is now found to be erroneous, it is only by multiplied observations that we can arrive at any accurate conclusion. In the mean time Humboldt has conferred a great favour on meteorological science by his admirable paper *On Isothermal Lines, and the Distribution of Heat over the Globe.* Setting aside all hypothetical views, he has traced on a chart, from the best meteorological observations, lines of *equal temperatures;* so that at a glance we can trace the places which are found to have the same mean temperature. From this map we immediately perceive how widely these isothermal lines differ from the parallels of latitude; and we remark, that the isothermal lines of Western Europe sink to a far lower latitude as they recede on either hand. Thus, the isothermal line of temperature 54°·4 in France, in longitude 0. 37. east, passes through latitude 45. 46. north; but in China, in longitude 116. 27. east, passes near Pekin, in latitude 39. 54. north; and in longitude 104. west, near the mouth of Columbia River, in America, it passes through 44. 40. north. The isothermal lines, however, on the eastern side of the Rocky Mountains, descend still lower, compared to their position in Europe, as the following table shows:—

Lat.	Mean Temperature, Old Continent.	Mean Temperature, New Continent.	Difference.
30	70°·52 Fah.	66°·92	3°·60
40	63°·14	54°·50	8°·64
50	50°·89	37°·94	12°·95
60	40°·64	23°·74	16°·90

In both continents the most rapid decrease of mean temperature is between the parallels of latitude 40° and 45°; a circumstance which, Humboldt justly remarks, has undoubtedly had a happy influence on the civilization and industry of the people inhabiting that zone, because these slight variations of latitude produce considerable changes in the vegetable productions that become objects of rural economy; and when contiguous countries differ much in their products, it stimulates the industry of each, and gives vigour to commercial intercourse; circumstances highly conducive to civilization.

For various important facts and observations on heat, see Black's *Lectures on Chemistry*, vol. i.; Murray's *System of Chemistry*, vol. i.; Dalton's *Chemistry;* Leslie *on Heat;* Pictet *sur le Feu;* Rumford's *Essays;* Deluc *sur les Modif. de l'Atmosph.;* Saussure *sur l'Hygrométrie;* Young's *Lectures on Philosophy;* Biot, *Traité de Physique*, i.; Martine *on Heat;* Crawford *on Heat;* Irvine's *Essays;* J. and G. Murray's *Popular View of Chemistry;* Mrs Somerville *on the Connection of the Physical Sciences;* *Phil. Trans.* 1754, 1777, 1783, 1788, 1792, 1795, 1799, 1800, and 1801; *Edin. Phil. Trans.* vi. ix. x. xii. xiii.; *Ann. de Chim.* 3, 14, 22, 29, 71, and 75; Nicholson's *Journal*, 4, 9, 11, and 12, 8vo series; *Journ. de Physique*, 61; *Ann. of Phil.* 2, &c.; *Manchester Memoirs; Mémoires de l'Académie de Genève*, &c. (I. I. I.)

HEAT, Animal. See Physiology.

HEATH, James, an English historian, was born in 1629, at London, where his father, who was the king's cutler, then lived. He was educated at Westminster school, and became a student of Christ Church, Oxford, in 1616. In 1648 he was ejected by the parliamentary visitors, for his adherence to the royal cause; lived upon his patrimony till it was almost spent; then married, and was obliged to write books and correct the press in order to maintain his family. He died of a consumption and dropsy at London in August 1664, and left several children to the parish. His principal publications were, 1. A brief Chronicle of the late Intestine War in the Three Kingdoms of England, Scotland, and Ireland, 1661, 8vo, afterwards enlarged by the author, and completed from 1637 to 1663, in four parts, 1663, in 8vo; 2. *Flagellum*, or The Life and Death, Birth and Burial, of Oliver Cromwell, the late Usurper, 1663; 3. A new Book of Loyal English Martyrs and Confessors, who have endured the Pains and Terrors of Death, Arraignment, &c. for the Maintenance of the just and legal Government of these Kingdoms both in Church and State, 1663, 12mo.

HEAVEN literally signifies the expanse of the firmament surrounding our earth, and extending every way to an immense distance.

Heaven, amongst Christian divines and philosophers, is considered as a place in which the omnipresent Deity condescends to afford a nearer and more immediate view of himself, and a more sensible manifestation of his glory, than in the other parts of the universe. This is often called the *empyrean*, from that splendour with which it is supposed to be invested; and of this place the inspired writers give us the most noble and magnificent descriptions. The ancients considered heaven as the residence only of the celestial gods, into which no mortals were admitted after death, unless they were deified. As for the souls of good men, they were consigned to the Elysian fields.

Heaven, amongst astronomers, called also the ethereal and starry heaven, is that immense region in which the stars, planets, and comets are disposed.

Heaven is more particularly used in astronomy for an orb, or circular region, of the ethereal heaven.

HEBDOMADARY, Hebdomadarius, or Hebdomadius, a member of a chapter or convent, whose week it is to officiate in the choir, to rehearse the anthems and prayers, and to perform the usual functions which the superiors perform at solemn feasts, and other extraordinary occasions. The word is formed from the Greek ἑβδομας, which signifies a week, from ἑπτα, *seven.*

The hebdomadary generally collated to the benefices which became vacant during his week, though this was usually looked upon as an abuse. In cathedrals, the hebdomadary was a canon or prebendary, who had the peculiar care of the choir, and the inspection of the offices for his week. In monasteries, the hebdomadary is he who waits at table for a week or other stated period, and directs and assists the cook.

HEBDOME, a solemnity of the ancient Greeks, in honour of Apollo, in which the Athenians sung hymns to his praise, and carried in their hands branches of laurel. The word signifies the *seventh day*, this solemnity being observed on the seventh day of every lunar month.

HEBE, the daughter of Jupiter and Juno (Apollodor. i. 3), the goddess of youth, and cup-bearer of the gods, was succeeded in her office by Ganymede, considered by some only as another name of Hebe (Paus. ii. 13). She was also called Dia (Strab. viii. 382), and was married to Hercules, when he was raised to the rank of a god; and had by him Alexiares and Anicetus (Apollodor. ii. 7, 7).

HEBER, the son of Salah, and father of Peleg, from whom the Hebrews derived their name, according to Josephus, Eusebius, Jerome, Bede, and most of the interpreters of the sacred writings; but Huet, bishop of Avranches, in his Evangelical Demonstration, has attempted to prove that the Hebrews took their name from the word *heber*, which signifies *beyond*, because they came from beyond the Euphrates. Heber is supposed to have been born 2281 B. C. and to have lived 464 years.

Heber, *Reginald*, a poet, and dignitary of the church of England, was born at Malpas, in the county of Chester, on the 21st of April 1783. His youth was distinguished by a precocity of talent, docility of temper, a love of reading, and a veneration for religion. After acquiring the elementary parts of education at Neasdon, in the neighbourhood of London, he was entered of Brazen-nose College, Oxford, in the year 1800. In his first year he gained the university prize for Latin verse by his *Carmen Seculare*, a poem on the commencement of the new century; and in 1803 he wrote his poem of *Palestine*, which was crowned with the same success, and received with remarkable applause. His academical career was brilliant from its commencement to its close. After taking his degree, and gaining the university's bachelors' prize for the best English prose essay, he in 1805 set out on a continental tour, of which he kept a regular journal, which was afterwards published. Mr Heber returned to England in the following year, and in 1807 took orders, and was instituted by his brother to the family living of Hodnet in Shropshire, soon after which he returned to Oxford to take his degree as master of arts. In 1809 he married and settled in his rectory, and there discharged the duties which a large parish devolved upon him with exemplary assiduity. Soon after his marriage he published a series of hymns "appropriate to the Sundays and principal holidays of the year," the greater number of which were composed for music already used in the church. In 1812, he commenced a *Dictionary of the Bible*, and published a volume of poems, which contained, besides those previously published, translations from Pindar, and a few other pieces. In the same year he commenced a poem entitled *Mort d'Arthur*, which was never completed. The fragment was published after his death by his widow, in the volumes which contain his biography. In 1817 he was appointed to the prebendary of St Asaph, and in 1822 he obtained the preachership of Lincoln's Inn. During the same year the bishopric of Calcutta became vacant by the death of Dr Middleton, and the offer of it having been made to Mr Heber, he accepted of it after much hesitation. About this period he published a life of Jeremy Taylor, with a review of his writings. In 1823 he took his degree of doctor of divinity, and embarked for India, where he arrived in safety. Bishop Heber was peculiarly well qualified to fill the high and responsible situation which he had attained, with honour to himself and advantage to the church, as well by his amiable and conciliatory temper, as by his talents, and zeal in the cause of Christianity. Soon after his arrival in India, he was appointed one of the vice-presidents of the Asiatic Society in Calcutta. He also assumed the office of president of the Diocesan Committee of the Christian Knowledge Society, established in Calcutta. The native schools and the various branches of the society's labours in that city, in common with other institutions of the same description, engrossed much of his time and attention. On Ascension-day in the year 1824, Bishop Heber held his first visitation in the cathedral of Calcutta; and subsequently, he made progresses through his diocese, which was very extensive, consecrating churches, and facilitating the adoption of measures for the extension of Christian knowledge amongst the Hindus. In one of his journeys to the southern provinces, he was cut off by an apoplectic fit, with which he was seized whilst bathing, at Trichinopoly, on the 3d of April 1826. After the death of this eminent prelate, there was published a Narrative of a Journey through the Upper Provinces of India, from Calcutta to Bombay, in 2 vols. 4to, and afterwards in 3 vols. 8vo. A biography of this good prelate, with numerous letters, and a History of the Cossacks, has been published by his widow, in 2 vols. 4to. Besides the works of Bishop Heber already mentioned, he was the author of several dramatic poems, and a considerable contributor to the Quarterly Review. As a poet he is elegant and pleasing, without being either very vigorous or original. His poem of *Palestine* is perhaps the best which has ever been written upon the subject; and many of his hymns, whilst they possess all the simplicity and true Christian feeling which should characterise such compositions, have more elevation and poetic fervour than is usually met with in writings of this kind. His prose works are written in an easy, flowing style, and are characterised by acuteness and sound judgment. His Indian Narrative is graphic and pleasing in the highest degree. As a minister of the gospel, Bishop Heber combined rational piety with zealous industry in the discharge of his duties, and he was beloved and venerated in the highest degree by those over whom he presided as a spiritual guide and instructor.

HEBERDEN, William, a practical physician of great celebrity, was born in London in the year 1710. He was sent at a very early age, near the end of 1724, to St John's College, Cambridge. He took his first degree in 1728, and obtained a fellowship about 1730; he became master of arts in 1732, and took his degree in physic in 1739. He remained at Cambridge about ten years longer as a practitioner of physic, and gave an annual course of lectures on the Materia Medica. In 1746 he became a fellow of the Royal College of Physicians in London, and two years afterwards he left Cambridge, having presented to St John's College the specimens which had been subservient to his lectures. He also added to this donation, a few years afterwards, a collection of astronomical instruments of some value. Having determined to establish himself in London, he was elected a fellow of the Royal Society in 1769; and he was employed in a very extensive medical practice for more than thirty years. When he became sensible that his age required some indulgence, he resolved to pass his summers at a house which he had taken at Windsor; but he continued his practice in the winter for some years longer. In January 1760 he married Mary, daughter of W. Wollaston, Esq. by whom he had five sons and three daughters; but he survived them all, except Dr W. Heberden, and Mary, married to the Rev. G. Jenyns. In 1778 he was made an honorary member of the Royal Society of Medicine at Paris.

Dr Heberden's first publication seems to have been a short essay on the incongruous composition of the mithridate and theriac, entitled Antitheriaca, 8vo, 1745. 2. He sent to the Royal Society an Account of a very large Human Calculus, weighing more than $2\frac{1}{4}$ pounds avoirdupois (*Phil. Trans.* xlvi. 1750, p. 596; *Abr.* xi. p. 1005). 3. Account of the Effect of Lightning at South Weald in Essex (*Phil. Trans.* liv. 1764, p. 198). Both these essays are erroneously attributed, in Dr Maty's index, to his brother, Dr Thomas Heberden of Madeira, who sent several other papers to the society. Dr Heberden was one of the principal contributors to the first three volumes of the *Medical Transactions*, published in a great measure at his suggestion, by the College of Physicians, in which we find about sixteen of his original communications. 4. Remarks on the Pump Water of London, 1768. 5. Observations on Ascarides. 6. On Night Blindness, or Nyctalopia. 7. On the Chicken-Pox. 8. On the Epidemical Cold of 1767. 9. Queries, relating to bark, camphor, cold, the gout, and apoplexy. 10. On Hectic Fever. 11. On the Pulse. 12. On a Disorder of the Breast, the *angina pectoris*. 13. On Diseases of the Liver. 14. On the Nettle Rash. 15. On Noxious Fungi. 16. Queries; on sizy blood, on hernia, on damp clothes, on venesection in hemorrhages. 17. On an Angina Pectoris. 18. On the Ginseng. 19. On the Measles. 20. Table of the Mean Heat of the different Months in London (*Phil. Trans.* lxxviii. 1778, p. 86.) 21. Commentarii de Morborum Historia et Curatione, London, 1802, in 8vo; also in English. He had long been in the habit of making notes in a pocket-book, at the bed-sides of his patients; and every month he used to select and copy out, under the proper titles of the diseases, whatever he thought particularly worthy to be recorded. In the year 1782 he employed himself in digesting this register into the form of a volume of *Commentaries* on the history and cure of diseases, religiously observing never to depend on his memory for any material circumstance that he did not find expressly written down in his notes. These commentaries were intrusted to the care of his son, Dr W. Heberden, to be published after his death. We find in them a greater mass of valuable matter, accurately observed and candidly related, than in almost any other volume which has ever appeared upon a medical subject; yet they are but too likely to chill the ingenuous ardour of many a youthful mind, and even to lead to a total apathy with respect to the diligent study of a profession in which so respectable a veteran was so often disposed to exclaim, that "all is vanity." There are indeed many instances in which he does not seem to have been perfectly master of all the instruments of his art: thus, he appears to have been but partially acquainted with the virtues and various uses of antimony and ipecacuan, and to have reasoned very inaccurately on the operation for a strangulated hernia. But it has been remarked, that the more experience a physician acquires in his profession, the more he is in general inclined to approach the opinions of Dr Heberden, and to esteem his writings.

Notwithstanding that he has been accused of having occasionally been liable to personal and professional prejudices, it may safely be asserted, that he possessed a singular combination of modesty and dignity of character. He was not only a well-informed and accomplished scholar, but a man of the purest integrity of conduct, of mild and courteous manners, distinguished by genuine piety, and by unaffected benevolence of heart. It is related by one of his biographers, that he bought a sceptical work, left in manuscript by Dr Conyers Middleton, of his widow, for L.50, in order to burn it. He was at the expense of publishing another work of the same author, on the servile condition of physicians amongst the ancients, as well as an edition of some of the plays of Euripides, by Markland. He had an opportunity of rendering an essential service to Dr Letherland, a man of the deepest and most extensive learning and science that adorned the last century, but of retired habits, and very little known even in his own profession, though he contributed by his literary information to the popularity of more than one of his colleagues. Dr Heberden's extensive practice made it inconvenient for him to accept the appointment of physician to the queen; and the king, who had always shown him the greatest esteem and regard, readily adopted his disinterested recommendation of Dr Letherland as his substitute in the situation. He died on the 17th of May 1801, at the age of above ninety years, having exhibited at the close of his life the same serenity of mind which he had enjoyed throughout its course. (*Life* prefixed to his *Commentaries*; Chalmers' *Biographical Dictionary*, xvii.)

HEBREW, something relating to the Hebrew.

Hebrew Character. There are two kinds of Hebrew characters; the ancient, called also the *square*; and the modern, or rabbinical character.

The *Square Hebrew* takes its denomination from the figure of its characters, which stand more square, and have their angles more exact and precise, than the other. This character is used in the text of Scripture, and in other principal and important writings. When both this and the rabbinical character are employed in the same work, the former is used for the text, and the latter for the accessory part, as the gloss, notes, commentaries, and so forth.

The best and most beautiful characters of this kind are those copied from the characters used in the Spanish manuscripts; next, those from the Italian manuscripts; then those from the French; and, lastly, those of the Germans, whose characters are much the same, with respect to the other genuine square Hebrew characters, as the Gothic or Dutch characters are with respect to the Roman.

Several authors contend, that the square character is not the real ancient Hebrew character, written from the beginning of the language till the time of the Babylonish captivity; but that it is the Assyrian or Chaldaic character, which the Jews having become accustomed to during the captivity, afterwards retained. They allege, that the Jews, during their captivity, had quite disused their ancient character; so that Ezra found it necessary to have the sacred books transcribed into the Chaldaic square character. These authors also contend, that what we call the Samaritan character is in reality the genuine ancient Hebrew. Of this opinion are Scaliger, Bochart, Casaubon, Vossius, Grotius, Walton, Capellus, and, amongst the ancients, Jerome and Eusebius. It is urged, that the present characters are called Assyrian by the ancient Jewish writers of the Talmud, and therefore must have been brought from Assyria. But to this argument it is replied, that there were two sorts of characters anciently in use, viz. the sacred or present square character, and the profane or civil, which we call Samaritan; and that the sacred is called Assyrian, because it first began in Assyria to come into common use. It is further alleged, that the Chaldaic letters, which the Jews now use, were unknown to the ancient Jews before the captivity (Dan. i. 4). Moreover, it is inferred from a passage in Second Kings (xvii. 28), where we learn that a Jewish priest was sent to teach the Samaritans the worship of Jehovah, that on this occasion he must have taught them the law; and yet no mention occurs of his teaching them the language or character in which the law was then written, namely, the character which the Samaritans used. But the chief argument is derived from some ancient Jewish shekels, having a legend on one side, "The shekel of Israel," and on the other, "Jerusalem the holy," both in Samaritan characters. These shekels, it is said, must have been coined before the division of the two kingdoms of Judah and Israel, or at least before the Assyrian captivity, because the Samaritans never afterwards reckoned Jerusalem holy. On the other side, namely, in favour of the primitive antiquity of the square character, are the two Buxtorfs, Leusden, Calovius, Hottinger, Spanheim, Lightfoot, and others, who urge (from Matthew, v. 18) that *jod* is really the least of the consonants in the present Hebrew, whereas it is one of the largest characters in the Samaritan alphabet; but Walton replies, that if our Saviour here speaks of the least letter of the alphabet, we can only infer that the Chaldaic character was used, in our Saviour's time, which is not denied by those who maintain the Samaritan to be the original. They also allege that the Jews were too obstinate and superstitious to allow their sacred character to be altered; but if this was effected under the direction and authority of Ezra, the argument will be much invalidated. Further, they maintain that Ezra could not alter the ancient character, because it was impossible to make the alterations in all their copies. This argument, however, is contradicted by fact, since the old English black letter is actually changed for the Roman. They likewise allege that Ezra was not disposed to profane the sacred writings with a heathen character; but this supposes that Ezra was so superstitious as to imagine that there was some peculiar sanctity in the shape of the letters. Moreover, the advocates of this opinion appeal to ancient coins found in Judæa, with a legend in the Chaldaic or Assyrian character. But the genuineness of these coins is much disputed. The learned Souciet maintains that the ancient Hebrew character is that found on the medals of Simon, and others, commonly called Samaritan medals, but which, he affirms, were really Hebrew medals, struck by the Jews, and not by the Samaritans.

Buxtorf endeavours to reconcile these two opinions by producing a variety of passages from the Rabbin to prove that both these characters were anciently used; the present square character being that in which the tables of the law, and the copy deposited in the ark, were written, and the other character being used in the copies of the law which were written for private and common use, and in civil affairs in general; and that after the captivity, Ezra ordered the former to be used by the Jews on all occasions, leaving the latter to the Samaritans and apostates. But it can scarcely be allowed by any who consider the difference between the Chaldaic and Samaritan characters, with respect to convenience and beauty, that they were ever used at the same time. After all, it is of no great moment which of these, or whether either of them, formed the original characters; since it appears that no change of the words has arisen from the manner of writing them, because the Samaritan and Jewish Pentateuch almost invariably agree. It is most probable that the form of these characters has varied at different periods. This appears from the testimony of Montfaucon (*Hexapla Origenis*, vol. i. p. 22), and is implied in Dr Kennicot's making the characters in which manuscripts are written one test of their age.

The *Modern*, or *Rabbinical*, is a good, neat character, formed of the square Hebrew, by rounding it, and retrenching most of the angles or corners of the letters, to render it more easy and flowing. The letters used by the Germans are very different from the rabbinical character employed everywhere else, though all formed alike from the square character, but in a more slovenly manner than the rest. The Rabbin frequently make use either of their own, or the square Hebrew character, to write the modern languages in. There are even books in the vulgar tongues printed in Hebrew characters, instances of which are seen in the king's library at Paris.

HEBREW Language, that spoken by the Hebrews, and in which the books of the Old Testament are written.

The books of the Old Testament are the only compositions to be found, in all antiquity, written in pure Hebrew; and the language of many of them is extremely sublime. It appears perfectly regular, particularly in its conjugations; indeed, properly speaking, it has but one conjugation, but this is varied in each seven or eight different ways, which has the effect of so many different conjugations, and affords a great variety of expressions to represent by a single word the different modifications of a verb, and many ideas which in the modern and in many of the ancient and learned languages cannot be expressed without a periphrasis.

The primitive words, which are called *roots*, have seldom more than three letters or two syllables.

In this language there are twenty-two letters, only five of which are usually reckoned vowels; but then each vowel is divided into two, a long and a short; the sound of the former being somewhat grave and long, and that of the latter short and acute. It must however be remarked, that the two last vowels have sounds which differ in other respects besides quantity and a greater or less elevation. To these ten or twelve vowels may be added others, called *semi-vowels*, which serve to connect the consonants, and to render easier the transitions from one to another. The number of accents in this language is prodigious. Of these there are nearly forty, the use of some of which, notwithstanding all the inquiries of the learned, is not yet perfectly known. We know, in general, that they serve to distinguish the sentences, like the points called commas, semicolons, and colons in our language; to determine the quantity of the syllables; and to mark the tone with which they are to be spoken or sung. It is no wonder, then, that there are more accents in the Hebrew than in other languages, since they perform three offices, which in other languages are called by different names.

As we have no Hebrew but that which is contained in the Scripture, the language wants a great many words; not only because in those primitive times languages were not so copious as at present, but also on this account, that the inspired writers had no occasion to mention many of the terms which might be in use in the language.

The Chaldaic, Syriac, and Ethiopic languages, are by some held to be dialects of the Hebrew; as the French, Italian, and Spanish, are dialects of the Latin. It has been supposed by many learned men, that the Hebrew characters or letters were often used hieroglyphically, and that each had its several distinct sense understood as a hieroglyphic. Neumann, who seems to have taken infinite pains to find out the secret meaning of these letters, gives the following explication; א, *aleph*, he says, is a character denoting motion, readiness, and activity; ב, *beth*, signifies matter, body, substance, thing, also place, space, or capacity, and lastly, in, within, or contained; ג, *ghimel*, stands for flexion, bending, or obliquity of any kind; ד, *dhaleth*, signifies any protrusion made from without, or any promotion of any kind; ה, *he*, stands for the presence or demonstrative essence of any thing; ו, *vau*, stands for copulation, or the growing together of things; ז, *tsain*, expresses vehement protrusion and violent compression, such as is occasioned by at once violently discharging and constringing a thing, and sometimes the straitening of any figure into a narrow point at the end; ח, *cheth*, expresses association, society, or any kind of composition or combination of things; ט, *teth*, stands for the withdrawing, drawing back, or recession of any thing; י, *jod*, signifies extension and length, whether in matter or in time; כ, *caph*, expresses a turning, incurvation, or concavity; ל, *lamech*, stands for an addition, accession, impulse, or adversation, and sometimes for pressure; מ, *mem*, expresses amplitude, or the amplifying any thing in whatever sense, and in regard to contiguous qualities it also signifies the adding length, breadth, and circumference, lastly, multitude; נ, *nun*, signifies the propagation of one thing from another, or of the same thing from one person to another; ס, *samech*, expresses cincture and coarctation; ע, *ain*, stands for observation, objection, or obviation; פ, *pe* or *phe*, stands for a crookedness or an angle of any figure; צ, *tsadde*, expresses contiguity and close succession; ק, *koph*, expresses a circuit or ambit; ר, *resh*, expresses the egress of any thing, as also the exterior part of a thing, and the extremity or end of any thing; ש, *schin* or *sin*, signifies the number three, or the third degree, or the utmost perfection of any thing; and ת, *tau*, expresses a sequel, continuation, or succession of any thing.

As, according to this explication, the several letters of the Hebrew alphabet separately convey ideas of motion, matter, space, and several modifications of matter, space, and motion; it follows that a language, the words of which are composed of such expressive characters, must necessarily be of all languages the most perfect and expressive; as the words formed of such letters, according to their determinate separate significations, must convey the idea of all the matters contained in the sense of the several characters, and be at once a name and a definition, or succinct description, of the subject; and all things material as well as spiritual, all objects in the natural and moral world, must be known as soon as their names are known, and their separate letters considered.

The words *urim* and *thummim* are thus easily explained, and found to be perhaps the most apposite and expressive words that ever were formed.

Rabbinical or *Modern Hebrew*, is the language used by the Rabbin in the writings they have composed. Its basis or body is the Hebrew and Chaldaic, with various alterations in the words of these two languages, the meanings of which they have considerably enlarged and extended. They have borrowed freely from the Arabic; and the rest is composed of words and expressions, chiefly from the Greek, some from the Latin, and others from the modern tongues, particularly that spoken in the place where each Rabbi lived or wrote.

HEBRIDES, the general name of some islands lying to the north-west of Scotland, of which kingdom they constitute a part. They are situated between the 55th and 59th degrees of latitude. The names of the largest are *Lewis*, *Skye*, *Mull*, *Ilay*, and *Arran*. Of these islands, generally, Mr Pennant gives the following history.

"All the accounts left us by the Greek and Roman writers are enveloped with obscurity; at all times brief even in their descriptions of places they had easiest access to, and might have described with the most satisfactory precision; but in remote places, their relations furnish little more than hints, the food for conjecture to the visionary antiquary.

"That Pytheas, a traveller mentioned by Strabo, had visited Great Britain, I would wish to make only *apocryphal*. He asserts that he visited the remoter parts; and that he had also seen Thule, the land of romance amongst the ancients; which all might pretend to have seen; but every voyager, to swell his fame, made the island he saw last the Ultima Thule of his travels. If Pytheas had reached these parts, he might have observed, floating in the seas, multitudes of gelatinous animals, the *medusæ* of Linnæus, and out of these have formed his fable. He made his Thule a *composition of neither earth, sea, nor air; but like a composition of them all*; then, catching his simile from what floated before him, compares it to the *lungs* of the sea, the Aristotelian idea of these bodies, and from him adopted by naturalists, successors to that great philosopher. Strabo very justly explodes these absurd tales; yet allows him merit in describing the climate of the places he had seen. As a farther proof of his having visited the Hebrides, he mentions their unfriendly sky, that prohibits the growth of the finer fruits; and that the natives are obliged to carry their corn under shelter to beat the grain out, lest it should be spoiled by the effect of sun and violence of the rains. This is the probable part of his narrative; but when the time that the great geographer wrote is considered, at a period that these islands had been neglected for a very long space by the Romans, and when the difficulties of getting among a fierce and unfriendly nation must be almost insuperable, doubts innumerable respecting the veracity of this relater must arise. All that can be admitted in favour of him is, that he was a great traveller; and that he might have either visited Britain from some of the nations commercing with our isle, or received from them accounts, which he afterwards dressed out, mixed with the ornaments of fable. A traffic must have been carried on with the very northern inhabitants of our islands in the time of Pytheas; for one of the articles of commerce mentioned by Strabo, the ivory bits, were made either of the teeth of the walrus, or of a species of whale, native of the northern seas.

"The geographer Mela, who flourished in the reign of Claudius, is the next who takes notice of our lesser islands. He mentions the Orcades as consisting of 30, the Æmodæ of seven. The Romans had then made a conquest of the former, and might have seen the latter: but, from the words of the historian, it is probable that the Shetland Islands were those intended; for he informs us that the 'Æmodæ were carried out over against Germany.' The site of the Hebrides will not admit this description, which agrees very well with the others; for the ancients extended their Germany, and its imaginary islands, to the extreme north.

"Pliny the Elder is the next that mentions these remote places. He lived later than the preceding writers, and of course his information is fuller. By means of intervening discoveries, he has added ten more to the number of the Orcades; is the first writer that mentions the Hœbudes, the islands in question; and joins in the same line Æmodæ, or, as it is in the best editions more properly written, the *Acmodæ*, or extreme point of the Roman expeditions to the north, as the Shetland Isles in the highest probability were. Pliny and Mela agree in the number of the Æmodæ or Acmodæ; the former makes that of the Hœbudes 30; an account extremely near the truth, deducting the little isles, or rather rocks, that surround most of the greater, and many of them so indistinct as scarcely to be remarked, except on an actual survey.

"Solinus succeeds Pliny. If he, as is supposed, was contemporary with Agricola, he has made very ill use of the light he might have received from the expeditions of that great general; his officers might have furnished the historian with better materials than those he has communicated. He has reduced the number of the Hœbudes to five. He tells us that 'the inhabitants were unacquainted with corn; that they lived only on fish and milk; that they had one king, as the islands were only separated from each other by narrow straits; that their prince was bound by certain rules of government to do justice, and was prevented by poverty from deviating from the true course, being supported by the public, and allowed nothing that he could call his own, not even a wife; but then he was allowed free choice, by turns one out of every district, of any female that caught his affection; which deprived him of all ambition about a successor.'

"By the number of these islands, and by the minute attention given by the historian to the circumstance of their being separated from each other by very narrow straits, I should imagine that which is now called the *Long Island*, and includes Lewis, North Uist, Benbecula, South Uist, and Barra, to have been the five Hœbudes of Solinus; for the other great islands, such as Sky, &c. are too remote from each other to form the preceding very characteristic description of that chain of islands. These might naturally fall under the rule of one petty prince, almost the only probable part of Solinus's narrative.

"After a long interval appears Ptolemy, the Egyptian geographer. He also enumerates five Ebudæ, and has given each a name; the western *Ebuda*, the Eastern *Ricino*, *Maleos*, *Epidium*. Camden conjectures them to be the modern Sky, Lewis, Rathry or Racline, Mull, and Ilay; and I will not controvert his opinion.

"The Roman historians give very little light into the geography of these parts. Tacitus, from whom most might have been expected, is quite silent about the names of places; notwithstanding he informs us, that a fleet by the command of Agricola performed the circumnavigation of Britain. All that he takes notice of is the discovery and the conquest of the Orkneys: it should seem, that with the biographers of an ambitious nation, nothing seemed worthy of notice but what they could dignify with the glory of victory.

"It is very difficult to assign a reason for the change of name from *Ebudæ* to *Hebrides*: the last is modern, and seems, as the annotator on Dr Macpherson supposes, to have arisen from the error of a transcriber, who changed the *u* into *ri*.

"From all that has been collected from the ancients, it appears that they were acquainted with little more of the Hebrides than the bare names: it is probable that the Romans, either from contempt of such barren spots, from the dangers of the seas, the violence of the tides, and horrors of the narrow sounds, in the inexperienced ages of navigation, never attempted their conquest, or saw more of them than what they had in sight during the few circumnavigations of Great Britain, which were expeditions more of ostentation than of utility.

"The inhabitants had probably for some ages their own governors, one little king to each island, or to each group, as necessity required. It is reasonable to suppose that their government was as much divided as that of Great Britain, which, it is well known, was under the direction of numbers of petty princes before it was reduced under the power of the Romans.

"No account is given in history of the time these islands were annexed to the government of Scotland. If we may credit our Saxon historians, they appear to have been early under the dominion of the Picts; for Bede and Adamnanus inform us, that soon after the arrival of St Columba in their country, Brude, a Pictish monarch, made the saint a present of the celebrated island of Iona. But neither the holy men of this island, nor the natives of the rest of the Hebrides, enjoyed a permanent repose after this event. The first invasion of the Danes does not seem to be easily ascertained. It appears that they ravaged Ireland, and the Isle of Rathry, as early as the year 735. In the following century their expeditions became more frequent; Harold Harfager, or the *light-haired*, pursued, in 875, several petty princes, whom he had expelled out of Norway; who had taken refuge in the Hebrides, and molested his dominions by perpetual descents from those islands. He seems to have made a rapid conquest; he gained as many victories as he fought battles; he put to death the chief of the pirates, and made an indiscriminate slaughter of their followers. Soon after his return, the islanders repossessed their ancient seats; and, in order to repress their insults, he sent Ketil the *flat-nosed* with a fleet and some forces for that purpose. He soon reduced them to terms, but made his victories subservient to his own ambition; he made alliances with the reguli he had subdued; he formed intermarriages, and confirmed to them their old dominions. This effected, he sent back the fleet to Harold; openly declared himself independent; made himself prince of the Hebrides; and caused them to acknowledge him as such, by the payment of tribute and the badges of vassalage. Ketil remained, during life, master of the islands; and his subjects appear to have been a warlike set of freebooters, ready to join with any adventurers. Thus when Eric, son of Harold Harfager, after being driven out of his own country, made an invasion of England, he put with his fleet into the Hebrides, received a large reinforcement of people fired with the hopes of prey, and then proceeded on his plan of rapine. After the death of Ketil, a kingdom was in after times composed out of them, which, from the residence of the little monarch in the Isle of Man, was styled that of *Man*. The islands became tributary to that of Norway for a considerable time, and princes were sent from thence to govern; but at length they again shook off the yoke. Whether the little potentates ruled independent, or whether they put themselves under the protection of the Scottish monarchs, does not clearly appear; but it is reasonable to suppose the last, as Donald-bane is accused of making the Hebrides the price of the assistance given him by the Norwegians against his own subjects. Notwithstanding they might occasionally seek the protection of Scotland, yet they never were without princes of their own: policy alone directed them to the former. From the chronicles of the kings of Man we learn that they had a succession of princes.

"In 1089 is an evident proof of the independency of the islanders on Norway; for, on the death of Lagnan, one of their monarchs, they sent a deputation to O'Brian, king of Ireland, to request a regent of royal blood to govern them during the minority of their young prince. They probably might in turn compliment in some other respects their Scottish neighbours; the islanders must have given them some pretence to sovereignty; for,

"In 1093, Donald-bane, king of Scotland, calls in the assistance of Magnus the Barefooted, king of Norway, and bribes him with the promise of all the islands. Magnus accepts the terms; but at the same time boasts, that he does not come to invade the territories of others, but only to resume the ancient rights of Norway. His conquests are rapid and complete; for, besides the islands, by an ingenious fraud he adds Cantyre to his dominions.

"The Hebrides continued governed by a prince dependent on Norway, a species of viceroy appointed by that court; and who paid, on assuming the dignity, ten marks of gold, and never made any other pecuniary acknowledgment during life: but if another viceroy was appointed, the same sum was exacted from him. These viceroys were sometimes Norwegians, sometimes natives of the isles. In 1097 we find that Magnus deputes a nobleman of the name of *Ingemund:* in after times we learn that natives were appointed to that high office. Thus were the Hebrides governed, from the conquest by Magnus, till the year 1263, when Acho, or Haquin, king of Norway, by an unfortunate invasion of Scotland, terminating in his defeat at Largs, so weakened the powers of his kingdom, that his successor Magnus IV. was content to make a cession of the islands to Alexander III.: but not without stipulating for the payment of a large sum, and a tribute of 100 merks for ever, which bore the name of the *annual of Norway.* Ample provision was also made by Magnus in the same treaty, for the security of the rights and properties of his Norwegian subjects who chose to continue in the isles, where many of their posterity remain to this day.

"Notwithstanding this revolution, Scotland seems to have received no real acquisition of strength. The islands still remained governed by powerful chieftains, the descendants of Somerled, thane of Heregaidel, or Argyle, who, marrying the daughter of Olave, king of Man, left a divided dominion to his sons Dugal and Reginald; from the first were descended the Macdougals of Lorn, from the last the powerful clan of the Macdonalds. The lordship of Argyle, with Mull, and the islands north of it, fell to the share of the first; Ilay, Cantyre, and the southern isles, were the portion of the last; a division that formed the distinction of the Sudereys and Nordereys (as further noticed in the article Iona).

"These chieftains were the scourges of the kingdom; they are known in history but as the devastations of a tempest; for their paths were marked with the most barbarous desolation. Encouraged by their distance from the seat of royalty, and the turbulence of the times, which gave their monarchs full employ, they exercised a regal power, and often assumed the title; but are more generally known in history by the style of the *Lords of the Isles*, or the Earls of Ross; and sometimes by that of the *Great Macdonald.*

"Historians are silent about their proceedings, from the retreat of the Danes, in 1263, till that of 1335, when John, lord of the isles, withdrew his allegiance. In the beginning of the next century his successors were so independent, that Henry IV. entered into a formal alliance with the brothers Donald and John. This encouraged them to commit fresh hostilities against their natural prince. Donald, under pretence of a claim to the earldom of Ross, invaded and made a conquest of that county; but, penetrating as far as the shire of Aberdeen, after a fierce but undecisive battle with the royal party, thought proper to retire, and in a little time to swear allegiance to his monarch James I. But he was permitted to retain the county of Ross, and assume the title of earl. His successor Alexander, at the head of 10,000 men, attacked and burnt Inverness; at length, terrified with the preparations made against him, he fell at the royal feet, and obtained pardon as to life, but was committed to strict confinement.

"His kinsman and deputy, Donald Balloch, resenting the imprisonment of his chieftain, excited another rebellion, and destroyed the country with fire and sword; but on his flight was taken and put to death by an Irish chieftain, with whom he sought protection."

"These barbarous inroads were very frequent with a set of banditti, who had no other motive in war but the infamous inducement of plunder.

"In the reign of James II. in the year 1461, Donald, another petty tyrant, an Earl of Ross, and Lord of the Isles, renewed the pretence of independency; surprised the castle of Inverness; forced his way as far as Athol; and obliged the earl and countess, with the principal inhabitants, to seek refuge in the church of St Bridget, in hopes of finding security from his cruelty by the sanctity of the place: but the barbarian and his followers set fire to the church, put the ecclesiastics to the sword, and, with a great booty, carried the earl and countess prisoners to his castle of Claig, in the island of Ilay. In a second expedition, immediately following the first, he suffered the penalty of his impiety: a tempest overtook him, and overwhelmed most of his associates; and he, escaping to Inverness, perished by the hands of an Irish harper; his surviving followers returned to Ilay, conveyed the Earl and Countess of Athol to the sanctuary they had violated, and expiated their crime by restoring the plunder, and making large donations to the shrine of the offended saint.

"John, successor to the late Earl of Ross, entered into alliance with Edward IV. and sent ambassadors to the court of England, where Edward empowered the Bishop of Durham and Earl of Winchester to conclude a treaty with him, another Donald Balloch, and his son and heir John. They agreed to serve the king with all their power, and to become his subjects: the earl was to have 100 marks sterling for life in time of peace, and L.200 in time of war; and these island allies, in case of the conquest of Scotland, were to have confirmed to them all the possessions benorth of the Scottish sea; and in case of a truce with the Scottish monarch, they were to be included in it. But about the year 1476, Edward, from a change of politics, courted the alliance of James III. and dropt his new allies. James, determined to subdue this rebellious race, sent against them a powerful army under the Earl of Athol; and took leave of him with this good wish, *Furth, fortune, and fill the fetters;* as much as to say, "Go forth, be fortunate, and bring home many captives;" which the family of Athol has used ever since for its motto. Ross was terrified into submission; obtained his pardon; but was deprived of his earldom, which by act of parliament was then declared unalienably annexed to the crown; at the same time the king restored to him Knapdale and Cantyre, which the earl had resigned; and invested him anew with the lordship of the isles, to hold them of the king by service and relief.

"Thus the great power of the isles was broken: yet for a considerable time after, the petty chieftains were continually breaking out into small rebellions, or harassed each other in private wars; and tyranny seems but to have been multiplied. James V. found it necessary to make the voyage of the isles in person in 1536, seized and brought away with him several of the most considerable leaders, and obliged them to find security for their own good behaviour and that of their vassals. The names of these chieftains were (according to Lindesay), *Mydyart, Mac-connel, Mac-loyd* of the Lewis, *Mac-niel, Mac-lane, Mac-intosh, John Mudyart, Mac-kay, Mac-kenzie,* and many others; but, by the names of some of the above, there seem to have been continental as well as insular malecontents. He examined the titles of their holdings; and finding several to have been usurped, reunited their lands to the crown. In the same voyage he had the glory of causing a survey to be taken of the coasts of Scotland, and of the islands, by his pilot Alexander Lindesay; which was published in 1583, at Paris, by Nicholas de Nicholay, geographer to the French monarch.

"The troubles that succeeded the death of James occasioned a neglect of these insulated parts of the Scottish dominions, and left them in a state of anarchy. In 1614, the Mac-donalds made a formidable insurrection, oppugning the royal grant of Cantyre to the Earl of Argyle and his relations. The petty chieftains continued in a sort of rebellion; and the sword of the greater, as usual in weak governments, was employed against them; the encouragement and protection given by them to pirates employed the power of the Campbells during the reign of James VI. and the beginning of that of Charles I.

"But the turbulent spirit of the old times continued down till a comparatively late period. The heads of clans were, by the divisions, and a false policy that predominated in Scotland during the reign of William III. flattered with an ideal importance: instead of being treated as bad subjects, they were courted as desirable allies; instead of feeling the hand of power, money was allowed to bribe them into the loyalty of the times. They would have accepted the subsidies, notwithstanding they detested the prince that offered them. They were taught to believe themselves of such consequence, that in these days turned to their destruction. Two rebellions gave the legislature a late experience of the folly of permitting the feudal system to exist in any part of its dominions. The act of 1748, for abolishing heritable jurisdictions, at once deprived the chieftains of all power of injuring the public by their commotions."

New HEBRIDES, a cluster of islands lying in the Great South Sea, or Pacific Ocean. See AUSTRALASIA.

HEBRON, a town of Palestine, so named from a very remote antiquity. It is a place of great resort for pilgrims, both Mahommedan and Christian. Its situation is on a hill, near the plain of Mamre, which is fertile, and planted with excellent vineyards. Here Constantine built a church, of which the walls still remain. It is twenty-seven miles south-west of Jerusalem.

HEBRUS, now MARITZA, a river of Thrace, rising in Mount Scomius (Thucyd. ii. 96), or Rhodope (Plin. iv. 11), and falling into the Ægean Sea near Ænos, forming at its mouth the Palus Stentoris (Herodot. vii. 58). It is joined on the left bank by the Artiscus (Bujuk-déré), by the Agrianes (Ergene), which receives the Contadesdus (Saradjala), and this last the Tearus (Tekedéré). It was at the source of this river that Darius erected a pillar with an inscription to the effect that its waters were the purest and best, as he was the fairest of men. (Herodot. iv. 89–92.)

HECATÆUS, an ancient historian of Miletus, in Asia Minor. The exact period of his birth and death is unknown, but the active part he took in the affairs of his country proves that he flourished about 500 B. C., at a time when the Ionians were attempting to throw off the yoke of the Persians, who were then governed by Darius. He was the son of Hegesandrus (Suid.), and descended of a noble family. Like Herodotus, whom he preceded only by a few years, he visited many countries, and, making himself acquainted with the peculiarities of their customs, and the history of different nations, he wrote numerous works on these subjects. (Herodot. ii. 143.) We find Hecatæus present at the deliberations of the Ionians, 501 B. C., before they revolted against Darius, when he pointed out to his countrymen the folly of their intended proceedings. War, however, was resolved on at all hazards, and Hecatæus then recommended that they should devote their attention to secure maritime supremacy. This advice was also neglected; and, 497 B. C., Aristagoras, who headed the war faction, was obliged to fly, being a short time afterwards slain in Thrace (v. 36, 125). Hecatæus was one of the earliest writers in prose, and is said by Porphyry to have furnished materials for the history of Herodotus. His works were divided into three classes; histories, genealogies, and geographical pieces. The fragments, which are numerous, have been collected by Creuzer, *Historicorum Antiquissimorum Fragmenta*, p. 38–86. (See *Mémoires de l'Académie des Inscript.* tom. vi. p. 475; Vossius *de Hist. Græc.* p. 440; and Ulrici, *Charakteristik der antiken Historiographie*, Berlin, 1833.)

HECATÆUS, a native of Abdera, in Thrace, who was a contemporary of Alexander the Great, and lived at the court of Ptolemy, son of Lagus king of Egypt (B. C. 323–283). He had there an opportunity of becoming acquainted with the Jewish nation; for, after the battle of Gaza, where Ptolemy defeated Demetrius Poliorcetes, the whole of Palestine came into the possession of the king of Egypt; and a large body of Jews, charmed by the humanity and moderation of Ptolemy, went along with him into Egypt, and, amongst others, the high-priest Hezekiah. From him it would appear that Hecatæus received such minute information respecting the customs and habits of his countrymen, that he was induced to write a detailed history of the Jews. Both Josephus (Ap. i. 22, ii. 4) and Eusebius have preserved passages which are of great value, as confirming the accounts which we have elsewhere received of that people. In this work he described the nature and position of the country of Palestine, and gave an account of their fastnesses, Jerusalem, the temple, with the remarkable customs of the people and priests. In later times it has become a matter of dispute whether we ought to consider this work as the genuine production of Hecatæus. Scaliger regarded it as spurious, following the opinion of Herennius Philo, as quoted by Origen (*Contr. Cels.* lib. i.); but we think that Sainte Croix (*Exam. Crit. des Hist. d'Alexandre*, p. 558) has completely proved that it is the work of the author whose name it bears. (See *Hecatæi Abderitæ Philosoph. et Histor. Eclogæ.* Gr. et Lat. by Scaliger, Alton, 1730.)

HECATE, daughter of Perses and Asterie, or of Night, an ancient symbol of the moon, appearing in the Orphic hymns as the first and oldest divinity. She is there called the Almighty Queen of Heaven, the bearer of the keys of the world. As the goddess of fortune, she was the protectress of merchants and highways (Trivia). Hers was the name applied to the new moon, and therefore one of the names of Diana. (See DIANA.) She was commonly represented with three bodies, and was worshipped by the Greeks on the 30th day of every month, when the mullet and anchovy were offered to her.

HECATESIA, a yearly festival observed by the Stratonicensians in honour of Hecate. The Athenians also paid particular worship to this goddess, who was deemed the patroness of families and of children. From this circumstance the statues of the goddess were erected before the doors of the houses; and at every new moon a public supper was provided at the expense of the richest people, and set in the streets, where the poorest of the citizens were permitted to retire and feast upon it, whilst they reported that Hecate had devoured it. There were also expiatory offerings, to supplicate the goddess to remove whatever evils might impend on the heads of the public.

HECATOMB, in *Antiquity*, a sacrifice of a hundred beasts of the same kind, at a hundred altars, and by a hundred priests or sacrificers. The word is formed from the Greek ἑκατομϐη, which properly signifies a sumptuous or magnificent sacrifice. Some, however, derive it from the Greek ἑκατον, *centum*, an hundred, and βους, *bos*, bullock, from which the hecatomb should be a sacrifice of a hundred bullocks; whilst others derive it from ἑκατον and πους, *pes*, foot, and on that principle maintain that the hecatomb might consist of only twenty-five four-footed beasts. They add, that it did not matter what kind of beasts were chosen as victims, provided the contingent of feet was complete.

Respecting the origin of hecatombs, Strabo relates, that there were a hundred cities in Laconia, and that each city used to sacrifice a bullock every year for the common safety of the country; whence the institution of the celebrated sacrifice of a hundred victims, called *hecatombs*. Others refer the origin of hecatombs to a plague, with which the hundred cities of Peloponnesus were afflicted, and for the removal of which they jointly contributed to so splendid a sacrifice.

Julius Capitolinus relates, that for a hecatomb they erected a hundred altars of turf, and on these sacrificed a hundred sheep and a hundred hogs; and he adds, that when the emperors offered sacrifices of this kind, they sacrificed a hundred lions, a hundred eagles, and a hundred other beasts or animals.

HECATOMBÆON was the first month of the Athenian year, consisting of thirty days; beginning on the first new moon after the summer solstice, and consequently answering to the latter part of our June and the beginning of July. It had its name from the great number of hecatombs sacrificed in it.

HECATOMPOLIS, in *Ancient Geography*, a surname of the island of Crete, from its containing an hundred cities. The territory of Laconia also had anciently this name for the same reason; and the custom of these hundred cities was to sacrifice a hecatomb annually.

HECHINGEN, a city, the capital of the principality of Hohenzollern-Hechingen, in Germany. It is the residence of the prince, and, besides his palace, contains 550 houses, and 2310 inhabitants, who depend chiefly on the court, but make a few woollen cloths. It has three churches and some monasteries. Long. 8. 52. 58. E. Lat. 48. 21. 15. N.

HECLA, a volcano of Iceland, situated in the southern part of the island. See ICELAND or ISLAND.

HECTOR, the eldest son of Priam and Hecuba, and heir to the throne, was the most valiant defender of Troy. He was married to Andromache, daughter of Eëtion, to whom he was tenderly attached, and had by her Astyanax and Laodamas or Amphineus. He had the chief command of the troops during the Trojan war, and the valour which he displayed showed how well qualified he was to discharge that important office. He fought in single combat with Ajax, and obliged Diomede to fly; but Achilles was his natural enemy, though it was not till the tenth year of the siege that they met in battle. Hector took advantage of the absence of Achilles, who was indignant with Agamemnon for having taken Briseis from him, and, approaching the camp of the Greeks, began to set fire to the ships. Patroclus appeared in the armour of Achilles, and fell by the hands of Hector. This drew forth Achilles, who proceeded to the field of battle, and, pursuing Hector through the plain, put him to death. He then dragged his dead body thrice round the walls of the city, and, not satisfied with this, declared that the body should be given as a prey to birds and dogs. The following night, however, the tears of the aged Priam induced him to change his resolution, and the body of Hector was committed to the flames within the walls of his native city. Such is the scene which terminates rather abruptly the poem of the Iliad. Hector had a monument at Thebes, to which the Thebans maintained that his bones had been removed from Troy. (Homer, *Iliad*; Pausanias, ix. 18.)

HECUBA, the daughter of Dymas (Hom. *Il.* ii. 718), or of Cisseus (Eurip.), or of the river Sangarius and Metope (Apollodor. iii. 12, 5), married Priam, and had by him nineteen sons and a great number of daughters. Of the sons, the most celebrated were Hector, Paris, Deiphobus, Helenus, Polydorus, Troilus; and of the daughters, Polyxena, Cassandra, Creüsa, and Laodice. When Hecuba was pregnant of Paris, she dreamed that she had brought into the world a burning torch, which reduced her husband's palace and all Troy to ashes. This dream was interpreted to mean that the son she should bring into the world would prove the destruction of his country. To avoid this, she exposed Paris as soon as he was born; but he was saved by shepherds, and afterwards acknowledged by his parents. During the Trojan war she witnessed the death of nearly all her children, and at last saw her husband murdered before her eyes. (Virg. *Æn.* ii.) When Troy was taken, Hecuba fell to the lot of Ulysses, who was not particularly satisfied with his share of the booty. They set sail and landed in the Thracian Chersonnesus, where Hecuba learned that her son Polydorus had been murdered by Polymnestor, the ancient friend of the Trojans, to whom Priam had sent him. She proceeded with some Trojan women to the house of Polymnestor, and having torn out his eyes, put to death two of his sons. Having been deprived of her senses, Hecuba traversed the whole of Thrace, and made it resound with her fury and despair. In pity for her misfortunes, the gods changed her into a bitch. (Hygin. iii.; Ovid. *Met.*) Some, however, say that she was carried to Lycia by Apollo. (Paus. x. 27.)

HEDINGHAM CASTLE, a town of the county of Essex, in the hundred of Hinchford, forty-seven miles from London, whose inhabitants amounted in 1801 to 1065, in 1811 to 1052, in 1821 to 1163, and in 1831 to 1220. Within half a mile of it is another town, Sible Hedingham, whose population amounted in 1801 to 1865, in 1811 to 1702, in 1821 to 2060, and in 1831 to 2194.

HEDON, or HEYDON, a borough town of Holderness, in the east riding of Yorkshire, situated on a creek connected with the river Humber. It is governed by a mayor and aldermen; and returned two members to parliament till the disfranchisement of 1832. The inhabitants amounted in 1801 to 592, in 1811 to 780, in 1821 to 902, and in 1831 to 1080.

HEDWIG, JOHN, a botanist of eminence, was born at Cronstadt, in Transylvania, in October 1730, being descended of a family originally Saxon. In his earlier years he discovered a strong attachment to the study of botany, in which he afterwards excelled. On the death of his father, he was left with very little to support him. The fame of Gerlach led him to Zittau in Lausatia, where he prosecuted his studies for three years, assisted by the generosity of different benefactors. He studied philosophy, mathematics, and medicine, at Leipsic, where he was distinguished for his diligence and regularity of deportment. He afterwards assisted Ludwig in the arrangement of his library, anatomical museum, and botanical garden; and in 1756 he entered into the family of Bose, professor of botany, for whom he prepared plants for demonstration, and attended patients in the public infirmary. In 1759 he took the degree of doctor of physic, and practised at Chemnitz in Saxony, where he entered into the married state.

It was customary with him to walk into the fields at five in the morning to contemplate the beauties of nature, to visit his patients after breakfast, and to spend the afternoon and evening in examining such plants as he had collected during his early excursions. He particularly applied himself to the investigation of the grasses, and also of the whole cryptogamic class of plants, which botanists at that period had greatly neglected. At the age of forty he taught himself to draw and paint the objects which he had discovered, and the compound microscope which he received from Koehler of Dresden greatly assisted him in those researches. By the persuasion of his second wife, whom he married about a year after the death of his first, he was prevailed on, in 1781, to settle at Leipsic, where he published his great work, entitled *Fundamentum Historiæ Naturalis Muscorum Frondosorum*, in which he gave an accurate history of mosses from his own observations, illustrated the whole with appropriate plates, and discovered such sagacity, industry, and profound research, as astonished all the botanists of his time, and induced them to pay more attention to this curious subject. He gained the prize given by the Petersburg Academy for his curious and excellent treatise, entitled *Theoria Generationis et Fructificationis Plantarum Cryptogamicarum, Linnæi more, propriis Observationibus et Experimentis superstructa*, published in 1784.

His literary reputation increased his medical practice; he was chosen physician to the town-guards in 1784, and two years afterwards he became professor of medicine in the university. In 1789 he was chosen ordinary professor of botany, and superintendent of the physic garden. He corrected the false notions which then prevailed respecting the efficacy of the medulla or pith, the perforation of the flowers, the excrements of plants, the increase of the vessels of vegetables, and the genuine use of the leaves. By the death of a favourite daughter, who sunk under a consumption at the age of sixteen, he received a severe shock; and a catarrhal affection, followed by a nervous fever, deprived the world of his services on the 7th of February 1799, in the sixty-eighth year of his age.

It is agreed on all hands that Dr Hedwig was a man of great modesty, which is the usual concomitant of extraordinary talents; that he was friendly and benevolent, upright in his dealings, not solicitous about wealth, and free from parade both in teaching and in writing. In the forests of Hispaniola there is an evergreen tree, the name of which, *hedwigia balsamifera*, was intended to perpetuate his memory. He left behind him two sons, one a painter of eminence at Magdeburg, and the other Dr Romanus Adolphus Hedwig, who is known to the botanical world by several publications.

HEGIRA, in *Chronology*, a celebrated epoch among the Mahommedans. The word is Arabic, formed from חגורה, *hagirah*, flight, from חגר, to fly, to quit one's country, family, and friends. The event which gave occasion to this epoch was Mahommed's flight from Mecca. The magistrates of that city, fearing that his impostures would raise a sedition, resolved to expel him; and this, accordingly, they effected, in the year of our Lord 633, on the evening of the 15th or 16th of July. To render this epoch more creditable, the Mahommedans affect to use the word *hegira* in a peculiar sense for an act of religion, by which a man forsakes his country, and gives way to the violence of persecutors and enemies of the faith; and they add, that the Corashites, being then the strongest party in the city, obliged their Prophet to fly, because they were not able to endure his abolishing idolatry. This flight was not the first of Mahommed's, but it was the most famous. It happened in the fourteenth year after he had assumed the character of Prophet, and promulgated his new religion. The orientals do not agree with us as to the time of the hegira. Among the Mahommedans, Amasi fixes it to the year of Christ 630, and from the death of Moses 2347; and Ben Cassem to the year of the world 5800. According to the Greek computation, among the Christians, Said Ebn Batrik refers the hegira to the year of Christ 614, and of the creation 6114. Khondemir relates that it was Omar, the second caliph, who first established the hegira as an epoch, and appointed the years to be numbered from it. At the time he passed this decree, seven years had already elapsed. This establishment was made in imitation of the Christians, who, in those times, reckoned their years from the persecution of Diocletian. But there is another hegira, and that earlier too, though of less eminence. Mahommed, in the fourteenth year of his mission, was obliged to relinquish Medina. The Corashites had all along opposed him very vigorously, as an innovator and disturber of the public peace; and many of his disciples, not enduring to be reputed followers of an impostor, desired leave of him to abandon the city, from an apprehension of being obliged to renounce their religion. This retreat forms the first hegira. These two hegiras the Mahommedans, in their language, call *hegiratan*. The years of the hegira consist only of 354 days. To reduce these to the Julian calendar, or to find what Julian year a given year of the hegira answers to, reduce the year of the hegira given into days, by multiplying by 354, divide the product by 365, and from the quotient subtract the intercalations, that is, as many days as there are four years in the quotient; and lastly, to the remainder add 622.

HEIDELBURG, a city of the duchy of Baden, in Germany, in the circle of the Neckar, and capital of the bailiwick which takes its name from the city. It is situated on the river Neckar, over which is a bridge 700 feet in length. It is in a most romantic situation, the interest of which is heightened by a number of antique buildings and ruins in its vicinity, the most striking of which are the Geisberg with its lofty cupola, the Kaiserstahle on the right bank of the Neckar, the Heiligenburg, with the ruins of the castle and of the monastery, and Schloss in which is the celebrated wine cask, now in a dilapidated state. The city is walled, has a good high street, and four open places or markets; contains two Lutheran, one Reformed, and one Catholic church, a synagogue, four hospitals, and, including the suburbs, 1192 houses, with 10,500 inhabitants. It is the seat of a most respectable university, with forty-five teachers of different branches, and 600 pupils, to which belongs a library of 30,000 volumes; and several institutions for professional branches of education. It is not a place of much commerce; but some linen and woollen goods are made, and various kinds of leather are prepared. It has several breweries, and some builders of barges and boats, and a considerable fishing, especially of white fish, whose scales are valued as being formed here into artificial pearls. Long. 8. 36. 18. E. Lat. 49. 24. 43. N.

HEIDENHEIM, a town of the kingdom of Wurtemberg, in the circle of Jaxt, the capital of a bailiwick of the same name, which extends over 208 square miles, and contains 26,500 inhabitants. The town is situated on the river Brentz, and has 300 houses, with 2320 inhabitants, occupied in cotton manufactures, ironmongery, and cutlery.

HEILBRON, a city of the kingdom of Wurtemberg, in the circle of the Neckar, the capital of a bailiwick of the same name, situated on the river Neckar, over which is a covered wooden bridge. It is surrounded with high walls and ditches, contains three Lutheran and two Catholic churches, a council-house, an hospital, an orphan-house, 934 dwelling-houses, and 7350 inhabitants. There is a considerable gymnasium, with a library of 12,000 volumes. Around the city are nearly 1600 acres of land occupied as vineyards, which produce very good wine. It is a place of manufacturing industry, preparing snuff, white lead, brandy, oil, vinegar, paper, cloth, and articles of gold and silver, and jewellery. Long. 9. 3. 25. E. Lat. 48. 7. 48. N. Near the city is a hunting seat of the king, formerly a fortress.

HEILIGENSTADT, a town of the province of Lower Ens, in Austria, a few miles distant from Vienna. It contains some manufactories of paper, silks, cotton twist, and oil refining. There is an hospital or school for the daughters of the officers of the army. The inhabitants are 2650.

HEILIGENSTADT, a city, the capital of the circle of the same name, in the province of Saxony, in Prussia. It stands at the junction of the rivers Geislade and Leine. It is surrounded with walls, contains four churches, 560 houses, and 4530 inhabitants, who are employed in the woollen trade, and in distilleries.

HEILSBERG, a city, the capital of a circle of the same name, in the province of East Prussia, situated on the river Alle. It is the residence of the Catholic bishop of Ermeland, contains two Catholic and one Lutheran church, with 348 houses, and 2850 inhabitants. Long. 20. 37. 50. E. Lat. 54. 3. 50. N.

HEINECCIUS, JOHN GOTTLIEB (Theophilus), one of the most celebrated jurisconsults Germany has produced, was born at Eisenberg, in the principality of Altenburg, on the 21st of September 1681. His father, who was regent of the school of that place, and a man of talents superior to his situation, made him early acquainted with the masterpieces of antiquity, and thus inspired him with a decided taste for study. Heineccius (or more properly *Heinecke*) was still very young when he had the misfortune to lose his father; but in his elder brother, who was pastor at Goslar, he found a monitor and guide, who, by his care and instructions, in some measure supplied the place of his deceased parent. From Goslar he proceeded to Leipsic, where he attended the prelections of the illustrious professor who then adorned the university of that place. In 1702 he published there a thesis *De insignibus sacerdotalibus Apostolorum;* a subject which might have afforded scope for a great display of erudition, but which, as treated by Heineccius, did not indicate the real talent of the author. In this thesis he attempted to combat some assertions of Baronius. Heineccius, the following year, took his degree in arts, and then returned to his brother, who wished him to enter the ecclesiastical profession. But having satisfied his brother as to the reasons which induced him to decline taking orders, he soon afterwards accompanied the latter to Halle, where he became tutor to the sons of Count Golofkin. In 1708 he was admitted into the philosophical faculty of that city, and there published an academical dissertation *De Genuina Christi Æra e Nummis et Inscriptionibus illustrata,* in 4to, republished in 1735, with notes by Liebknecht. Two years afterwards he obtained a chair, which he filled with ability, but without any material increase of reputation. All his studies, however, he regarded as merely preparatory to that of jurisprudence; but it was not until 1716, when he was admitted into the faculty of law, being then in the thirty-sixth year of his age, that he disclosed his designs. His inaugural thesis *De Origine et Indole Jurisdictionis Patrimonialis,* which was considered as a masterpiece, procured him the esteem of his judges; and his Abridgment of the Antiquities of the Roman law confirmed the high idea which had been formed of his merit, whilst it extended his reputation throughout all Germany. In 1721 he was appointed to the chair of law, a situation which he filled with an ability and success that reflected credit on the university; and new works, which succeeded one another with inconceivable rapidity, added daily to his reputation. But although he enjoyed the highest consideration, yet finding his allowances insufficient to enable him to bring up his family, he was obliged, in 1724, to accept a chair which had been offered him, with suitable appointments, in the university of Franeker. Three years afterwards, on the invitation of the king of Prussia, he repaired to Francfort-on-the-Oder, whence this prince obliged him, in 1733, to return to Halle. Everywhere his prelections were attended by an extremely numerous concourse of pupils, attracted by the solid instruction, the luminous method, and the clear and elegant diction, for which this illustrious professor was distinguished. His life, barren of incidents, was passed in the prosecution of useful labours; yet notwithstanding his continual occupation, he discharged in an exemplary manner all the duties of society. But sedentary habits and unremitting application at length ruined his health, and he died generally regretted, on the 31st of August 1741, at the age of sixty. A list of his numerous works will be found in the *Bibliothèque Germanique,* tom. ii. part 1st. The principal are, 1. Fundamenta styli cultioris una cum Sylloge exemplorum, Halle, 1719, in 8vo; 2. Elementa Philosophiæ Rationalis et Moralis, quibus præmissa Historia Philosophica, Francfort, 1728, in 8vo; 3. Antiquitatum Romanarum Jurisprudentiam illustrantium Syntagma juxta seriem Institutionum Justiniani, Halle, 1718, in 8vo; 4. Elementa Juris Naturæ et Gentium, Halle, 1738, in 8vo; 5. Prælectiones Academicæ in H. Grotii *de Jure Belli ac Pacis* libros, Berlin, 1744, in 8vo; 6. Prælectiones Academicæ in Sam. Puffendorf *de Officio Hominis et Civis,* ibid. 1742, in 8vo; 7. Historia Juris Civilis Romani ac Germanici, Halle, 1735, in 8vo; 8. Elementa Juris Civilis secundum ordinem Institutionum, Franeker, 1725, in 8vo; 9. Elementa Juris Civilis secundum ordinem Pandectarum, Francfort, 1756, in two vols. 8vo; 10. Elementa Juris Cambialis, Amsterdam, 1743, in 8vo. The works of Heineccius were collected and published by Uhl, professor at Francfort-on-the-Oder, under the title of *Opera ad Universam Jurisprudentiam, Philosophiam, et Litteras humaniores pertinentia,* Geneva, 1744–1748, in eight vols. 4to, reprinted in the same city, with additions, 1771, in nine vols. 4to; and to these two editions a supplementary volume was at the same time added. After the works of Cujas, this collection is perhaps the most valuable and necessary to a student of jurisprudence. The commentary of Heineccius on the Julian and Papian laws would alone suffice to place him in the rank of the greatest jurisconsults; and if his authority has decreased somewhat in Germany, which we believe to be the case, it is because his successors, profiting by his researches, have been enabled to surpass him. We are also indebted to Heineccius for editions of the *Jurisprudentia Romana et Attica,* Leyden, 1738, in three vols. folio, with a learned preface prefixed to the first volume. (A.)

HEINSIUS, ANTONY, grand pensionary of Holland by successive quinquennial re-elections, from the year 1689 until his death on the 3d of August 1720, at the age of seventy-nine, was one of the statesmen who, during this memorable period, exercised the greatest influence on the affairs of Europe. Marlborough, Prince Eugene, and Heinsius, formed the famous triumvirate so resolutely determined to humiliate France, and which steeped in bitterness the declining years of Louis XIV He saw his country avenged for the misfortunes which that monarch had inflicted on it in 1672; and he also saw himself avenged; for, after the peace of Nimeguen, having been sent to the court of France on affairs connected with the principality of Orange, he had experienced the ill nature of the haughty and insolent Louvois, who did all but threaten to have him shut up in the Bastille. Heinsius commenced his public career as councillor-pensionary of the town of Delft; and, faithful to his commission, he sometimes, in this capacity, pursued a line of conduct not calculated to make him be considered as a person devoted to the interests of the stadtholder. But at a subsequent period the Prince of Orange honoured him with the most unlimited confidence; and Heinsius, in return, rendered him the most important services. He continued to enjoy the same favour when that prince became king of England, and even after he had been succeeded by Queen Anne. After the death of King William, however, his political conduct in regard to France appears to have experienced some modification, though not to such an extent as to enable the French court to flatter themselves with any decided change in his views. Voltaire, in his *Siècle de Louis XIV.*, represents Heinsius as a Spartan, proud of having humbled the king of Persia, when, in 1709, Louis sent his minister De Torcy to the Hague to sue for peace. De Torcy himself, in his *Mémoires* (tom. ii. p. 3), describes the grand pensionary "as a man of consummate ability in the management of affairs, cold in his manners, polished in his conversation, having nothing repulsive in his demeanour, and rarely warmed, far less excited, by debate. His exterior," adds the same authority, "was simple, and his house plain; an establishment composed of a secretary, a coachman, a laquais, and a female servant, by no means indicated the credit of a prime minister." De Torcy further informs us that "he was never accused, either of seeking to prolong the war on account of the consideration which its continuance necessarily gave him, or from any views of private interest or personal ambition." This is the testimony of an enemy, and cannot, therefore, be suspected of partiality. M. de Haren, in a note to his poem of the *Gueux*, renders the same justice to the calmness and sobriety of Heinsius; but supposes that his seclusion from society prevented him acquiring that knowledge of the human heart which a statesman ought to possess, and thus led him to disregard intelligence, of which one better acquainted with mankind would at once have discerned the importance. "Hence, when the refugee pastor Basnage, in 1707, apprised him of a certain secret convention entered into between the courts of Vienna and Versailles to defeat the projected enterprise against Toulon, Heinsius neglected this information, not imagining it possible that a minister of the gospel could be better initiated in the secrets of cabinets than a grand pensionary." But Fagel did not share this security, nor was it justified by the event. M. de Haren also mentions a singular anecdote of Heinsius. Soon after the peace of Utrecht he was attacked by the pestilence in the midst of the Hague, and cured without the appalling fact being suffered to transpire. On this occasion he displayed admirable prudence and self-possession. The secret was confined to himself, his physician, and Count de Wassenaer-Starrenburg, and was kept with inviolable fidelity until after his death. Heinsius was the last of the magistrates and ministers of the states of Holland who wore the costume of the gown and band. (A.)

HEINSIUS, *Daniel*, a Dutch philologist, was descended of a distinguished family, and born at Ghent in 1580. In the troubles of the Low Countries, his father, a man without ambition, but of an elevated character, took a part, which proved fatal to his own repose and that of his family. Daniel was sent to Veere, in Zealand, whence, with his parents, he passed over into England; and soon afterwards he accompanied them on their return to Holland. They established themselves first at Delft, then at the village of Ryswick, and lastly at the Hague. The father of Heinsius consoled himself under his misfortunes by devoting his attention to the education of his son; but circumstances obliged the latter to return to Zealand, where he was placed under good masters, though at first he showed no great disposition to profit by their instructions, and preferred play to study. Having, however, evinced a predilection for verse, he composed, at the age of ten, a Latin elegy, which gave a favourable presage of future eminence. As his father intended him for the bar, he was, at the age of fourteen, sent to Franeker to study law; but this intention was defeated by the passion which he had conceived for Greek. Having remained about six months at Franeker, he passed thence to Leyden, whose rising university already shone with great lustre. Here he attracted the notice of Scaliger, whilst Marnix de Sainte-Aldegonde, and the elder Douza, honoured him with particular attention. Between Heinsius and Scaliger there was established an intimacy, founded on affection on the one hand and veneration on the other. A noble emulation now fired the soul of Heinsius, who, though ambitious to rival, despaired of ever approaching so great a model, and spent many sleepless nights in the most anxious and unremitting labour. Douza, however, judiciously attempted to moderate the ardour of his young friend without repressing his ambition, and procured him agreeable relaxation by occasionally carrying him to his country residence at Nordwick, two leagues distant from Leyden. Heinsius was only eighteen when he was attached to the university of Leyden, first to explain the Latin classics, and not long afterwards the Greek; and at the age of twenty-five he was appointed to the chair of history and politics. Scaliger, who died in 1609, had wished to leave him the whole of his library; but Heinsius only accepted part of it. On the death of Paul Merula, the office of librarian to the academy of Leyden devolved on him, and he also discharged the duties of secretary. His increasing reputation now attracted to Leyden a great number of pupils; and as other countries envied Holland the possession of a man of such distinguished merit, propositions were made to him on the part of France, Germany, and Italy. In 1616 Heinsius writes that the Italians had paid him flattering compliments, and that he was strongly solicited to repair to Rome. "Valde Itali nos amant, et jam clanculum εἰς την ἑπταλοφον, ingenti præmio, videndæ urbis causa, invitamur." If we may credit Balzac, Heinsius, in his relations with Rome, acted with more adroitness than sincerity ("ménageait un peu la chèvre et le chou"). In the apology for his *Herodes Infanticida* against the strictures of Balzac, a work which he sent to Rome, a passage of the text in which the pope is mentioned as *ipsum Ecclesiæ caput*, is rectified in the *errata* into *ipsum Ecclesiæ Romanæ caput.* "The text," says Balzac, "was for Rome, the errata for Leyden; on the one hand Heinsius wished to please the pope, who would probably not read his errata, and on the other to have the means of justifying himself to the ministers, if he should be accused of being a bad Huguenot, and of keeping up an understanding with the enemy." But, in the first place, this duplicity is irreconcilable with the known character of Heinsius; secondly, it was not Heinsius himself who edited his *Epistola qua Dissertationi D. Balzacii ad Herodem Infanticidam respondetur*, but Boxhorn; thirdly, the erratum in question is not placed, as usual, at the end of the volume, but is interposed between the dedication and the Epistle; and, lastly, it appears from the statement of Thysius, in his funeral oration on Heinsius, that, in the propositions made to him by Pope Urban VIII. and Cardinal Barberini, in order to draw him to Rome, nothing had been stipulated in reference to religion. Various honours were, however, conferred upon Heinsius. The republic of Venice created him knight of the order of St Mark; the king of Sweden, Gustavus Adolphus, named him his historiographer, to which he added the title of privy councillor; and the states of Holland rewarded him for his attachment to his country, and the refusal of various foreign propositions, by choosing him their historiographer, and attaching to the title a liberal salary. Heinsius alienated many friends by accepting, in 1618, the office of secretary to the famous synod of Dordrecht. At the age of thirty-five he married Ermengarde, sister of Janus Rutgersius, by whom he had a son, Nicolas, and a daughter, Elizabeth, and whom he survived many years. Being endowed with a strong constitution, Heinsius, notwithstanding his unremitting labours, was rarely indisposed; but a particular symptom accompanied the decline of his days, namely, an almost total extinction of memory. He died at Leyden on the 23d of February 1665, when he had nearly completed the eighty-fourth year of his age. Heinsius was not less remarkable for the excellence of his character than for his vast erudition. Modesty, sensibility, benevolence, and candour, formed its distinctive features; and, though he was naturally grave, he loved to joke with his friends, and to indulge in innocent pleasantries. He had some disputes, more or less serious, with Salmasius, Balzac, and a minister of the gospel called John de Croy, who had sought his acquaintance by means of adulation and sycophancy; but being naturally of a mild and peaceable disposition, he avoided controversy as much as possible, and had probably fewer enemies than almost any eminent man of his time. Notwithstanding his great knowledge, or rather because he knew so much, he adopted as his motto, *Quantum est quod nescimus*. The works of Heinsius are, 1. Editions of the Greek and Latin classics, or works of criticism connected with them, amounting to eighteen in number; 2. Latin poetry, particularly *Iambi*, *Auriacus* a tragedy, *Herodes Infanticida* also a tragedy, *De Contemptu Mortis* a poem in four books, fugitive pieces under the titles of *Extemporanea* and *Juvenilia*, and some Greek poems; 3. Latin harangues, which have been collected under the title of *Orationes Varii Argumenti*, Leyden, 1615, 1620, in 12mo; 4. Rerum ad Sylvam Ducis atque alibi in Belgio aut a Belgis anno 1629 gestarum Historia, Leyden, 1631, in folio. (A.)

Heinsius, *Nicolas*, son of the preceding, was born at Leyden on the 29th of July 1620, and there received, under the auspices of his father, the most careful education. The same studies in which his parent had distinguished himself became in some measure the passion of his life. He visited England in 1642; but not finding the English very communicative of their literary treasures, he made only a short stay in their country, where, however, he collated some manuscripts of Ovid, a poet whose works he had already undertaken to illustrate. In 1644 he repaired to Spa for the benefit of the waters, from which he derived great advantage, and on his return traversed Belgium, where he formed useful connections, and acquired new riches for his Ovid. The following year he revisited Spa, and towards autumn proceeded to Paris, where his merit and his name procured him the friendship of the most eminent men, and opened all the libraries to his researches, and where also he published a collection of Latin poems, which met with the most flattering success. Next year he visited Rome, where, through the good offices of Holstenius, he obtained access to the inedited Greek work of John Lydus on the Roman magistracies, and was otherwise well received. From Rome he proceeded to Naples, but the troubles which broke out in that city in the summer of 1647 obliged him to return to Leghorn, whence he proceeded first to Venice and next to Padua, where, under the title of *Italica*, he published two books of elegies in 1648. After an absence of three years he returned to Leyden; but his stay there was short, for, having yielded to the solicitations of Queen Christina of Sweden, who had invited him to join her literary court, he set out for Stockholm, where he established himself in 1650. The queen undertook to purchase books and manuscripts for his library; but Heinsius, unwilling to take immediate advantage of the generosity of Christina, made advances of which he afterwards found great difficulty in obtaining the reimbursement. At Stockholm he met the ardent enemy of his father, Salmasius, who, in concert with Michon Bourdelot, endeavoured to overwhelm him with every species of annoyance, and to drive him from the court in disgust. But the muse of Heinsius avenged him on his implacable adversary; and nothing but the obstinate malevolence of Salmasius can excuse a piece so virulent as the *Scazon in Alastorem*, which we find in his poems. During the following years Heinsius traversed Italy in all directions, to make interesting acquisitions for Christina, whether in books and manuscripts, or in medals and antiquities. Salmasius had not ceased to intrigue against him during his absence; but the credit of Bochart counterbalanced this hateful influence, and Salmasius died in 1653, whilst proceeding to take the benefit of the waters of Spa. Next year Heinsius returned to Stockholm, but it was only to demand of Christina, whose tastes began to take another direction, permission to retire, and the reimbursement of the sums which he had expended. Her letter, which is in the form of a *placet*, and exceedingly remarkable, may be found in the *Sylloge Epistolarum* of Peter Burmann (tom. v. p. 766, et seqq.). The Queen of Sweden attempted to dissuade Heinsius from carrying his resolution into effect; and, on the 7th of October 1654, the states of Holland appointed him their resident at Stockholm, which induced him to remain some time longer in the Swedish capital. But in the month of February 1655, having lost his father, he resolved to return to his native country. Like Grotius, he was at the point of death on the road; but, more fortunate than that illustrious man, he escaped from a malady which detained him thirty-six days at Dantzig. On his arrival at the Hague, the states, in order to testify their satisfaction with his conduct in Sweden, offered him his choice of the Prussian or Danish legations; but the state of his health prevented his accepting either of those appointments; and, in 1656, he established himself at Amsterdam, where he was appointed secretary. The repose of his latter days was disturbed by a process brought against him by a courtesan, called Margaret Wullen, whom he had known at Stockholm, and who pretended to have rights over him which he refused to recognise. In 1658 he resigned his secretaryship, and then went to establish himself at the Hague, where Virgil, Valerius Flaccus, the Latin muse, and literary correspondence, occupied all the leisure which the process in question left at his disposal. It appears that he also meditated continuing the Annals of Grotius after 1609, but the design was not carried into execution. Being again appointed resident at the court of Sweden, he set out for that country, and on the road met his debtor Christina, who was on her way to Denmark; she received him kindly, and lavished on him the most flattering distinctions, but forgot to pay her debt, which would have been much more acceptable to Heinsius. About this time, also, Louis XIV. included him in the number of the foreign men of letters to whom he granted pensions; but the post which he occupied at the court of Sweden prevented his enjoying this favour. He never neglected his favourite studies; and it was therefore with regret that, in the year 1667, he found himself charged with a mission to the czar of Muscovy. In 1671 he once more returned to the Hague, but with his health much impaired; and next year the public calamities forced him to withdraw to East Friseland, then to Bremen, Minden, Paderborn, Mayence, Worms, Spire, and Heidelberg. Upon his return to the Hague he occupied himself principally with Valerius Flaccus and Petronius; but being entangled in new processes, he withdrew to Maarssen, in the province of Utrecht, where he established himself about the month of December 1674. This retreat, however, did not shelter him from the annoyances to which he was exposed, and at length he sought repose in the small town of Viane, where his friend Grævius took pleasure in visiting him. Family affairs having recalled him to the Hague, he died there, on the 7th of October 1681, at the age of sixty-one, having expired in the arms of Grævius, whom he charged with his last instructions. Nicolas Heinsius published or wrote, 1. *Claudian*, with notes, Leyden, 1650, in 12mo, and Amsterdam, 1665, in 8vo; 2. *Ovid*, with notes, ibid. 1652, 1661, 1668, in three vols. 12mo; 3. *Virgil*, without notes, Amsterdam, 1676, and Utrecht, 1704, in 12mo; 4. *Valerius Flaccus*, without notes, Amsterdam, 1680, in 12mo; 5. Remarks on Silius Italicus, Petronius, and Phædrus; 6. A great number of Letters, which may be found in the *Sylloge Epistolarum* of Burmann, in 5 vols. 4to; 7. *Poemata*, the best edition of which is that of Elzevir, Amsterdam, 1666, in 8vo, dedicated by the author to the Duke of Montausier. Peter Burmann the younger also published *Nic. Heinsii Adversariorum libri v.* followed by the notes of Heinsius on Catullus and Propertius; and the same author also cites inedited notes of Heinsius on Tacitus, on the dialogue *De Claris Oratoribus*, and on the *Catalecta veterum Poetarum*. (A.)

HEIR, in *Law*, signifies the person who succeeds another by descent.

Heir-Apparent is a person so called in the lifetime of his ancestor, at whose death he is heir-at-law.

Heir-Presumptive, is one who, if the ancestor should die immediately, would, in the present circumstances of things, be his heir; but whose right of inheritance may be defeated by the contingency of some nearer heir being born.

HEIRSHIP MOVEABLES, in *Scotch Law*, the best of certain kinds of moveables, which the heir of line is entitled to take, besides the heritable estate.

HEISTER, LAURENCE, an eminent physician, surgeon, and anatomist, was born at Frankfort-on-the-Maine, in the year 1683. After being educated in the universities of Germany, he prosecuted the study of anatomy and surgery at Amsterdam in 1706; next year acted as surgeon in the Dutch camp in Brabant; and afterwards studied medicine at Leyden under the celebrated Boerhaave, at the expiration of which he took his degrees. In 1709 he was appointed physician-general to the Dutch military hospitals, by which means he acquired vast experience, both in medicine and surgery. In 1710 he was appointed professor of anatomy and surgery at Altdorf, where he acquired great celebrity by his lectures and writings. In 1720 he removed to the university of Helmstadt, where he continued during the remainder of his life. The Czar Peter invited him to Russia; but the esteem in which he was held by different sovereigns induced him to remain in Germany. His death happened in the year 1758, in the seventy-fifth year of his age. Dr Heister was uncommonly industrious, and wrote a prodigious number of books; but his reputation was principally derived from his singular skill and success in surgery. He is particularly known by his *Compendium Anatomicum*, which has been frequently reprinted, and translated into different languages. His chief surgical publication is his Institutions of Surgery, which was long considered as a standard book of the kind, till it was superseded by more modern systems. As a physician his principal works are, 1. Observationes Medico-miscellaneæ, Theoreticæ et Practicæ; 2. De Medicinæ Mechanicæ Præstantia; 3. Compendium Institutionum et Fundamentorum Medicinæ. A collection of Medical, Chirurgical, and Anatomical Observations was published after his death, in two volumes quarto.

HEITERSHEIM, a town of the duchy of Baden, Germany, and in the circle of Treisam. It is the capital of a bailiwick, in which are a town, nineteen villages, and 8940 inhabitants. The town is situated at the foot of the Black Forest, on a brook running to the Rhine. It has a fine castle, which was once the residence of the order of St John. The houses are 340, the inhabitants 1630. Lat. 47. 52. 34. N.

HELAI, a village of Hindustan, in the province of Sinde, situated on the road from Tatta to Hyderabad, near the Indus, where this river is three fourths of a mile wide, and from four to five fathoms deep. Lat. 24. 52. N.

HELENA, ST, an island in the Atlantic Ocean, off the coast of Southern Africa. It belongs to no group of islands, but stands entirely alone in the ocean, about twelve hundred miles from land. To the sea it presents, throughout its whole circumference, which is twenty-eight miles, only an immense wall of perpendicular rock, from 600 to 1200 feet in height. Its general aspect is bleak and dreary, but on passing through the wall of rock by one of the few openings which nature has left, the scene is agreeably changed. Verdant and even beautiful patches of ground are interspersed amongst the rocks; and on the summit is a fertile plain, consisting of about 1500 acres, covered with grass, and capable of every species of cultivation. The loftiest eminence is called Diana's Peak. It is situated nearly in the centre of the island, and rises to the height of 2700 feet above the level of the sea. In this, as in most of the African islands, the rocks consist chiefly of basalt. Limestone of the best quality is also abundant, and various kinds of volcanic rocks are scattered about the island in considerable quantities. There are only four small openings in the rock, which, like a natural bulwark, surrounds St Helena; and on the largest of these, where alone a little beach appears, James Town has been built. It is entered by an arched gateway, within which is a handsome parade, about one hundred feet square. Here are the government-house and the main guard-room. Within the former is the residence of the governor and the public officers. The principal street in James Town contains about thirty houses, most of which are neat and well built. The number of English families upon the island amounts to between two and three hundred. St Helena is chiefly of importance as a place of refreshment for vessels returning from the East Indies. There is abundance of excellent water, and fresh provisions can be obtained here, though they are neither so plentiful nor so cheap as those of the Cape of Good Hope.

St Helena was first discovered by the Portuguese in 1502, on St Helena's day; whence its name. They stocked it with different kinds of useful animals; but whether they ever settled a colony on it or not is uncertain. The Portuguese having either abandoned or never taken possession of it, the Dutch became its masters, and kept possession of it till the year 1600, when they were driven out by the English. In 1673 the Dutch retook it by surprise; but a short time afterwards it was recovered by the brave Captain Munden, who also took three Dutch East Indiamen then lying in the harbour. On this occasion the Hollanders had fortified the landing place, of which there is only one on the island, and erected batteries of great guns to prevent a descent; but the English having knowledge of a small creek, where only two men abreast could creep up, climbed to the top of the rock in the night, and appearing the next morning behind the batteries, the Dutch were so terrified that they threw down their arms, and surrendered at discretion. This creek has since been fortified, and a battery of large cannon placed at the entrance; so that now the island is rendered perfectly secure against all regular approaches or sudden attacks.

St Helena has acquired no small celebrity as the place of confinement of Napoleon Bonaparte, ex-emperor of France. The illustrious exile arrived there on the 17th of October 1815, and remained in the island till his death, on the 5th of May 1821. He was buried in a retired spot not far from Longwood, the place of his residence. Long. 5. 43. W. Lat. 15. 55. S.

HELENA, the daughter of Leda (wife of Tyndareus, king of Sparta), and of Jupiter, who, being changed into a swan, had obtained the favours of the queen. In consequence of this amour she produced two eggs, from one of which sprang Castor and Clytemnestra (both mortal, as being children of Tyndareus), and from the other Pollux and Helena, who were considered immortal, as the offspring of Jupiter. (Clement. Alex. *Cohort.* p. 26; Pind. *Nem.* x. 150.)

From her infancy she possessed that dazzling beauty which became in the course of time so fatal to her admirers. About the age of ten she was carried off by Theseus, who concealed her at Aphidnæ, in Attica, under the protection of his mother Æthra. (Plut. *Thes.* 31; Hygin. 79.) She was rescued by her brothers, Castor and Pollux, who discovered her place of concealment by means of Academus. They carried off at the same time Æthra, who henceforth remained the captive slave of Helen. (Paus. x. 25.) This adventure did not prevent her from being sought in marriage by all the young princes of Greece. The most celebrated of her suitors were Menelaus, Diomede, Philoctetes, Idomeneus, Merione, Amphilochus, Patroclus, the two Ajaxes, Teucer, Antilochus, Ulysses, with others to the number of thirty. Her father, Tyndareus, was alarmed at the number of her suitors, believing that the preference he showed to one would bring on him the displeasure of all the rest. He was relieved from this dilemma by Ulysses, on condition he should receive the hand of his niece Penelope in marriage. His advice was to bind all the princes by an oath that they would yield implicitly to the will of the princess, and that they would unite to defend her if any attempt should be made to carry her off from the arms of her husband. The rivals consented, and Helen decided in favour of Menelaus, who thus became the heir apparent, and soon afterwards possessor, of the throne of Sparta. By her he had a daughter Hermione, and two sons, Morrhaphius and Diethus. (*Schol. Il.* Γ. 175; *Od.* Δ. 12; Apollodor. iii. 10, 7.)

Venus had promised to Paris the possession of the most beautiful of women. At her instigation, he proceeded to Sparta during the absence of Menelaus, and succeeded in gaining the affections of Helen, and in inducing her to quit her husband and her country. It was in vain that Menelaus sent to Troy to demand back his wife, in vain that the sons of Atreus threatened that all Greece would march against Troy. During the celebrated Trojan war she remained faithful to Paris, and had by him Bunichus, Agane, Idæus, and Corythus. On the death of Paris she married Deiphobus, the bravest of the sons of Priam after Hector; and on the taking of Troy, she is said to have betrayed him in order that she might ingratiate herself with Menelaus. It appears that Menelaus forgave her, and that they proceeded on their way to Sparta, where, according to some, they did not arrive till the space of eight years had elapsed. Here they received the visit of Telemachus, who had been sent by his mother in search of his father Ulysses. And here the legend of Homer ends. According to Euripides, she was killed by Orestes, her son-in-law, or she was banished by her step-sons, Megapenthes and Nicostratus, when she retired to the island of Rhodes, where she was suffocated in a bath. (*Paus.* iii. 19.)

According to one tradition, Helen never visited Troy, but was detained in Egypt by King Proteus during the whole period of the siege. Here Menelaus being driven on shore by a storm, found her. (Herodot. ii. 112, *et seqq.*) She had a temple at Therapne (vi. 61).

HELENUS, one of the sons of Priam, possessing the power of prophecy (Virg. *Æn.* iii. 295, 712), who distinguished himself by his valour during the Trojan war; but when Helen was given in marriage to Deiphobus, he determined to leave Troy, and retired to Chrysa, or Mount Ida. He was here discovered and taken prisoner by Ulysses. After the taking of Troy we find him the friend or slave of Neoptolemus, son of Achilles, whose favour he had gained by preventing him from embarking in a vessel which sunk with all its passengers. Being tired of Andromache, he gave her as wife to Helenus. On the death of Neoptolemus he became the natural guardian of his son Molossus, and when he came of age, restored to him a part of Epirus, reserving that which he had conquered during his regency. He had by Andromache a son called Cestrinus. (Paus. i. 11, ii. 23.) Here Helenus received Æneas on his way to Italy, and foretold some of the calamities which threatened him. (Virg. *Æn.* iii. 295.)

HELEPOLIS, in the ancient art of war, a machine for battering down the walls of a place besieged, the invention of which is ascribed to Demetrius Poliorcetes. Diodorus Siculus says, that each side of the Helepolis was 405 cubits in breadth and ninety in height; that it had nine stages, and was carried on four strong solid wheels eight cubits in diameter; that it was armed with large battering rams, and had two roofs capable of supporting them; that in the lower stages there were several sorts of engines for casting stones, and in the middle they had large catapultas for discharging arrows, and smaller ones in those above, with a number of expert men for working all these machines.

HELIADES, the daughters of the Sun and Clymene, called also Phaëthontides, from their brother Phaëthon, whose fate they lamented so much that they were changed into poplar trees, and their tears into amber, upon the banks of the Po. (Ovid. *Met.* ii. 340; Amor. iii. 12, 38; Diodor. v. 23; Lucan. ii. 410.) According to Diodorus (v. 56), they were seven sons of a king of Rhodes, who were celebrated for their knowledge of astrology and navigation. Having put to death one of their number, called Tenages, they were obliged to fly; and Actis proceeded to Egypt, where he introduced the knowledge of astrology.

HELIÆA, in Grecian antiquity, was the greatest and most frequented court in Athens for the trial of civil affairs.

HELIASTÆ, in *Antiquity*, the judges of the court of *Heliæa*. They were so called, according to some authors, from a Greek word which signifies *to assemble in a great number;* but, according to others, from another word which signifies *the sun*, because they held their assemblies *sub dio.* They composed not only the most numerous, but likewise the most important of the Athenian tribunals; for their province was either to explain obscure laws, or to give new vigour and authority to those which had been violated. The Thesmothetæ convoked the assembly of the Heliastæ, which sometimes amounted to a thousand, sometimes to fifteen hundred, judges. Mr Blanchard is of opinion, that, to make up this number, the Thesmothetæ sometimes summoned those of each tribe who had last quitted the public offices they had exercised in another court. But, however this may be, it appears that the assemblies of the Heliastæ were not frequent, as they would have interrupted the jurisdiction of the stated tribunals and the common course of affairs.

The Thesmothetæ paid to each member of this assembly, for his attendance, three oboli, which are equal to two Roman sesterces, or to half a drachma. Hence Aristophanes terms them "the brothers of the triobolus." They were likewise condemned to pay a fine if they came too late; and if they did not present themselves till after the orators had begun to speak, they were not admitted. Their attendance was requited out of the public treasury, and their pay was called *misthos heliasticos.*

The assembly met, at first, according to Aristophanes, at the rising of the sun. If the judges were obliged to meet under cover on account of frost and snow, they had a fire; but there is not a passage in any ancient author which informs us of the place where these assemblies were held either in the rigorous or in the mild season. We only learn that there was a double enclosure around the assembly, that it might not be disturbed. The first was a kind of arbour-work, from space to space, separated by doors, over which were painted in red the ten or twelve first letters of the Greek alphabet, which directed the entrance of the officers who composed the tribunal, each of them entering under the letter which distinguished his tribe. The beadles of the court, to whom they showed the wand which had been sent them by the Thesmothetæ as a summons to meet, examined its mark to see if it was authentic, and then introduced them. The second enclosure, which was at the distance of twenty feet from the former, was a rope or cord, that the people who stood round the first enclosure, and were desirous to see what passed within the second, might not be prevented from gratifying their curiosity at a proper distance. Thus the attention of the judges was not interrupted by the concourse of the multitude, many of whom were heated by views of interest or of party.

To each of the members of the assembly were distributed two pieces of copper; one of which was perforated, not certainly that it might be distinguished from the other by feeling, for these assemblies met at the rising and were dissolved at the setting of the sun. Those pieces of copper had been substituted for little sea-shells, which were at first in use. The Thesmothetæ read the names of those who were to compose the assembly, and each man took his place as he was called. The Thesmothetæ were then sent for, whose function it was to observe prodigies and to superintend the sacrifices; and if they gave their sanction, the deliberations were begun. It is well known that the officers called *Exegetæ* were often corrupted by those who were interested in the debates of the assembly, and that they excited tumults such as were raised by the Roman tribunes in the popular assemblies convoked by the consuls.

Of all the monuments which remain relating to the Heliastæ, the most curious is the oath which those judges took before the Thesmothetæ. Demosthenes has preserved it in his oration against Timocrates, who having been bribed by those who had been intrusted with the effects taken on board a vessel of Naucratis, and refused to give an account of them, got a law passed, by which an enlargement was granted to prisoners for public debts on giving bail. Demosthenes, on making his oration against that law, ordered the oath of the Heliastæ to be read aloud, as a perpetual auxiliary to his arguments, and happily calculated to interest the multitude and inflame their passions. This oath was in these terms: "I will judge according to the laws and decrees of the people of Athens, and of the senate of five hundred. I will never give my vote for the establishment of a tyrant, or of an oligarchy; nor will I ever give my approbation to an opinion prejudicial to the liberty or to the union of the people of Athens. I will not second those persons who may propose a reduction of private debts, or a distribution of the lands or houses of the Athenians. I will not recall exiles, or endeavour to procure a pardon for those who shall be condemned to die. Nor will I force those to retire whom the laws and the suffrages of the people shall permit to remain in their country. I will not give my vote to any candidate for a public function, who gives not an account of his conduct in the office which he has previously filled; nor will I presume to solicit any trust from the commonwealth without subjecting myself to this condition, which I mean as obligatory to the nine archons, to the chief of religious matters, to those who are balloted on the same day with the nine archons, to the herald, the ambassador, and the other officers of their court. I will not suffer the same man to hold the same office twice, or to hold two offices in the same year. I will not accept any present, either myself or by another, either directly or indirectly, as a member of the Heliastic assembly. I solemnly declare that I am thirty years old. I will be equally attentive and impartial to the accuser and the accused; I will give my sentence rigorously, according to evidence. Thus I swear, by Jupiter, by Neptune, and by Ceres, to act. And if I violate any of my engagements, I imprecate from these deities ruin on myself and my family; and I request them to grant me every kind of prosperity if I am faithful to my oath."

Here we have one of the motives of the meeting of this assembly stated. Aristotle informs us of another, which was by the public authority deputed to them, namely, to elect a magistrate in the room of one deceased. It is surprising that Pausanias, who enters so often into details, gives us no particular account of this assembly. All that he says of it is, that the most numerous of the Athenian assemblies was called *Helice.*

We are informed by Diogenes Laertius, in his life of Solon, that it was before one of these Heliastic assemblies that Pisistratus presented himself, covered with wounds and contusions self-inflicted, to excite the indignation of the people against his pretended enemies, who, jealous, as he alleged, of the popularity he had acquired by asserting the rights of his poorer fellow-citizens, in opposition to the men in power, had attacked him whilst he was hunting, and had wounded him in that barbarous manner. His design succeeded, and a guard was appointed him, by the assistance of which he acquired the sovereignty or tyranny of Athens, and kept it during thirty-three years. The power of the assembly appeared remarkably on that occasion; for Solon, who was present, opposed it with all his efforts, but did not succeed.

As to the manner in which the judges gave their suffrages, there was a sort of vessel covered with an osier mat, in which there were placed two urns, the one of copper, the other of wood. In the lid of these urns there was an oblong hole, which was large at the top, and became narrower downwards, as we see in some old boxes of our churches. The suffrages which condemned the accused person were thrown into the wooden urn, which was termed *kyrios*, whilst that of copper, named *akyros*, received those which absolved him.

Aristotle observes, that Solon, whose aim was to make his people happy, and who found an aristocracy established by the election of the nine archons, annual officers, whose power was almost absolute, tempered their sovereignty, by instituting the privilege of appealing from *them* to the people, who were to be assembled by lot to give their suffrage, after having taken the oath of the Heliastæ, in a place near the Panathenæum, where Hissus had in former days calmed a sedition of the people, and bound them to unanimity by an oath. It has likewise been remarked, that Apollo was not invoked in the oath of the Heliastæ, as in the oaths of the other judges. We have observed, that he who took the oath of the Heliastæ engaged that he would not be corrupted by solicitation or money. Those who violated this part of their oath were condemned to pay a severe fine. The decemvirs at Rome made such corruption a capital crime. But Asconius remarks, that the punishment denounced against them was mitigated in later times; and that they were expelled the senate, or banished for a certain time, according to the degree of their guilt.

HELICOID Parabola, or the *Parabolic Spiral*, is a curve arising from the supposition that the common or Apollonian parabola is bent or twisted till the axis comes into the circumference of a circle, the ordinates still retaining their places and perpendicular positions with respect to the circle, and all these lines still remaining in the same plane.

HELICON, in *Ancient Geography*, the name of a mountain in the neighbourhood of Parnassus and Cythæron, sacred to Apollo and the muses, who are thence called *Heliconides.* It is situated in Livadia, and is now called *Zagura* or *Zaguya.* Helicon was one of the most fertile and woody mountains in Greece. On it the fruit of the adrachnus, a species of the arbutus, or of the strawberry-tree, was uncommonly sweet; and the inhabitants affirmed that the plants and roots were all friendly to man, and that even the serpents had their poison weakened by the innoxious qualities of their food. It approached Parnassus on the north, where it touched on Phocis; and resembled that mountain in loftiness, extent, and magnitude. Here was the shady grove of the muses and their images; with statues of Apollo and Bacchus, of Linus and Orpheus, and the illustrious poets who had recited their verses to the harp. Amongst the tripods, in the second century, was that consecrated by Hesiod. On the left hand going to the grove was the fountain Aganippe; and about twenty stadia, or two miles and a half, higher up, the violet-coloured Hippocrene. Round the grove were houses. A festival was celebrated there by the Thespiéans, with games called *Musea.* The valleys of Helicon are described by Wheler as green and flowery in the spring; enlivened by pleasing cascades and streams, and by fountains and wells of clear water. The Bœotian cities in general, two or three excepted, were reduced to inconsiderable villages in the time of Strabo. The grove of the muses was plundered under the auspices of Constantine the Great. The Heliconian goddesses were afterwards consumed in a fire at Constantinople, to which city they had been removed.

HELIGOLAND, or HELGOLAND, a group of small islands in the North Sea, formerly belonging to Denmark, now to Great Britain, and situated about twenty-eight miles from the mouths of the Weser, the Elbe, and the Eyder. It consists of the principal island, subdivided into the Cliff and the Low Land; the smaller island called the Down; and several sand-banks and rocks, of which that called the Monk is the most conspicuous. The Cliff is a continued rock of sandstone (red breccia), almost perpendicular, varying from ninety to a hundred and sixty-six feet in height; the ascent to it is by a long flight of steps; its circumference is above 4000 paces. Whilst the Cliff is said to suffer progressive diminution from the action of the waves, the Low Land is asserted to be on the increase. It is joined to the former by a bottom of rock, about 500 paces long. Its circumference is much smaller than that of the high ground; and the circuit of the whole island does not exceed two miles and a half. The Down, or Downs, is not quite half this size; but its extent is continually varying. On the High Land is a light-house, whose geographical position is 7° 53′ 13″ east longitude, and 54° 11′ 34″ north latitude. It is of great use to guide ships, not only amidst the surrounding rocks and shoals, but being visible at a distance of more than twenty-seven miles, it serves as a mark for directing vessels to the mouths of the nearest rivers on the continent.

Heligoland has two good harbours; and to the east of the Down is a road where vessels may anchor in forty-eighty feet of water. The inhabitants, in number about 2000, subsist chiefly by fishing and acting as pilots; the women cultivate the little grain (barley and oats) that is raised here, and attend to a few hundred sheep, for which there is pasture on the upper ground. It is on this part of the island that the public and other buildings are placed; on the low grounds there are only fishermen's huts. There are two wells of fresh water, but scarcely a tree or shrub of any kind on the island. Turf, wood, fuel, and garden vegetables, are brought from Cuxhaven and Hamburg in exchange for fish.

Heligoland was, in former ages, of much greater extent; having been, it is said, the residence of a chief of the Sicambri, or North Frieslanders, and the seat of worship of the Saxon deity Phoseta. The latter is confirmed by the name, which signifies in German "sacred land." The diminution of the island has taken place at different times; in the years 800 and 1300, if tradition may be believed, but with certainty in 1649, and even in 1720. The ravage of 1649 seems to have been very considerable. During the war with the Danes, it was taken by a small squadron in September 1807, and rendered a depôt for merchandise which was afterwards smuggled into the ports of the Continent, from which our commerce was excluded by Bonaparte. At that time Heligoland was much crowded with mercantile adventurers. At the peace of 1814, though exclusion was no longer to be dreaded, our government judged it fit to retain the island, doubtless in consideration of the value of its double harbour, and of the ease with which the high ground may be defended.

HELIOCENTRIC LATITUDE *of a Planet*, the inclination of a line drawn between the centre of the sun and the centre of a planet to the plane of the ecliptic.

HELIOCENTRIC Place of a Planet, the place of the ecliptic in which the planet would appear to a spectator placed at the centre of the sun.

HELIOCOMETES, a phenomenon sometimes observed about sunset, being a large luminous tail or column of light proceeding from the body of the sun, and dragging after it, not unlike the tail of a comet; and hence the name.

HELIODORUS *of* PHŒNICIA, bishop of Trica in Thessaly, better known by the romance he composed in his youth, entitled *Æthiopica*, in which are related the amours of Theagenes and Chariclea. Some say he was deposed by a synod because he would not consent to suppress this romance. The fable has a moral tendency, and particularly inculcates the virtue of chastity. As this was the first composition of the kind, he is commonly styled the *Father of Romance.* He was also a good Latin poet. Heliodorus lived in the fourth century. For an analysis of the *Æthiopica*, with some judicious remarks thereon, see Dunlop's *History of Fiction.*

HELIOMETER, formed of ἡλιος, *sun*, and μετρω, *I measure*, the name of an instrument, called also *astrometer*, invented by M. Bouguer in 1747, for measuring with particular exactness the diameters of the stars, and especially those of the sun and moon.

This instrument is a kind of telescope, consisting of two object-glasses of equal focal distance, placed one by the side of the other, so that the same eye-glass serves for both. The tube of this instrument is of a conical form, larger at the upper end, which receives the two object-glasses, than at the lower, which is furnished with an eye-glass and a micrometer. By the construction of this instrument two distinct images of an object are formed in the focus of the eye-glass, whose distance, depending upon that of the two object-glasses from one another, may be measured with great accuracy. Nor is it necessary that the whole disc of the sun or moon should come within the field of view, since, if the images of only a small part of the disc be formed by each object-glass, the whole diameter may be easily computed by their position with respect to one another. For, if the object be large, the images will approach, or perhaps even lie over each other, and the object-glasses being moveable, the two images may always be brought exactly to touch one another, and the diameter may be computed from the known distance of the centres of the two glasses. Besides, as this instrument has a common micrometer in the focus of the eye-glass, when the two images of the sun or moon are made in part to cover one another, that part which is common to both the images may be measured with great exactness, as being viewed upon a ground that is only one half less luminous than itself; whereas, in general, the heavenly bodies are viewed upon a dark ground, and on that account are imagined to be larger than they really are. By a small addition to this instrument, provided it be of a moderate length, M. Bouguer thought it possible to measure angles of three or four degrees, which is of particular consequence in taking the distance of stars from the moon. By means of this instrument M. Bouguer found, by repeated observation, that the sun's vertical diameter, though somewhat diminished by the astronomical refraction, is longer than the horizontal diameter; and, in ascertaining this phenomenon, he also found, that the upper and lower edges of the sun's disc are not so equally defined as the other parts, on which account his image appears somewhat extended in the vertical direction. This is owing to the decomposition of light, which is known to consist of rays differently refrangible in their passage through our atmosphere. Thus the blue and violet rays, which proceed from the upper part of the disc at the same time with those of other colours, are somewhat more refracted than the others, and therefore seem to us to have proceeded from a higher point; whereas, on the contrary, the red rays proceeding from the lower edge of the disc, being less refracted than the others, seem to proceed from a lower point; so that the vertical diameter is extended, or appears longer, than the horizontal diameter.

HELIOPOLIS, ruins at Matarieh, giving name to the district Heliopolites, which stretched into Arabia, a city of Egypt, near the apex of the Delta, and near the eastern bank of the Nile, twelve miles from Babylon of Egypt (Anton. *Itin.*), sacred to the worship of the Sun (Macrob. *Sat.* i. 21; Herodot. ii. 59), whose priests were considered as the most learned of the land (ii. 3), particularly in astrology, which they acquired from Actis, son of Helios, who was founder of the city (Diodor. v. 57). It is situated on a considerable eminence to the south of some lakes, probably now Birket-el-Hadgy, which were furnished with water from the canal which ran towards the Red Sea. The city was in ruins in the time of Strabo, and the temple in which the ox Mnevis used to be kept exhibited marks of the destructive visit of Cambyses. He saw the remains of the magnificent edifices in which the college of priests used to reside; but that learned body had dwindled away, and was then represented only by a few individuals, who explained to strangers the antiquities of the temples. The reputation of this college had at one time been so high that it attracted the presence of Plato and Eudoxus, who are said to have resided many years under the tuition of the priests (Strab. xvii. 805, 806; Plin. v. 9). It is supposed to be the On of the Scriptures.

HELIOSCOPE, in *Optics*, a sort of telescope, peculiarly fitted for viewing the sun without affecting the eyes. As the sun may be viewed through coloured glasses without detriment to the eyes, if the object and eye-glasses of a telescope be made of coloured glass, as red or green, such a telescope will become an helioscope.

HELIOSTATE, in *Optics*, an instrument invented by the learned s'Gravesande, who gave it this name from its fixing as it were the rays of the sun in an horizontal direction across a dark chamber all the time it is in use.

HELIOTROPE (*heliotropium*), amongst the ancients, an instrument or machine for showing when the sun arrived at the tropics and the equinoctial line. This name was also used generally for a sun-dial.

HELIX, in *Geometry*, a spiral line. The word is Greek, ἕλιξ, and literally signifies *a wreath* or *winding*, from ἑλισσω, *involvo*. In architecture, some authors make a difference between the helix and the spiral. A staircase, according to Daviler, is in a helix, or is helical, when the stairs or steps wind round a cylindrical newel; whereas the spiral winds round a cone, and is continually approaching nearer and nearer its axis.

HELIX is also applied, in *Architecture*, to the caulicules or little volutes under the flowers of the Corinthian capital, which are called *urillæ*.

HELL, the place of punishment after death. As all religions have supposed a future state of existence, so all have their hell or place of torment, in which the wicked are supposed to be punished. The hell of the ancient heathens was divided into two mansions, the one called *Elysium*, on the right hand, pleasant and delightful, appointed for the souls of good men; the other called *Tartarus*, on the left, a region of misery and torment, appointed for the wicked. The latter only was hell in the present limited sense of the word.

Amongst Christians, there are two controverted questions in regard to hell; the one concerning the locality, and the other the duration of its torments.

The locality of hell, and the reality of its fire, began first to be controverted by Origen. That father, interpreting the Scripture account metaphorically, made hell to consist, not in external punishments, but in a consciousness or sense of guilt, and a remembrance of past pleasures. Amongst the moderns, Mr Whiston advanced a new hypothesis. According to him, the comets are so many hells appointed in their orbits alternately to carry the damned into the confines of the sun, there to be scorched by its violent heat, and then to return with them beyond the orb of Saturn, there to freeze in the dismal regions of eternal cold. Another modern author, not satisfied with any hypothesis hitherto advanced, assigns the sun as the locality of hell.

As to the second question, the duration of hell torments, we find Origen again at the head of those who deny that they are eternal. It was his opinion, that not only men, but devils, would, after a due course of punishment suitable to their respective crimes, be pardoned and restored to heaven. The principle upon which Origen mainly built his opinion, was the nature of punishment, which he took to be emendatory, and applied only as physic for the recovery of the patient's health. The chief objection to the eternity of hell torments amongst modern writers, is the disproportion between temporary crimes and eternal punishments. Those who maintain the affirmative, ground their opinions on Scripture accounts, which represent the pains of hell under the figure of a worm which never dies, and a fire which is not quenched.

HELLANICUS, an ancient historian of Mitylene, in Lesbos, was son of Andromenes or Aristomenes, born B. C. 496, if we credit the statement of Aulus Gellius (xv. 23), that he was sixty-five years old B. C. 431, at the beginning of the Peloponnesian war. Herodotus was then fifty-three, and Thucydides forty years of age. According to Lucian (Macrob. c. 22), he lived to the age of eighty-five (which extends the life of Hellanicus to B. C. 411), and died at Perperena, a village of Æolis, opposite the island Lesbos (Suid.). It is impossible to say in what dialect of the Greek language he wrote, as those authors who have quoted him may have changed his words to suit their own style. He is accused by Diodorus (i. 37) of overlaying his history with fable, so that the entire loss of his works is a matter of little regret. He seems to have been a voluminous writer, having been employed on the history partly of foreign nations, and partly of Greek races and states. His style is said to have been simple and unadorned, without eloquence or ornament. The following are a few of his works: Antiquities of Egypt, of Phœnicia, of Persia, of Scythia, of Troy, and of Barbarian Nations; Journey to the Temple of Ammon; Foundation of Chios.

The fragments of Hellanicus have been collected by Sturz, Lips. 1826.

HELLAS, in *Ancient Geography*, an appellation comprehending, according to the more ancient Greeks and Romans, Achaia and Peloponnesus, but afterwards restricted to Achaia. It was bounded on the west by the river Achelous, on the north by Mounts Othrys and Œta, on the east by the Ægean Sea, and on the south by the Saronic and Corinthian Bays, and by the isthmus which joins it to Peloponnesus. It was called *Hellas*, from Hellen, the son of Deucalion, or from Hellas, a district of Thessaly; and hence *Hellenes*, the gentilitious name, denoting Greeks.

HELLE, in fabulous history, a daughter of Athamas, king of Thebes, by Nephele. Helle fled from her father's house with her brother Phryxus, to avoid the cruel oppression of her mother-in-law Ino. According to some accounts, she was carried through the air on a golden ram, which her mother had received from Neptune, and having in her passage become giddy, she fell from her seat into that part of the sea which from her received the name of *Hellespont*. Others say that she was carried on a cloud, or rather upon a ship, from which she fell into the sea and was drowned. Phryxus, after he had given his sister a burial on the neighbouring coast, pursued his journey, and arrived in Colchis.

HELLENISM, in matters of language, a phrase in the idiom, genius, or construction of the Greek tongue. This word is only used when speaking of the authors who, writing in a different language, express themselves in a phraseology peculiar to the Greek.

HELLENISTIC LANGUAGE, that used by the Grecian Jews who lived in Egypt and other parts where the Greek tongue prevailed. In this language the Septuagint was written, and also the books of the New Testament; and it was thus denominated, to show that it was Greek filled with Hebraisms and Syriacisms.

HELLENISTS (*Hellenistæ*), a term occurring in the Greek text of the New Testament, and which in the English version is rendered Grecians. But the critics are divided as to the signification of the word. Œcumenius (*Scholia ad Act.* vi. 1) observes, that it is not to be understood as signifying those of the religion of the Greeks, but those who spoke Greek (τους ʽΕλενιστι φθεγξαμενους). The authors of the Vulgate indeed render it, as in our version, *Græci;* but Messieurs du Port-Royal more accurately, *Juifs Grecs*, Greek or Grecian Jews; that is, Jews who spoke Greek, and who are thus distinguished from the Jews called *Hebrews*, who spoke the Hebrew tongue of that time. The Hellenists, or Grecian Jews, were those who lived in Egypt and other parts where the Greek tongue prevailed. It is to them we owe the Greek version of the Old Testament, commonly called the Septuagint. But Salmasius and Vossius are of a different opinion with regard to the Hellenists. The latter conceives that they were those who adhered to the Grecian interests. Scaliger is represented, in the *Scaligerana*, as asserting that the Hellenists were the Jews who lived in Greece and other places, and who read the Greek Bible in their synagogue, and used the Greek language *in sacris*, and who were thus opposed to the Hebrew Jews, who performed their public worship in the Hebrew tongue; and in this sense St Paul speaks of himself as a Hebrew of the Hebrews (Phil. iii. 5), meaning a Hebrew both by nation and language. The Hellenists are thus properly distinguished from the *Hellenes* or Greeks (mentioned in John, xii. 20), who were Greeks by birth and nation, and yet proselytes to the Jewish religion.

HELLENODICÆ, ʽΕλληνοδιϰαι, in *Antiquity*, the directors of the Olympian games. At first there was only one, but afterwards the number was increased to two, to three, and at length to nine. They assembled in a place called ʽΕλληνοδιϰαιον, in the Elean forum, where they were obliged to reside ten months before the celebration of the games, to take care that such as offered themselves to contend performed their ϖϱογυμνασματα, or preparatory exercises, and were instructed in all the laws of games by certain men called νομοφυλαϰες, or keepers of the laws. And the better to prevent all unjust practices, they were further obliged to take an oath that they would act impartially, take no bribes, nor discover the reason for which they disliked or approved of any of the competitors. At the solemnity they sat naked, having before them the victor's crown till the exercises were finished, and then it was presented to whomsoever they adjudged it. Nevertheless, there lay an appeal from the Hellenodicæ to the Olympian senate.

HELLESPONT, a narrow strait between Asia and Europe, connecting the Mediterranean with the Propontis. It received its name from Helle, who was drowned there in her voyage to Colchis. It is celebrated for the love and death of Leander, and for the bridge of boats which Xerxes built over it when he invaded Greece. It is now called the *Dardanelles*. This strait is about thirty-three miles in length, and, in the broadest parts, the Asiatic coast is about one mile and a half distant from the European, and only half a mile in the narrowest.

HELLSTEDT, a town of Prussia, in the circle of Mansfeld and province of Saxony, with 540 houses and 3604 inhabitants; near to which are some mines of copper and of silver, which employ a part of the population in extracting these metals and converting them to use.

HELM, a long and flat piece of timber, or an assemblage of several pieces, suspended along the hind-part of a ship's stern-post, where it turns upon hinges to the right or left, serving to direct the course of the vessel, as the tail of a fish guides the body. See SHIP-BUILDING.

There are several terms in nautical language relating to the helm; as, *Bear up the helm*, that is, let the ship go more large before the wind; *Helm a midship*, or *right the helm*, that is, keep it even with the middle of the ship; *Port the helm*, put it over the left side of the ship; *Starboard the helm*, put it on the right side of the ship.

HELMET, a piece of defensive armour worn by horsemen both in war and in tournaments. It anciently covered both the head and face, only leaving an aperture in the front secured by bars, which was called the *visor*.

HELMINTHOLOGY.[1]

The title of this article was formerly bestowed on a much larger group of animated beings than that to which we here restrict it. The Linnæan group of *Vermes* contained, in fact, the whole of the intestinal and other worms, the molluscous and testaceous tribes, the Zoophytes and Infusoria,—which now form the natural materials of many classes. We here apply it exclusively to the ANNELIDES, or red-blooded vermes, of which the medicinal leech and earth-worm afford familiar examples. Bruguieres and others have no doubt conjoined them, in comparatively recent times, with the intestinal tribes; and it was at one time our intention (see ANIMAL KINGDOM, vol. iii. p. 180 of this work) to have adopted that arrangement. But we now conceive it to be more advisable to follow the example of Cuvier, and, referring the latter to the radiated or zoophytical division, to include in the article HELMINTHOLOGY the Annelides alone. In truth, the intestinal tribes exhibit no organs of respiration, either tracheal or branchial,—no traces of a true circulation,—and their nervous system is extremely obscure. It will therefore become apparent, from the following definition, how greatly the Annelides differ from the creatures just named.

The Annelides or red-blooded worms form the first class of the articulated division of the animal kingdom.[2] Their blood, of a red colour, resembling that of the vertebrated animals, circulates in a double system of closed vessels, that is, in arteries and veins. This system, though destitute of a heart properly so called, is sometimes provided with one or more distinct fleshy ventricles. Respiration is carried on through the medium of organs, which are sometimes external, occasionally developed beneath the surface of the skin, or sunk more deeply into the interior. They may all be presumed to breathe by means of branchiæ, although the respiratory system, of the so-called Abranchial Order, is still unknown. The branchiæ or respiratory organs of the greater number are external, and vary considerably in their size, form, number, and position. Their body, of a softish texture, is more or less elongated, and always divided into numerous rings or segments, of which the anterior, known under the name of head, scarcely differs from the others, except by the possession of a mouth, and of the principal organs of the senses. None of the Annelides possess articulated members properly so called, but in room of these many are furnished with setiferous mammillæ, or fleshy projections, bearing bundles of hairs or bristles, and forming what may be called *pedes spurii*, of which the number is extremely various. These peculiar organs are sometimes composed of two parts, the one superior and dorsal, the other inferior and ventral. The muscular power resides in the interior, and is capable of producing only an undulatory or creeping movement,—the locomotive parts being incompetent to sustain the body. The organs of the mouth consist sometimes of parts resembling jaws, more or less developed,—sometimes of a simple tube. The organs of the external senses are composed of fleshy tentacula, sometimes articulated,—and of certain blackish points, not existing in all the species, regarded as eyes. The nervous system consists of a double ganglionic cord, analogous to that of insects, as already described in our article ENTOMOLOGY. In regard to their natural habits, most of these creatures are aquatic (the Lumbrici or earthworms excepted). Some dwell in holes beneath the waters, other form tubes or tunnels of mud or other matters, or even transude from their own bodies a calcareous secretion, which forms around them a protecting covering.[3] Considered sexually, they are for the most part hermaphrodite, and some require reciprocal communication.

It will be perceived, even from the preceding brief exposition, that the Annelides are animals of a very peculiar nature. Although their nervous system coincides with that of the other articulated classes, and although their bodies are likewise divided by transverse sections, yet their locomotive organs are entirely dissimilar to those of the Crustacea, Arachnides, and Insects. Their setiferous mammillæ are merely retractile sheaths, and the hairs or bristles which they enclose are in no way comparable to the feet of the last-named classes, but are organs of a very different nature.

The Annelides are few in number compared with insects and other articulated classes, and the greater proportion are marine. Their possession of red blood is a singular character in animals so low in the scale, and one not possessed by the molluscous tribes, which are yet regarded as their superiors in other points of organisation. In regard to their external parts, we shall here indicate a few of the most important,—premising that the characters mentioned are not universal to the class, but rather

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[1] From ἑλμινς, *a worm*, and λογος, *a discourse*.

[2] For a description of these primary divisions of the animal kingdom, see vol. iii. p. 179 of this work.

[3] "As to the external tube which the Chetopoda (by which term M. de Blainville denominates the setigerous genera of the class Annelides) often inhabit, although it is frequently sufficiently regular and solid, it cannot however in any manner be compared to the shell of the Mollusca, not even where there is the greatest approximation, as in *Dentalium* and *Siliquaria*. These tubes of the Chetopoda are always simple excretions from their body, which are by no means attached to it, and from which the animal may issue forth without dying immediately. We begin to observe something of this kind in the mucosity with which certain species line the hole hollowed in the mud or sand which they inhabit, as in the Arenicolæ, and some Lumbrici. This is analogous to the mucous pellicle of the tube of the Amphitritæ and the Sabellæ; but in the latter, surrounding this mucosity, is attached externally a stratum, more or less thick, composed merely of mud or very fine grains of sand, or, in fine, of debris, more or less thick, of shells and larger grains of sand. These tubes are constantly open at both extremities; there are also some of them more regular, which are completely calcareous. The double opening is a character whereby they are distinguished from tubular shells, the summit of which, on the contrary, is constantly imperforate. These tribes, however, appear constantly to grow, after the manner of tubular shells, by laminæ or strata extremely thin, placed inside of and out-edging one another. From this result striæ marking the growth, more or less apparent outside; but we never remark longitudinal striæ on their surface, nor anything indicating the delicate working of the edges of a mouth, as in the Mollusca. This character alone might suffice to distinguish them from the true tubular *shells*; but to this we may add, that the constant perforation of the summit of the tube of the Chetopoda never allows the animal, in growing and advancing in its tube, to form partitions there, whereas in the tubular shells the reverse is invariably the case. A final character which distinguishes the tubes of the Chetopoda is, that they are adherent, and fixed flatly, through a greater portion of their extent, on foreign bodies, which never takes place with the tubular shells." (Griffith's edition of Cuvier's *Animal Kingdom*, vol. xiii. p. 58.) We may add, that the young of the shell-bearing Mollusca are always born with shells, because that part forms, in fact, a portion of their *skin*; but there is no doubt that the young Annelides are produced in an exposed condition, and afterwards proceed, by a voluntary effort, to form their protecting habitations.

confined to certain races. The head, in such as possess one, is a small anterior swelling, which bears the antennæ commonly so called, and the eyes, and is distinct from the first segment of the body. The Nereids of Linnæus are regarded by Latreille as the only Annelides of which the anterior segment merits the name of head, or possesses organs fit to be compared to eyes, more especially to those of the larvæ of insects. These eyes are simple, extremely small, and appear like blackish points,—their number from two to four. Savigny indeed attributes eight to the leech tribe, but Latreille suspects that their structure is different from that of the Nereids. The organisation of the mouth varies greatly in the different orders. The parts called maxillæ by Savigny are hard circumscribed parts, of a corneous or calcareous nature, to which Latreille does not accord the name of jaws. The latter author indeed seems to regard the Annelides as a suctorial rather than a masticating class. Most of them are of carnivorous habits, and live on the blood of other creatures. The trunk or sucker is a contractile fleshy portion, constituting the mouth, and containing the so-called jaws. The latter portions, however, being adherent to the inner coats of the sucker, and the latter being nothing more than a prolongation of the œsophagus, can scarcely be regarded as genuine jaws.

Several tribes have their branchiæ uniformly spread over the extent of the body, or over its central portion, while others (and these usually dwell in tubes) bear those organs at their anterior extremity. In the erratic species, or such as are naked, and without fixed dwellings, they are usually disposed longitudinally along the sides of the body, there being one for each foot. Blood-vessels sometimes appear to spread into the setiform processes, and to convert them into respiratory organs.

We have already stated that Linnæus placed the Annelides in his almost unlimited class of Vermes,—a vast and by no means well-combined group, which the later labours of Otho Frederick Muller, Pallas, and other naturalists, failed to cast into a more natural mould. The great Swedish naturalist separated the true Annelides from each other, placing one portion of the group in the order Intestina, and the other in that of Mollusca. In Cuvier's earliest work (*Tableau Elementaire*, &c. 1789), he restricted the class of worms to the Annelides and intestinal species, a mode of grouping previously practised by Bruguieres in the *Encyclopédie Méthodique.* Subsequent investigations induced the French anatomist to raise the former to the rank of a separate class, which he named *Vers a sans rouge*, in a memoir read to the French Institute in 1802. On this same group Lamarck (*Extrait du Cours*, &c. 1812) bestowed the name of ANNELIDES, which has since been very generally adopted. A slight disparity, however, still exists in the constitution of the Annelides, in the works of Cuvier and Lamarck, the former including in the class so named the genus Gordius, which the latter associates with the other Vermes.

But notwithstanding the valuable labours of these and other writers, the external structure of the Annelides cannot be said to have been at all rigorously determined, or viewed in relation to that of conterminous groups, till we received the fruits of Savigny's laborious and most delicate observations, originally presented to the Academy of Sciences.[1] At that period Blainville was also occupied in the study of the same group, which, with the exception of the leeches, forms his class of *Sétipodes.* He published an extract from his labours in the course of the ensuing year.[2] Oken, Leach, Latreille, Dugés, Audouin, Mylne Edwards, and others, have likewise contributed to our knowledge of this curious and important class, in publications, to the majority of which we shall more particularly allude in the course of the present treatise.

In regard to the geographical distribution of the Annelides, our data are not yet sufficiently precise and numerous to admit of any satisfactory generalization. We have already said, that with the exception of the earthworms (and even these require a moist abode), all the *known* species are aquatic. We may add, that the great majority inhabit the saline waters of the ocean. Most of the Naids, however, occur in fresh water, and some true Nereids are found in the lakes of North America. Annelides of some kind or other are met with in all quarters of the globe, and the species of many genera are very widely distributed; but others, such as the *Amphinomæ*, for example, are characteristic of, if not peculiar to, the warmer seas. Undoubtedly the most magnificent are native to the Indian shores. "It is in general on the coasts of the sea, in the midst of Thalassiophytes, in the anfractuosities of Madrepores, in the sand, and particularly in mud, that the Chetopoda are to be found; and if some species are more commonly to be met with in the open sea, as, for instance, the Amphinomæ, named by M. Savigny *Pleione vagans*, it appears that they may have been drawn along with marine plants by the currents, as is the case with many other animals."[3] Their natural movements are extremely slow, and may be compared to those of slugs, although their appendages for locomotion are much more numerous. The Nereids, however, not only creep in a kind of serpentine manner over the surface of solid bodies at the water's edge, but frequently swim very respectably, either by successive undulations of the body, after the manner of eels and serpents, or by agitating their appendages, and thus making these organs serve as oars.[4]

The utility, in an economical point of view, of the Annelides in general to the human race, is by no means great. According to Pallas, the inhabitants of some parts of Belgium eat those portions of *Aphrodita aculeata* which compose the mouth; the Nereids and Arenicolæ, as well as the earth-worms, are extensively employed as baits for fish, and the medicinal uses of the leech are notorious; but, with these, and, it may be, a few other exceptions, little can be said regarding the direct benefits derivable from this peculiar class. Its subjects, however, are by no means on that account the less important in the eyes of the philosophical naturalist.

Several of the Annelides possess a phosphoric property, from which Linnæus named a certain species Nereis *noctiluca.* Others, characterized by the same attribute, have been more recently described by Sig. Viviani.[5]

The presence or absence of the organs of motion, and the position of the branchiæ, furnish natural characters of easy application, which modern zoologists have employed to signalize the primary groups. Lamarck divides the Annelides into three orders, *les Apodes, les Antennes,* and *les Sédentaires,*—and in the system of Cuvier they likewise form an equal number of orders, *les Tubicoles, les Dorsibranches,* and *les Abranches.* In both systems the Serpulæ occupy the highest position in the scale. Savigny's arrangement of these animals consists of five orders, of which the author has as yet treated only of four, viz. *les Néréidées, les Serpulées, les Lombricines,* and *les Hi-*

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[1] *Système des Annelides*, forming a portion of the great French work on Egypt.

[2] *Bulletin de la Soc. Phil.* Mai et Juin 1818.

[3] Griffith's *Animal Kingdom*, vol. xiii. p. 73.

[4] The lateral parts are hence named *rames* by M. Savigny.

[5] *Phosphorentia maris quatuordecim lucescentium animalculorum novis speciebus illustrata.* Genuæ, 1805.

rudinées. He places the Aphrodites and Nereids at the head of the class. Latreille is also of opinion that these Annelides, especially the Nereids, so far as regards their external organisation, are entitled to precedence, and make the nearest approach to the articulated animals provided with feet, such as Insects and Crustacea.

We shall here, in as far as general arrangement is concerned, follow the system of Cuvier.

ORDER I.—TUBICOLÆ, Cuv.

Some form a calcareous homogeneous tube, supposed to result from transudation, like the covering of testaceous Mollusca, but which does not adhere by any muscular attachment; others construct a covering by agglutinating grains of sand, broken shells, and other debris, by means of a membrane, likewise the result of transudation; while a third group are surrounded by a tube of an entirely membranous or corneous nature.

GENUS SERPULA, Linn. The body is composed of numerous segments; its anterior portion is enlarged in the form of a disk, armed on either side by several bundles of stiff bristles; and on each side of the mouth is a fan-shaped plume of branchiæ, usually adorned by lively colours. At the base of each plume is a fleshy filament, one or other of which is always prolonged and dilated at the extremity into a disk of various form, which serves as an operculum, and closes the overture of the tube whenever the contained creature chooses to retire. (Plate CCLXXV. fig. 3.) Of this genus the calcareous tubes cover, by their tortuous windings, the surface of stones, shells, and other submarine bodies. The species are widely distributed throughout the seas of Europe, India, and America. The largest are indigenous to the warmer climates of the globe. Little is known of their instinctive habits or natural economy. They are said to feed on aquatic animalcules, which they seize by means of their branchial tentacula.

Linnæus, and most of the naturalists of his time, placed the Serpulæ among the testaceous Mollusca. They now constitute a numerous genus, of which several species occur in the European seas. They are very contractile, and are supposed to feed on animalcules. A well-known species, *S. contortuplicata* (Plate CCLXXV. fig. 1), has rounded tortuous tubes, of about three lines in diameter. Its operculum is tunnel-shaped, and its branchiæ are often of a beautiful red, or varied with yellow and violet. Any object thrown into the sea is apt to be speedily covered by this species.

GENUS SPIRORBIS, Lam. Branchiæ much less numerous than in the preceding genus (from three to four on each side), placed anteriorly in a somewhat radiated form. A pediculated operculum, with a flat summit placed between the branchiæ. Tube testaceous, and rolled after the manner of a *Cornu ammonis.*

This genus is composed of very small species, which are found attached to fuci, shells, and other marine bodies. They frequently occur in great numbers, though always separate from each other. The animals are of a blood-red colour. We have figured the *Sp. nautiloïdes* of Lam. synonymous with the *Serpula spirorbis* of Linn. See Plate CCLXXV. figs. 2 and 4.

GENUS SABELLA, Cuv. *Amphitrite,* Lamarck. Body and fan-shaped branchiæ resembling those of the preceding genus, but both the fleshy filaments adhering to the branchiæ terminate in a point, and do not form an operculum; they are sometimes even wanting. Their tube is rarely calcareous, and seems often formed of grains of very fine clay or mud. Most of the ascertained species are of considerable size, and are remarkable for the extreme delicacy and lustre of their plumy branchiæ.

One of the most splendid of the genus is figured by Dr Shaw under the title of *Tubularia magnifica.*[1] It is found on various parts of the coast of Jamaica, adhering to the rocks. It is extremely wary, and when approached instantly recedes within its tube, which on a further alarm also retires into the rock, so that specimens can be obtained only by breaking off portions of the mass. These, when put into tubs of sea water, may be preserved for months, and the habits of the animals attentively studied. The species in question is characterized by a simple undulated tube of a whitish hue, the tentacula being varied by beautiful alternate bands of red and white. *Amph. vesiculosa* is a British species described by Montagu.[2] The internal texture of its tube is coriaceous, but the outer coat is invariably covered by coarse sand, intermixed with fragments of shells. (See Plate CCLXXV. fig. 5.) Considerable variety exists in the form and aspect of the genus Sabella.

GENUS TEREBELLA, Cuv. These, like the preceding, inhabit a tube of their own formation, but composed of coarser materials than that of the generality of Sabellæ. Their body presents much fewer segments, and the head is otherwise adorned. Numerous filiform tentacula, capable of great extension, surround the mouth; and on the neck are placed the branchiæ, which are not fan-shaped, but in the form of little branches.

The animals of this genus, according to Montagu, either prepare a sheath from the tenacious secretion of their own bodies, mixed with adventitious matters, or reside in prepared perforations at the bottom of the sea. Their tubes are in general so extremely fragile as to be easily destroyed, and the animals are then found lurking beneath stones, or forming a new dwelling. Some fabricate their tube in old shells or stones, to which they adhere by their entire length, while others fix a tube perpendicularly in the sand. These tubes are indeed frequently observed to obtrude several inches above the surface of the soil, and when the waters flow, the gills and other appendages are stretched forth, and seem agitated to and fro. The gills or branchial appendages are extremely sensible, of a fine blood colour, and when touched they contract so suddenly as to expel the fluid which they contain, and then they lose their sanguine hue. Many are gregarious, and so numerous, that the sea-shore is sometimes seen covered by their fragments after a storm. When their tubes are entire, but a small portion of the body is protruded, with the exception of the filiform tentacula, which they thrust about in all directions as if in search of food. The branchial appendages, just mentioned as so finely coloured during life, lose their brightness from day to day as the animals become sickly in confinement.

T. gigantea, Mont. the largest of the genus, measures sixteen inches in length, and occurs, though rarely, on the Devonshire coast. We here figure as an example another species, which has likewise been taken on that coast by deep dredging, viz. *T. nebulosa* of Montagu. See Plate CCLXXV. fig. 8.

GENUS AMPHITRITE, Cuv. *Pectinaria,* Lam. Recognizable by the golden coloured bristles ranged in a coronal or pectinated manner, in one or more rows, on the anterior portion of the head, where they probably serve either as a means of defence, for the purposes of locomotion,[1] or for collecting the materials of their dwelling. Numerous tentacula surround the mouth, and at the commencement of the back, on either side, there are comb-shaped branchiæ.

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[1] *Linn. Trans.* v. p. 228, tab. 9.

[2] *Ibid.* xi. p. 19, tab. 5.

The gills or branchial appendages of this genus are attached to the anterior part only of the body; and this is the case in fact with all the tribes that inhabit tubes, because gills attached to the other parts of the body, which are covered, would be useless for the purposes of respiration.[2]

Certain species construct very light and delicate tubes, in the form of a lengthened cone, which they carry along in the course of their travels. Their golden bristles form two combs, the teeth of which are directed downwards. Their intestine is very ample, folded several times, and is usually filled with sand. A well-known European species is the *Amph. auricoma Belgica* of Gmelin, of which we have given two representations. (See Plate CCLXXV. figs. 6 and 7.) Its tube measures about two inches in length, and is formed of little rounded grains of various colours. Other species attach their tubes to different substances, and their golden setæ form upon the head several concentric crowns, from which an operculum is produced, which closes the tube when the animal is in a state of contraction. Each foot is furnished with a cirrhus, and the body, terminating posteriorly in a tube curved towards the head, is provided with a kind of muscular gizzard.[3] To these belong *Amph. alveolata*, Ellis, *Corall.* 37, of which the tubes, combined in a compact mass, present regularly disposed orifices, resembling the cells of a piece of honeycomb. Another species, *Amph. ostrearia* of Cuvier, forms its tubes on the shells of oysters, and is said to be extremely injurious to the increase of that valuable mollusc.

Cuvier has placed in this order of Annelides the singular genus SYPHOSTOMA, first made known by Dr Otto, in a dissertation published at Breslau in 1820. (See Plate CCLXXV. figs. 12 and 18.) It appears to have two anterior openings or mouths.[4] Here also, but with a more doubtful claim, the genus DENTALIUM is allowed to stand. Its covering is a solid calcareous shell, in the form of an arched elongated cone, open at both ends, and compared by some to a small tusk of an elephant. (See Plate CCLXXV. fig. 9.) The animal itself does not appear to be in any way articulated, nor to possess lateral setæ. Its body is of a conical form like that of the shell, and is very smooth and compact.[5]

ORDER II.—DORSIBRANCHIA.

The genera of this order bear their branchiæ throughout the length of their body, or are at least along its middle portion, and in the various forms of branches, tufts, plates, or tubercles, in which the sanguineous vessels ramify. The majority of the species live in the mud, or swim freely in the sea. A few dwell in tubes.

Those in which the branchiæ are most highly developed are placed at the head of the order.

GENUS ARENICOLA, Lam. Branchiæ numerous, complicated, bush-shaped, and disposed over the intermediate segments of the body. Mouth terminal, in the form of a dilatable fleshy trunk, without either teeth or tentacula. No apparent eyes. The posterior extremity wants both the branchiæ and the bundles of setæ with which the other segments are furnished. There are no cirrhi to any part of the body.

Dorsibranchia.

This genus was established by Lamarck, at the expense of the old genus *Lumbricus* of Linnæus. The best-known species, *A. piscatorum* (*Lum. marinus*, Linn.), Plate CCLXXV. fig. 10, measures about a foot in length, and bears thirteen pair of branchiæ. It is of a reddish colour, and when handled it stains the fingers of a fine yellow. It inhabits moist sand by the sea-shore, and is much used as a bait by fishermen.

GENUS AMPHINOME, Brug. A pair of branchiæ on each segment of the body, and two bundles of setæ, and a pair of cirrhi to each foot. The sucker is destitute of maxillæ.

This genus was formed by Bruguieres from *Aphrodita* of Pallas and *Terebella* of Gmelin. Savigny divides it into three, viz.

1*st*, Gen. CHLŒIA, containing such as have five tentacula to the head, and branchiæ in the form of tri-pinnate leaves. We have figured as an example (Plate CCLXXV. fig. 13) a large and beautiful species, *C. capillata*, remarkable for its long and thick-set bundles of setæ of a brilliant yellow, and its purple branchiæ. It inhabits the Indian Seas. 2*d*, Gen. PLEIONE, containing those species which, with the same number of tentacula, have tufted branchiæ. 3*d*, Gen. EUPHROSINE, containing species characterized by bushy branchiæ, of a complicated structure, and strongly developed (Plate CCLXXV. fig. 11). The head is furnished with only a single tentaculum. The known species inhabit the Red Sea.

GENUS EUNICE, Cuv. *Leodice*, Sav. Branchiæ in the form of plumes, but the mouth or trunk is armed with three pair of corneous maxillæ of different forms. Each foot has two cirrhi and a tuft of setæ. The head bears five tentacula placed above the mouth, and two on the nape of the neck. (Plate CCLXXV. fig. 16.) Some of the species are furnished with a pair of eyes.

This genus contains a monstrous worm, *Eun. gigantea*, Cuv. the largest of all known Annelides. It measures from four to six feet in length, and its body consists of 448 segments. Its colour is ashy grey, with an opalescent reflection. It inhabits the Indian seas. Montagu (in *Linn. Trans.* vol. xi. pl. 3) has figured and described a species, under the title of *Nereis sanguinea*, but which, from the author's description of the jaws, is no doubt referrible to the present genus, or rather to that subdivision of it called MARPHYSA by Savigny, and distinguished by the absence of nuchal tentacula. The body is long, slightly depressed beneath, and its segments exceed 270, about forty of which, at the posterior extremity, were of a much paler colour than the others, and appeared to Montagu as if they had been lately reproduced. The rest of the body was of a fine bronze colour, resplendent with changeable prismatic tints. It is a large species, measuring fourteen or fifteen inches in length. *Eun. tubicola* inhabits the North Sea, and is remarkable for dwelling constantly in a solid corneous transparent tube. See Plate CCLXXV. figs. 14 and 17.

After the preceding genera of the dorsibranchial order, of which the branchiæ are complicated, Cuvier places those

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[1] Montagu observed *Terebella venustula* fixing its tentacula, and then, by contracting them, draw its body forward.

[2] Griffith's *Animal Kingdom*, vol. xiii. p. 86.

[3] These species form the genus *Sabellaria* of Lamarck, and Hermella of Savigny. No department of natural history is more darkened by a confused cloud of synonyms than that which treats of the Annelides. "Ces perpétuels changements des noms," says Cuvier, "finiront par rendre l'étude de la nomenclature beaucoup plus difficile que celle des faits." (*Règne Animal*, t. iii. p. 195.)

[4] See the article *Siphostome*, in the *Dict. des Sciences Nat.*

[5] See Savigny, *Système des Annelides*, p. 98; and Deshayes, *Monographie du Genre Dentale*, in *Mém. de la Soc. d'Hist. Nat. de Paris*, t. ii. p. 321. We may here note, that the genus *Dentalium* seems to have been equally abundant in ancient as in modern times,—many of the calcareous tubes being found in a fossil state.

Dorsibranchia.

of which the respiratory organs are reduced to simple laminæ, or even to slight tubercles. In some species indeed the branchiæ are represented by cirrhi alone.

Some exhibit an alliance to the genus Eunice, in the strength of their jaws, and the unequal number of their antennæ. Such are the genera Lysidice and Aglaura of Savigny.

Genus Nereis, Cuv. *Lycoris*, Sav. Tentacula of even numbers, attached to the sides of the base of the head, and a little further onwards two others biarticulate, with a pair of simple tentacula between them. A single pair of maxillæ in the proboscis. Branchiæ composed of small plates, in which a net-work of sanguineous vessels is disposed. Each foot is moreover provided with two tubercles, two bundles of setæ, and an upper and under cirrhus.

"The Nereides," it is observed in Mr Griffith's Supplement, "most usually live in the excavations of littoral rocks, in the hollows of sponges, in certain alcyones, in univalve or bivalve shells, in Madrepores, in the interstices of the radicles of Thalassiophytes, under stones, and in general in all bodies which present fissures more or less profound. There are some which bury themselves in mud or sand, where they excavate a lodge proportional to the dimensions of their body, and sometimes they line this dwelling with a mucous matter issuing from their body, in sufficient abundance to construct a tube or sheath. From this they put forth a greater or less portion of their body, but rarely the posterior extremity, so that they may be able to reenter on the slightest indication of danger. They all appear to feed upon animal substances, whether in the living state, or in a state of putrefaction more or less advanced. M. Bosc, who has observed the manners of some species on the coasts of the United States, tells us positively that these animals feed upon polypi and small worms, on which they throw themselves, by darting the anterior part of their body, which they have first contracted. Otho Fabricius tells us of some species of Spio, or Nereides with tubes, that they seize the planariæ on which they feed, by means of their long tentacula."

The species of this genus have a linear shaped body, more or less convex above, and composed of numerous segments. The term *Sea scolopendræ,* sometimes applied to them, expresses not inaptly their usual form. (See Plate CCLXXV. fig. 15.) *N. margaritacea* of Leach is distinguished by its pearly body, terminated by two long setæ. Its head is tri-lobate, with eight tentacula. This species is common near the Bell Rock, and is subject to great variation of colour.

Near the preceding Nereids may be classed several genera of the same slender form, and with branchiæ reduced to simple plates, or even to threads or tubercles. In some the maxillæ and tentacula are absent.

Genus Phyllodoce, Sav.[1] Tentacula on the side of the head, in equal numbers, with four or five smaller ones in advance. Eyes apparent. Trunk large, and provided with a circle of very short fleshy tubercles. No apparent jaws. Branchiæ broad, and in the form of leaves, thin, flat, and veined. Body linear, with many segments.

Ph. laminosa, Sav., is almost cylindrical, and consists of from 325 to 338 segments. It is of a brown colour, with reflections of purple and violet. Though nearly a foot long, it measures only a line and a half in breadth. It inhabits the shores of Nice. The *Nereis lamelligera Atlantica* of Pallas[2] is probably a Phyllodoce.

Genus Alciopa, Aud. and Edw. Mouth and tentacula resembling those of the preceding genus, but the feet or organs of movement present, in addition to the tubercles which bear the setæ and foliaceous cirrhi (branchiæ), two branchial tubercles, which occupy the upper and under margins.

Genus Spio, Fab. Body slender, with two very long tentacula resembling antennæ; head furnished with eyes; branchiæ on each segment of the body, in the form of a simple filament.

The species of this genus occur chiefly in the North Sea. They are of small size, and dwell in membranous tubes. They continually agitate their long tentacula. We have figured as an example the *S. crenaticornis* of Montagu,[3] the characters of which will be better understood by an inspection of Plate CCLXXVI. figs. 1 and 1^a, than by the most laboured description. The tube of this species is extremely tender, being composed of minute adventitious matter slightly agglutinated. It is usually attached to *Sertulariæ*. In general the feelers or tentacula are alone displayed; these are kept in constant motion, and are turned about in all directions, although they are at the same time capable of instantaneous contraction.

Genus Syllis, Sav. Tentacula of uneven number, and moniliform, in common with the superior cirrhi of the feet. The latter very simple, with a single tuft of setæ.

Some diversity seems to exist in this genus in regard to the presence or absence of jaws, a character, however, of too great importance, it may be supposed, to admit of such extreme variation in a *natural* group. The segments of the body are very numerous.

S. monilaris, Sav. (Plate CCLXXVI. fig. 2), inhabits the Red Sea. Its body is long (consisting of 341 segments), slightly depressed, insensibly narrowed towards the tail, which terminates in two slender moniliform threads.

Genus Glycera, Sav. Recognizable by the form of the head, which bears the shape of a fleshy conical point, resembling a little horn, and of which the summit is divided into four scarcely perceptible tentacula. The maxillæ are alleged to vary as in the preceding genus.

Few of the species have been observed in a recent state. *G. unicornis* is supposed by some to be identical with the *Nereis alba* of Muller and Gmelin. Its native country is unknown. *G. Meckelii* of Audouin and Edwards occurs on the shores of France.[4]

Genus Nephthys, Cuv. The species of this genus are distinguished by a trunk resembling that of Phyllodoce, but they want the tentacula, and have on each foot two bundles of setæ, widely separated, with an intermediate cirrhus.

The only species admitted by Savigny is *N. Hombergii*, discovered by the gentleman whose name it bears, near Havre de Grace.

Genus Lombrinera, Blainv. Tentacula wanting. The body, which is extremely elongated, bears on each segment merely a little forked tubercle, from which issues a small bundle of setæ.

To this genus are referrible, among other species, the *Nereis ebranchiata* of Pallas,[5] and the *Lumbricus fragilis* of Muller.[6] The latter forms the doubtful genus *Scoletoma* of Blainville.

Genus Aricia, Sav. Teeth and tentacula wanting. Body elongated, with two rows of lamellar cirrhi on the back. Anterior feet furnished with dentated crests, which are absent from the other organs of movement.

Genus Hesione, Sav. Body short, thickish, composed

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[1] Not to be confounded with the genus so named by Ranzani (in *Mem. di Storia Natur.* dec. prima, pl. i. fig. 2–9), at a period posterior to the publication of Savigny's work.

[2] *Nov. Act. Petrop.* t. ii. p. 233, tab. 5.

[3] *Linn. Trans.* xi. tab. 14, fig. 6 (not 3, as in the author's *references* to his own figures).

[4] *Littor. de la France*, Annelides, pl. vi. fig. 1.

[5] *Nov. Act. Petrop.* t. ii. pl. vi. fig. 2.

[6] *Zool. Dan.* pl. xxii.

of few segments, and these not very distinguishable. A very long cirrhus, probably performing the functions of branchiæ, occupies the upper part of each foot, which has also another beneath, and a tuft of setæ. The sucker is large, but unprovided with either teeth or tentacula.

The species, though few in number, seem pretty widely distributed. *H. splendida*, Sav.[1] (Plate CCLXXVI. fig. 3), occurs on the coasts of the Red Sea, and was found by Mathieu at the Isle of France. *H. festiva* greatly resembles the preceding, though of smaller size. It was discovered in the neighbourhood of Nice, by M. Risso.[2]

Genus Ophelia, Sav. Body thick and short, with the segments not very apparent, and the setæ scarcely visible. For two thirds of its extent long cirrhi serve as branchiæ. The palate contains a toothed crest, and the lips are surrounded by tentacula, of which the two upper are larger than the others.

O. bicornis, Sav. discovered by Orbigny, seems the only species yet distinctly known.

Genus Cirrhatulus, Lam. A very long branchial filament, and two small tufts of setæ on each segment of the body. These segments are very numerous and closely set, and there is an additional range of filaments on the posterior part of what may be called the neck. The head, but slightly apparent, has neither jaws nor tentacula.

To this genus Lamarck (under the name of *C. borealis*) refers the *Lumbricus cirratus* of Otho Fabricius.[3] Cuvier considers the *Terebella tentaculata* of Montagu[4] as likewise being a species of Cirrhatulus. See Plate CCLXXVI. fig. 4.

The body of this marine Vermis is long and slender, and composed of more than 200 annulations, each of which is furnished with two fasciculi of very minute bristles. There are no eyes, and the branchiæ are obscure. From the sides of the segments issue very long, red, capillary appendages, most numerous near the anterior end, the extreme point of which, however, is destitute of them, and becomes acuminated. The mouth is placed on the inferior face. The posterior end is likewise obtusely pointed. The length of this animal is eight or nine inches. The colour of the upper portion is olive green, of the under dull orange. While in a state of nature, the filiform appendages of the sides are in continual motion, appearing like slender red worms, twisting themselves around the body in all directions. This curious species was taken from a piece of timber that had been perforated by *Pholades*, and was destitute of any natural covering.[5] Although Montagu placed it in the genus *Terebella*, he expressed his doubts as to the genus to which it really belonged.

Genus Palmyra, Sav. Setæ of the upper tufts large, flattened, fan-shaped, and shining with the brilliancy of polished gold; under tufts small. Cirrhi and branchiæ not much developed. Body elongated, with two rather long and three very short tentacula.

The only known species is *P. aurifera*, a native of the Isle of France, from whence it was sent to Paris by M. Mathieu.

Genus Aphrodita, Linn. Distinguished by its two longitudinal ranges of broad membranous scales, which cover the back, and beneath which the branchiæ, in the form of little fleshy crests, are concealed.[6]

The form of these Annelides is usually flattish, and is shorter and broader than in most of the genera. The interior contains a very thick and muscular œsophagus, susceptible of being in part protruded outwards, like a trunk or sucker; there is likewise an unequal intestine, furnished on each side with a great number of branched cæca, of which the extremities are attached between the bases of the tufts of setæ, which serve as locomotive organs. It is alleged that the sexes are separate in the Aphroditæ, and that the females are oviparous. At certain periods the female is certainly found filled with egg-like substances, which swim in a circumambient liquid, and the male is said to abound with milt.

Abranchia.

Savigny has raised this genus to the rank of a family, containing three genera, viz. *Palmyra*, already noticed, *Halithea*, and *Polynoe*.

To the genus *Halithea* belongs a well-known British species, *Aph. aculeata*, Linn. It is of an oval form, six or seven inches in length, and nearly two inches broad. The scales of the back are covered, and in part concealed, by a substance resembling tow, which takes its growth from the sides. From these sides also spring groups of strong spines, which partially pierce through the tow-like substance, and bundles of softer and more flexuous bristles, which shine with the brilliancy of gold, or exhibit the various tints of the rainbow, scarcely yielding in beauty, as Cuvier has observed, either to the lustrous plumage of the humming-bird, or the sparkling of precious gems. Lower down is a tubercle, from which spines issue in three groups, and of three different sizes, and lastly, a fleshy cone. There are forty of these tubercles on each side; and between the first two there are a pair of small fleshy tentacula. There are fifteen pair of broad scales, sometimes pursed, upon the back, and fifteen small branchial crests on each side. This curious creature is known along our native shores by the name of *sea-mouse*. Two other species, *Aph. sericea* and *hystrix*, are referrible to the same genus.

Another subdivision of the Linnæan Aphroditæ has none of the flax-like substance on the back—the tentacula are five in number—and the trunk encloses strong corneous mandibles. (Plate CCLXXVI. fig. 5.) It is named *Polynoe* by Savigny, and contains most of the old species described by Linnæus, Pallas, Muller, and Otho Fabricius. The *Aph. clava* of Montagu[7] is a Polynoe. Several other generic groups have been recently formed by Audouin, Milne Edwards, and others, from the genus Aphrodita.[8]

Genus Chætopterus, Cuv. Mouth with neither trunk nor sucker, provided above with a lip, to which are attached two or three small tentacula. Then follows a disk, furnished with nine pair of feet, followed by a couple of long silky bundles like wings. The lamelliform branchiæ are attached rather to the under than the upper portion, and prevail along the middle of the body.

There is only one species of this singular genus, *Ch. pergamentaceus*, Cuv. which measures from eight to ten inches in length, and inhabits a tube formed of a substance resembling parchment. It occurs in the West Indian seas.[9]

Order III.—ABRANCHIA.

In this the third principal division of the Annelides there is no apparent external organ of respiration. Certain species, like the earth-worm, seem to respire over the entire surface; others, like the leech, by interior cavities. We perceive a circulating system of closed vessels, generally filled with red blood, and a nervous knotted cord, as among the preceding groups.[1] Some are furnished with setæ, which aid the locomotion, while others are destitute of these parts; from whence arises a subdivision into two principal families.

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[1] *Ouvrage d'Egypte*, pl. iii. fig. 3.

[2] *Eur. Merid.* t. iv. p. 418.

[3] *Fauna Groenlandica*, p. 281, fig. 5.

[4] *Linn. Trans.* ix. pl. vi. fig. 2.

[5] *Ibid.* p. 110.

[6] In the opinion of some observers, the *Aphroditæ* offer an exception to the characters of their class, in not being possessed of *red blood*; but Cuvier has stated his belief (*Règne Animal*, t. iii. p. 186, *note*) that that feature is distinguishable in *Aph. squamata*.

[7] *Linn. Trans.* ix. pl. vii. fig. 3.

[8] See *Règne Animal*, t. iii. p. 207.

[9] For descriptive notices (with figures) of several rare and otherwise interesting *British* Annelides, consult a series of papers published in the *Magazine of Natural History* (chiefly volumes 6th and 7th), by an ingenious observer, Dr Johnston of Berwick.

FAMILY I.—ABRANCHIA SETIGERA.

These are furnished with setæ, and correspond to the two genera *Lumbricus* and *Nais* of Linn.

GENUS LUMBRICUS, Cuv. Body long, contractile, cylindrical, divided by wrinkles into a great number of apparent rings. Mouth without teeth, subterminal, bilabiate, the upper lip larger than the other, advanced. No eyes.

This genus corresponds to *Enterion* of Savigny, and contains the earth-worm and other species. The setæ are rough and short, as if unguiculated. Each segment is provided with eight of these setæ, that is, four on each side, united in pairs, and forming, by their distribution on the body, eight longitudinal rows, of which four are lateral and four inferior. From six to nine of the segments, comprised between the 26th and the 37th, are swollen, and form towards the anterior and superior portion of the body a kind of cincture, especially perceptible during the breeding season. In the interior of these creatures we perceive a straight wrinkled intestine, unprovided with a cæcum, but receiving in its course several muscular fibres (proper to the rings of the body), which form an equal amount of small diaphragms. Some internal whitish glands towards the anterior of the body are regarded as connected with the generative system. The nervous cord consists of a series or infinity of very small ganglia, closely set together. The circulation of the blood among the Lumbrici is by no means difficult to detect. We may perceive arising from the intestinal canal, and from the inner surface of the outer envelope, an infinite number of small veinous vessels, which interlace with a great assemblage of arterial ones. These veins unite in one common trunk, placed longitudinally beneath the belly, and from that trunk proceed five small canals, which unite in a single dorsal vessel, which may be regarded as the heart. From the last-mentioned organ small arteries take their origin, and proceed to form a net-work with the veins of the superficies of the body,—thus completing the circulation. Respiration appears to be carried on at the surface of the skin, most likely by means of extremely small internal branchiæ.

The appearance of the common earth-worm (*Lumbricus terrestris*) is too familiar to need description in this place. We shall merely mention, that beneath the sixteenth segment there are two pores, the uses of which are still unknown. The mode of production is likewise still disputed. M. Montegre[2] maintains that the eggs descend between the intestine and the outer envelope, around the rectum, where they hatch, and are speedily protruded in the living state. M. Dufour, on the contrary,[3] asserts that they lay eggs resembling those of leeches.[4] See Plate CCLXXVI. figs. 7, 8, 9, 10. The ordinary habits of the earth-worm are well known. They inhabit moist earth, which they pierce in all directions, and a quantity of which they swallow. They also, however, feed on animal and vegetable remains, and always prefer soil imbued with those substances. They seek each other's society chiefly during the night, and in the month of June. Under the specific name of *terrestris*, naturalists have no doubt confounded many different kinds. Savigny, to whom we owe so much in relation to the Annelides in general, has, since the publication of his great work on that class, devoted his attention more particularly to the genus Lumbricus, and has ascertained the existence of about twenty-two species in the environs of Paris alone.[5]

In the genus *Hypogæon* of Savigny, each segment is furnished with an additional seta on its dorsal surface, and the setæ are long, spiny, and sharp-pointed. The body in form and colour greatly resembles that of the common earth-worm, but the segments are less numerous, not exceeding 106, whereas those of the latter amount to 120 and upwards. The only species with which we are acquainted is *Hyp. hirtum*, first observed in the neighbourhood of Philadelphia.

GENUS NAIS, Linn. Body elongated, linear, flattened, transparent or semi-transparent, and in general provided with lateral ciliæ, simple or in tufts. Segments less distinctly marked than in the earth-worm.

The synonymy of this genus is very confused, its nature and attributes obscure, and its position in the system consequently various, according to the views of different observers. The name, borrowed from the heathen mythology, was first applied by Muller, and was generally adopted by contemporaneous, as it has been by succeeding, naturalists. It was written *Naias* by Bruguieres (in *Encyc. Méthod.*), an erroneous alteration, in so far as the latter term had been previously consecrated by Linnæus to a genus in botany. Lamouroux increased the confusion by bestowing the name of *Naïsa* on a polypus genus of the family of *Tubularia*, already known by the title of *Plumastella*; and the resemblance of the two names has induced some compilers to refer to them as synonymous, although they in fact signify objects belonging to separate classes of the animal kingdom.

Lamarck and Cuvier, in preserving the name of *Nais* to the subjects of our present notice, do not agree regarding their relations to other groups. The former author places them in the third or concluding order of his class Vermes (*Vers hispides*), thus disposing them between the genus *Gordius* and the *Epizoariæ*. His reason for so doing is, that the structure of the Naides is by no means sufficiently composite to entitle them to a place among the true Annelides; and the fact of their being capable of multiplication by incision, shows that their nature is somewhat anomalous in relation to the last-named class. We may bear in mind, however, that notwithstanding the observations of Trembley and Roesel, their *tomiparous* generation is doubted by Bosc; and, all things considered, we regard them as more nearly related to the genera *Nereis* and *Lumbricus* than to any other. We therefore follow Cuvier in placing them among the Annelides.

The Naides in general are small vermiform creatures, of a few lines in length, of a reddish colour, though diaphanous, extremely active in their movements, and of a voracious disposition. They abound in fresh waters, where some dwell upon aquatic plants,—others beneath stones, or in perforations in the mud. They prey on minute Crustacea, such as the genus *Daphnia*, and on the still minuter animalcular tribes, and are themselves greedily de-

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[1] See M. Ant. Duges *Sur l'Anat. et Phys. des Annel. Abranch.* in *Ann. des Sciences Nat.* for Sept. 1828.

[2] *Mém. du Mus.* t. i. p. 242.

[3] *Ann. des Sciences Nat.* t. v. p. 17, and xiv. p. 216.

[4] This seeming contrariety is easily reconciled by bearing in mind that these creatures are in fact *ovo-viviparous*, and are sometimes born in the completed state, sometimes still surrounded by an envelope or egg-like covering.

[5] See also M. Morren's Treatise *De Lumbrici terrestris Historia Naturali nec non anatomica.* Brux. 1829.

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voured by the fresh-water polypi, which swallow them up, notwithstanding the pointed ciliæ with which their sides are armed. These ciliæ, however, and other apparently indigestible portions, are afterwards disgorged by the polypi, in the same manner as owls and other birds of prey reject from their stomachs little rounded pellets of hair and feathers.

The productive powers of the Naides, by whatever process accomplished, are truly astonishing. They appear in countless thousands in the waters of marshes after the lapse of a few hours, prior to which only some solitary individuals were perceptible. The mouth in these animals is sometimes a simple cleft, sometimes an opening, accompanied by two lips. The *N. proboscidia* of Gmelin, being provided with a trunk, forms the genus *Stylaria* of Lamarck; while certain anomalous species, such as *Lumbricus tubifex* and *marinus* of Muller, constitute the conterminous genus *Tubifex* of the former author. They dwell in perforations in the mud of streams and marshes, and in the sand of the sea-shore. We may conclude by observing, that the nervous system of the Naides is unknown, and that the ocular points on the heads of certain species, though vaguely named eyes, cannot with any certainty be regarded as organs of vision.

Genus Climena, Lam. Head without tentacula or other appendages. Body cylindrical, composed of few segments, somewhat swollen about the middle, and attenuated at either end. The posterior extremity is truncated and radiated.

These creatures inhabit fixed tubes of a cylindrical form and membranous texture, open at both ends. Our illustration, Plate CCLXXVI. fig. 6, represents *Cl. amphistoma*, a species taken in the Gulf of Suez, and indigenous to the shores of the Red Sea. Its tube is composed exteriorly of grains of sand and fragments of shells, and is usually attached to the interstices of rocks, or to Madrepores and other productions of the sea.

FAMILY II.—ABRANCHIA ASETIGERA.

This family comprehends such of the abranchial order as are unprovided with setæ, and is constituted by the old genera *Gordius* and *Hirudo* of Linn., of which all the distinctly-known species are aquatic.[1]

The leeches in general (Hirudines) are characterized by an oblong body, sometimes depressed, transversely wrinkled, and furnished with a dilatable cavity at either extremity—that is, the mouth is surrounded by a lip, and the posterior end is provided with a flattened disk. These latter parts are useful as organs of prehension and locomotion, and also act as suckers. The mouth, placed in the anterior cavity, is furnished with three jaws.

These useful vermes were probably known in very ancient times. The *Halucah* or *Gnaluka* of the Hebrews appears to have been one of this tribe, at least the term has been so translated in our versions of the Proverbs, ch. xxx. v. 15. "The horse-leech hath two daughters, crying, Give, give." The Greek writers make mention of them under the name of *Bdella*, and the Latin authors under those of *Hirudo* and *Sanguisuga;* but the ascertainment of the precise species indicated is by no means easy. After the revival of learning we have various general notices of their history and habits, although it was so late as the time of Linnæus before we attained to any knowledge of their specific distinctions. The Swedish naturalist (in his *Fauna Suecica*) described eight species, and numerous additions have been made in more recent times. For a long period the genus *Hirudo*, as founded by Ray and adopted by Linnæus, experienced no subdivision; but the labours of Leach, Oken, Savigny, Lamarck, and others, have shown the propriety of re-arranging a group, consisting no doubt of natural constituent parts, but composed of beings exhibiting a varied range of structure, and too much extended for the formation of a genus, properly so called.

The structure of these creatures is soft and contractile, composed of a great number of articulations, and generally invested by an abundant supply of mucous moisture. The anterior cavity, which contains the mouth, is named *capula* by Savigny, while the posterior disk bears the name of *cotyla* in the nomenclature of that author. On the anterior segments certain small black points are observable, which some designate as eyes, but which have scarcely been proved to fulfil the functions of those organs. They vary in number in the different genera, from two to ten. Various experiments have been made with a view to the ascertainment of this sense. If we place leeches in a vessel surrounded by black paper, and permit the light to enter only by means of a single small orifice, they are by no means slow in directing themselves to that point;—but this observation we deem to be in no way conclusive, in as far as light produces an efficient action and a directing influence, not only upon many of the lowest tribes, which we know to be destitute of eyes, but even upon the subjects of the vegetable kingdom. M. Moquin-Tandon however asserts, that having placed a small piece of red-coloured wood in front of *Nephelis vulgaris*, it evidently turned round on purpose to avoid it.[2] Their perception of the sense of touch is delicate, although they possess no special or circumscribed organs for its reception. The sense of taste is obvious,—that of hearing and of smell imperceptible. No odour affects them,—no sound seems to produce any influence; nor can we detect any organs which may reasonably be deemed the seat of these last-named functions.

The tegumentary system of leeches has been examined in detail in very few species. In the medicinal leech three parts are, however, distinguishable—the epidermis, an intermediate layer which is the seat of colour,—and the dermis. The epidermis is extremely fine and delicate, perfectly colourless, and remarkably deciduous, that is to say, it is frequently renewed, even as often as once in every four or five days in warm weather. It adheres intimately to the lower layer, but not by its entire extent—being frequently free between the rings of which the body of the creature is composed. When detached we perceive that it is perfectly transparent at the points which adhered to the coloured layer, and slightly opake, or even of a whitish colour, where it became unattached in passing from one segment to another. Under the microscope it is seen to be pierced by an infinity of small holes, through which a mucous liquid flows, which lubricates the surface. The coloured layer, or *pigmentum*, adheres strongly to the dermis on which it lies. The hues which it exhibits are very different according to the species,—sometimes they are

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[1] We do not exactly know what species of the lower tribes is alluded to by Sir T. S. Raffles in one of his letters descriptive of an excursion from Bencoolen. "I must not omit to tell you, that in passing through the forest, we were, much to our inconvenience, greatly annoyed by *leeches;* they got into our boots and shoes, which became filled with blood. At night, too, they fell off the leaves that sheltered us from the weather, and on awaking in the morning we found ourselves bleeding profusely. These were a species of intruders we were not prepared for." Another species of land leech is said to inhabit Madagascar, where it occurs on plants. It seizes greedily on the legs of the passers by, and sucks their blood.

[2] *Monographie de la famille des Hirudinées.* Montpellier, 1826, in 4to.

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dark and uniform, but usually lighter on the under than the upper surface; sometimes the ground colour is varied by spots or streaks of different intensities, while the pigment, if we may so express it, is occasionally almost colourless, and we may then perceive distinctly through the skin all the interior organs of the body. The dermis, or deepest layer, exhibits a curious organisation; it consists of a thickish tunic, presenting an appearance of distinct circular articulations, which produce the ringed or wrinkled aspect of the external surface. The spaces which exist between these rings are covered by the epidermis, and seem intended to facilitate the varied movements of the animal.

Beneath the skin, of course, are placed the muscles. We find first a layer of transverse fibres, which adheres intimately to the dermis. This layer covers other muscles, of which the direction is longitudinal; and beneath these we find some more, of which the direction is again transversal.

The *capula* or oral sucker is formed by two extensile lips; the one superior, usually large, sometimes almost lanceolate—the other inferior, and less advanced. Within it are placed the jaws, rarely wanting, and usually three in number, disposed triangularly, and fixed upon a corresponding number of little tubercles. Their consistence is slightly cartilaginous, their form almost lenticular, and their margin, free and cutting, is sometimes smooth, sometimes furnished with a double row of dentations, more or less numerous according to the different kinds. A sort of cartilaginous ring, which frequently surrounds the base of the tubercles, indicates the opening of the intestinal canal, which commences by a species of œsophagus more or less narrow, presenting occasionally some longitudinal folds, but never any lateral pouch-like swellings. The ensuing portion or stomach, on the contrary, usually exhibits throughout its entire extent expansions more or less perceptible, according to the state of repletion. In certain species (such as *Clepsina complanata*) these lateral appendages are never effaced, but constitute permanent cæca. The rectum is generally separated from the stomach by a valvular contraction. The anal opening is on the back, at the origin of the posterior sucker, called *cotyla* by Savigny. The digestive canal is throughout composed of two pellucid tunics, and towards its extremity some muscular fibres are perceptible. Although the existence of a liver in the leech tribe is not so ascertained as to be at all generally admitted (indeed it is denied by some, and doubted by many), yet M. Blainville describes an apparatus for the secretion of bile, consisting of a cellulo-membranous tissue, surrounding a portion of the stomach and intestine.[1]

All leeches are blood-thirsty and voracious, and support themselves by sucking the life-blood of other animals. Their powers of digestion and assimilation are, however, extremely slow. After the lapse of days, weeks, and even months, portions of the liquid or solid matters which they may have swallowed are found to remain in the intestinal canal. The kinds used in medicine, moreover, offer this peculiarity, that the blood which they have sucked does not seem to experience any sensible alteration in their stomach, but maintains its natural colour and fluidity. If, however, the leech dies, or the blood is exposed to the air, it speedily coagulates, and becomes of a blackish brown.

The nervous system of the leech tribe has been described in some detail by several authors, especially that of *Sanguisuga officinalis*, *Hæmopis vorax*, *Nephelis gigas*, and *Albione muricata*. It is composed of a series of ganglions, extending from the mouth to the extremity of the body, and placed, as among the other articulated classes, beneath the alimentary canal. From each ganglion proceed nervous threads, which ramify *ad infinitum* to the other parts.

The circulating system of leeches has been the subject of still more numerous researches. MM. Thomas,[2] Cuvier, Carena,[3] Moquin-Tandon, Dugés,[4] and Audouin,[5] have greatly signalised themselves in that laborious field. All the species hitherto examined have presented four longitudinal vascular trunks,—one dorsal, another ventral (these two being separated by the alimentary canal), and two lateral. These principal organs communicate with each other, not only by the capillary vessels which meet and intermingle in the different parts to which they are distributed, but also by special branches of considerable diameter, which proceed directly from one vascular trunk to another. The ventral vessel furnishes large branches, which, mounting vertically on either side, embrace the intestinal canal, and open on the dorsal vessel. Dugés names these the *abdomino-dorsal branches*. The lateral branches communicate with each other by means of transverse branches, which pass beneath the medullary cord. These branches have been lately figured and described by Jean Muller (in *Archiv. fur Anat. und Phys.* Jan. Marz. 1828), and Dugés names them *latero-abdominal branches*. Lastly, these lateral trunks also send large branches to the dorsal vessel, which bear the designation of *latero-dorsal branches*. In addition to these canals, which thus establish a direct connection between the principal trunks, each of the latter gives rise to an infinite number of small vessels, which carry the blood to the various parts, and especially to the skin, which may be regarded as the principal, though not the sole, organ of respiration. That other organ, to which we now allude, consists of certain pouches, amply provided with blood-vessels, which form a net-work on their coats, and proceed from the subdivision of a vessel furnished by the latero-abdominal branches, as well as of a large vascular pouch or bag called pulmonary by Dugés, and which is derived from the lateral trunk. In a species of *Albione* dissected by M. Audouin, the lateral vessels were perceived to be in direct communication with the respiratory pouches, by means of two branches, one of which is anterior, the other posterior. He also observed that numerous branches sprang from the anterior portion of the dorsal vessel, and proceeded partly to the pouches, and partly to the lateral trunks. Thus the pouches communicate at the same time, both with the dorsal and lateral vessels. In accordance with these views, the process of circulation is supposed to be as follows. The lateral trunks are regarded as great veins, which receive the blood from all parts of the body, and transmit it to the respiratory pouches, in which it becomes re-oxygenated; a small portion then flows back to the lateral vessels, while the greater portion enters the dorsal vessel, and then the ventral one, both of which assist in propelling it to all the other parts of the body, from whence it returns to the lateral branches, and thence flows to the respiratory pouches as aforesaid. We must add, however, that M. de Blainville and others deny that the pouches or vesicular sacks just mentioned are of a pulmonary nature.[6] They regard them rather as secreting glands, and it is certain that respiration is carried on in great part through the medium of the skin. Various kinds of leeches may be often seen fixed by their posterior sucker, and swinging themselves to and fro for hours and even days together, their bodies being at that time more than usually flattened, in order to render the motion more effective. They are then respiring after the manner of the Naids, by bringing their cutaneous system into constant contact with a fresh supply of water. During this singular process the pulmonary pouches are almost quite inert, and their sanguineous vessels scarcely perceptible, while the *cutaneous* net-work, on the contrary, is in full and remarkable activity.

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[1] *Essai d'une Monographie de la famille des Hirudinées.* Paris, 1827, in 8vo.

[2] *Mém. pour servir à l'Histoire Nat. des Sangsues.* Paris, 1806.

[3] *Monographie du Genre Hirudo*, in *Mém. de l'Acad. de Turin*, tom. xxv.

[4] *Recherches sur la Circulation, &c. des Annelides Abranches*, 1828.

[5] Articles *Sangsue* and *Sangsues*, in the *Dictionaire Classique d'Hist. Nat.*

[6] Cuvier seems to express no very decided opinion on the subject above referred to. "On voit dans plusieurs en dessous du corps deux séries de pores, orifices d'autant de petites poches intérieures que quelques naturalistes régardent comme des organes du respiration bien qu'ils soient la plupart du temps remplis d'un fluide muqueux." (*Règne Animal*, t. iii. p. 213.)

Leeches are hermaphrodites, like others of their class; but sexual union of separate individuals is indispensable to the process of fecundation. Although in many of their more obvious characters they so nearly resemble the Planariæ, they stand too high in the scale to be capable of reproduction by excision, or the cutting of parts. A variety of opinion exists among naturalists regarding the mode of production, whether by eggs or living young. It is probable that such as do not appear to lay eggs are merely ovoviviparous, and bring forth their young alive, after they have been hatched in the body of the parent. The majority of species in truth lay *oviferous capsules*, each containing several germs. Certain kinds of *Clepsina* are distinguished by this peculiarity; a small pouch exists in the abdomen, in which the young seek protection during infancy. They attain to full size rather slowly, and the duration of life is considerable, though not distinctly known. Medicinal leeches have been kept in life for a period of eight years; and it has been inferred, that if, with the disadvantages of confinement, and irregular supplies of food, they survive so long, their natural term of life must be much greater. This, however, we regard as an inconclusive, if not erroneous mode of reasoning; for we know that among insects and other classes of the more lowly organized departments of animal life, abstinence, and the non-fulfilment of their natural instincts, are uniformly found to prolong their period of existence.

The leech tribe in general is widely distributed over the earth's surface, although, as usual, each species has its own range of localities.[1] Our medicinal kinds seem proper to Europe, although they extend from Russia to the southern point of Spain. All the species are extremely sensible of atmospheric changes. They seem agitated during high winds, and often bury themselves in the mud during cloudy weather. Some fanciful observers have even kept them in confinement, that they might serve to indicate the weather; but we incline to think that it is fully as useful, and not more troublesome, to look out of a window than into a phial. On the approach of cold weather they sink into the mud, and pass the winter in a state of lethargy.

We shall now proceed to a brief consideration of the principal genera into which the tribe has been partitioned by modern naturalists.

Abranchia.

GENUS SANGUISUGA, Sav. Oral sucker consisting of several segments; upper lip almost lanceolate; aperture transversal, jaws three in number, compressed, and each armed on their cutting edges with two ranges of fine teeth. Ten black points (which some regard as eyes) disposed in a curved line; the posterior four more isolate. Anal sucker obliquely terminal.

This genus contains the leeches properly so called, that is, the medicinal kinds; and, according to Savigny, consists of three species. Some recent additions, however, have been made to these by MM. Moquin-Tandon and Carena.

H. medicinalis of naturalists (Plate CCLXXVI. fig. 14) is the most common kind, and that most frequently used for blood-letting purposes. It occurs throughout the freshwater marshes of Europe, and measures from four to five inches in what may be called its medium state, although capable of both contraction and extension within and beyond those limits. Its body, including the anterior sucker, is composed of ninety-eight rings, and is of a deep-green colour on the back, with six reddish bands, three on each side. The two inner bands are almost spotless; the two central ones are marked by a chain of small spots and points of velvet-black; the exterior bands are marginal, and each subdivided by a black fillet. The abdomen is of an olive colour, broadly bordered and spotted with black. Savigny distinguishes, under the name of *S. officinalis* (it is the *H. provincialis* of Carena), another species, likewise used in medicine (see Plate CCLXXVI. figs. 11 and 12), and frequently confounded with the preceding. It is vulgarly known as the *green leech*, and resembles the common kind in size, and the number of its segments; but the colour of the back is not so sombre, and the abdomen is of a more yellow green, and, though bordered with black, is without spots. The six anterior eyes are very projecting, and have more truly the appearance of organs of vision. The third species mentioned by Savigny is the *S. granulosa*. It was brought by M. Leschenhault from Pondicherry, where it is used in blood-letting after the manner of our European kinds. *S. obscura* and *interrupta* are both described by M. Moquin-Tandon as indigenous to the vicinity of Montpellier; and *S. verbena* of Carena occurs in the Lago Maggiore.

With the exception of the last-named species, and that from Pondicherry, M. Blainville refers all the others to the *H. medicinalis* of Linn., of which, according to his peculiar views, he establishes five varieties; the grey, the green, the spotted, the black, and the flesh-coloured. With that love of change for which too many modern naturalists are remarkable, he names the genus *Jatrobdella*.

We have already mentioned that leeches are abundant in all the countries of Europe. France furnishes an immense supply, and their collection in some of her provinces affords the materials of an important branch of commerce. Some curious details on the subject were read several years ago to the agricultural society of the department of Seine-et-Oise. Towards the month of April or May, according to the nature of the season, the country people collect the cocoons or capsules formerly mentioned as containing the eggs. These they find in abundance in the mud of shallow marshes, and convey them to various reservoirs in other quarters, so as to spread and propagate the breed. They do not use them commercially till they are about eighteen months old. Leeches are very numerous in the lakes and marshes in the neighbourhood of Nantes; and their collection is carried on throughout the whole year, but chiefly during summer. They are transported to Paris in linen bags, each containing about 500, placed in panniers, and surrounded by wet moss. During a favourable season the dealers of Nantes will sometimes receive at the rate of fifty thousand every day; and a Parisian druggist informed M. Audouin, that in the summer of 1820 he received from Moulins 130,000 for his own share.[1] Many leeches refuse to bite. This generally arises either from their appetite for food having been recently satisfied, or from their being about to change their skins. It is believed, however, that capricious individuals sometimes occur, which will not suck at all; and of this it is impossible to ascertain the cause. Inflammation occasionally follows the infliction of the bite, and in this case a vulgar prejudice exists that a horse-leech has been applied. This is in every way an error, for the horse-leech refuses to fasten upon the human body. The means used for the preservation of leeches in confinement are various. The most common mode consists in placing them in a bottle of water frequently renewed. Some apothecaries find advantage from placing moss or aquatic plants at the bottom of the vessel, which aid in freeing them from slime. The chief dispenser of the marine hospital of Rochefort keeps his leeches simply in moistened clay, in which the creatures form holes and galleries, where they live happily for years.

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[1] We observe it stated in several continental works of authority, that leeches are unknown in, or at least not indigenous to, the western world. We were inclined *a priori* to doubt the accuracy of this statement, and lately instituted some inquiries on the subject, in which we were aided by an excellent physiological naturalist of this city, Dr Allen Thomson. We find that in the Dispensatory of the United States, by Drs Wood and Bache (published at Philadelphia in 1833), there is a description of a true American medicinal leech. These authors state, that at New York, Boston, and elsewhere, European leeches, that is, the gray and green varieties of the *Hirudo medicinalis* of Linnæus, are chiefly employed, and are imported in great quantities; but that in Philadelphia and the neighbourhood the indigenous *Hirudo decora* is used. It is this species which is described in Major Long's Second Expedition (vol. ii. p. 268). The back is of a deep pistachio-green colour, with three longitudinal rows of square spots, twenty-two in number, and placed on every fifth ring. The abdomen is spotted with black. This kind usually measures two or three inches in length, occasionally attaining to the extent of four or five inches. It is carried to Philadelphia by the country people from Bucks and Berks county. It is said to draw less blood than the European leech, and does not cut so deeply. About three American do not more than correspond to a single European leech in their suctorial powers.

Genus Hæmopis, Sav. Differs from the preceding chiefly in the jaws being not compressed, and furnished with less numerous dentations. (Plate CCLXXVI. fig. 15.)

H. sanguisorba, Sav. (*Hirudo sanguisuga*, Linn.), commonly called the *horse-leech*, is a well-known species, somewhat larger than the medicinal kinds, and of a uniform greenish-black colour. A great diversity of opinion seems to exist regarding the blood-drawing propensities of this species. Many allege that it causes wounds extremely dangerous both to man and beast. Linnæus asserts that nine will kill a horse. MM. Huzard and Pelletier, on the other hand, maintain that the horse-leech, improperly so called, never attacks any vertebrated animal whatever;[2] while M. de Blainville again is of opinion that these writers have mistaken their subject of observation, and have described the black leech (his *Pseudobdella nigra*), which is truly characterized by the jaws being nothing more than folds of toothless skin, and may therefore be inferred to confine its attacks to the lower orders of creation. We agree with Cuvier in thinking that the subject deserves a fresh examination. In addition to the common species, Savigny describes three other kinds, *H. nigra*, *luctuosa*, and *lacertina*.

Genus Bdella,[3] Sav. Dentations of the jaws entirely wanting. (Plate CCLXXVI. fig. 17.) Eyes only eight in number.

As far as we know, this genus consists of only a single species, the *Bd. Nilotica*, found in Egypt, and familiar to the Arabs under the name of *Alak*. It appears to have been known to the ancients; and Herodotus (*Hist.* lib. ii. cap. 68) describes it as a parasite of the crocodile. It is of a chestnut-brown colour above, of a lively red below. (Plate CCLXXVI. fig. 16.)

Genus Nephelis, Sav. In this genus the eyes are also only eight in number, the four anterior being disposed in a crescent form, the four posterior ranged on each side on a transverse line. The jaws are reduced to three simple folds.

Savigny describes three species, *N. rutila*, *testacea*, and *cinerea*. The two former occur near Paris; the last named is frequent in the marshes of the forest of Fontainebleau.

The genus Trochetia of Dutrochet[4] does not seem to differ from the preceding, except by an enlargement near the position of the generative system. One species (*Geobdella trochetii* of Blainville) comes on shore in pursuit of earth-worms. Another minor genus has been established by M. Moquin-Tandon, under the name of Aulastoma. The jaws are represented by numerous projecting folds. The eyes are ten in number. We may here also mention M. Odier's genus Branchiobdella, of which the jaws are two in number, and the eyes wanting.[5] It inhabits the gills of cray-fish.[6]

In all the preceding groups or genera of leeches, the anterior sucker is but slightly distinguishable from the adjoining portion of the body; but in the two following genera it is rendered more perceptible by a restriction, and is composed of only a single segment. In the genus Hæmocharis of Savigny, the eyes are eight in number, the body slender, and indistinctly ringed. The species do not swim, but march after the manner of the *surveyors* or geometric caterpillars. They attach themselves particularly to fishes. The genus Albione of the same author differs from the preceding in its body being beset by tubercles, and in possessing only six eyes. The species inhabit the sea. We may mention as an example the *Hirudo muricata* of Linn.

The genus Branchellion of Sav. is distinguished by what some regard as projecting branchiæ. The epidermis is loose and ample, and seems to enclose the animal as in a sack. The species are parasitical, and attach themselves chiefly to fish of the torpedo kind. With the leeches, Cuvier also places the genus Clepsina, Sav., which is characterized by a broadened body, possessing only a posterior sucker. The anterior portion is a simple orifice, without any appearance of the usual disk. (See Plate CCLXXVI. figs. 13 and 13^a.) The species make a near approach to the *Planariæ*, and the one represented by the figure just referred to was described and figured by Mr Kirby, under the name of *Hirudo crenata*.[7] Other genera, allied to the preceding in their enlarged form and absence of the oral disk, have been established by Oken and Blainville. Of these, however, we cannot give account within our prescribed limits, and we shall therefore conclude the present treatise by a short notice of the more distantly related.

Genus Gordius, Linn. Body filiform, smooth, or with very slight transverse markings. Neither branchiæ nor tentacula of any kind.

A well-known species of this genus (*G. aquaticus*, Linn.) is distinguished in this country by the name of the *hair-eel*. It occurs in springs and marshes, and among moist a sand. It also dwells in mud, which it perforates in all directions. The position of the genus is variously regarded by different naturalists, and the extreme tenuity of form in these creatures has probably opposed obstacles in the way of a precise knowledge of their structure. The nervous system being composed of a ganglionic cord, seems, however, a strong reason for placing them among the Annelides. We follow the Baron Cuvier in so doing, although we are aware that Rudolphi and Blainville combine them with the genus *Filaria*, which contains the noted Guinea worm (*F. Medinensis*), and is usually regarded as belonging to the intestinal class.[1] (T.)

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[1] *Dict. Class. d'Hist. Nat.* t. xv. p. 108.

[2] *Journal de Pharmacie*, Mars 1825.

[3] Though we adopt the above name, we beg to protest against its propriety of application, in as far as it had been previously used to designate a genus of the class Arachnides.

[4] The title of this genus, if we mistake not, is liable to an objection similar to that stated in the preceding note,—Decandolle having previously established *Trochetia* as a genus in Botany. (See *Mém. du Museum*, t. x. p. 106.)

[5] We have already explained under what reservation of doubtful function we use the word *eyes*, in reference to the tribe of leeches.

[6] *Mém. de la Soc. d'Hist. Nat.* t. i. pl. iv.

[7] *Linn. Trans.* ii. tab. 29, p. 318.

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HELMOND, a town of the Netherlands, in the province of North Brabant, on the river Aa, which flows through it in three branches. It is defended by a strong castle, and contains 500 houses, with 2492 inhabitants, who carry on considerable trade in linen yarn, linen cloth, and especially damask table-cloths and napkins. Long. 5. 37. 17. E. Lat. 51. 29. 4. N.

HELMONT, John Baptist Van, a famous Brabançon physician, and leader of distinction in the chemical school of medicine, was born at Brussels in the year 1577, and descended of a noble family. At Louvain and other places he studied medicine with so much avidity, that he had perused Hippocrates, Galen, and the Greek and Arabian physicians at a very early period of life. When not more than seventeen years of age, he read public lectures at Louvain, and was created doctor of physic in the year 1599, when only twenty-two. Having, in 1609, married a wife who was both rich and noble, he retired with her to Vilforde, where he practised as a physician, without taking any fees. He was accustomed to boast of the thousands whom he cured every year; but his success in his own family was by no means great, for his eldest daughter died of a leprosy, and he lost two sons by the plague. He published a variety of works, by which he acquired great reputation. He was invited to the court of Vienna by the Emperor Rodolph, but he declined accepting the invitation. He died in the year 1644, in the sixty-eighth year of his age. Van Helmont was a man of acute genius, clear-sighted in detecting the mistakes of others, and extremely fond of forming hypotheses of his own, which were not always supported by conclusive arguments. He affirmed with great boldness, evinced extreme credulity, and showed excessive fondness for narrations, however extravagant, which seemed to favour his own preconceived opinions. Perhaps his greatest foible was the liberal manner in which he praised himself, in reference to his own pretended nostrums and specifics. His ideas were far from being perspicuous, chiefly owing to his habit of employing terms and phrases which he had not properly defined. He added much, however, to the stock of chemical facts at that time known, and paved the way to more interesting discoveries; and he contributed more than any of his predecessors to subvert the Galenical theory of humours and qualities, which he certainly combated with many forcible arguments. His theory of ferments was in a great measure espoused by Sylvius. His son Francis Mercury published a collected edition of his works, Amsterdam, 1648, in 4to, which has often been reprinted since, under the title of *Opera Omnia*, and has been translated into Dutch, French, and English. Of all his productions, the most curious are, 1. Febrium Doctrina inaudita, Antwerp, 1614, in 8vo; and, 2. De Magnetica Vulnerum naturali et legitima Curatione, contra Joh. Roberti, Soc. Jesu, Paris, 1621, in 8vo.

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[1] A common belief prevails in this country among the young and ignorant, that Gordii or hair-eels derive their origin from horse-hairs, or at least, that if a hair plucked from the tail of a horse (or probably a mare) is placed in water, it will ere long assume the form and fulfil the functions of a Gordius,—in other words, will become animated. We once heard this subject very gravely discussed in a company of poets and philosophers. The writer of the preceding sketch maintained, perhaps more seriously than so absurd a subject deserved, that such a transformation *could not be*. His arguments, which proceeded on certain general principles not necessary to be here narrated, were met by an equally serious assertion on the part of an ingenious and well-known pastoral poet, an honoured native of the vale of Ettrick, in the south of Scotland, that he had not only *seen* the conversion of a horse-hair to a hair-eel, but that having on one occasion, while engaged in angling, dropped a fishing-line from his hat-band, he had the good fortune to recover it some weeks after in the form of a congeries, all twisted and entwined together, of hair-eels!!! What became of the hooks?

> Blessed be the day I 'scaped the Stygian crew,
> From Pyrrho's maze, and Epicurus' *sty*,
> And held high converse with the godlike few,
> Who to the enraptured heart, and ear, and eye,
> Teach virtue, beauty, love, and *truth*, and melody.

HELMSLEY, a town of the wapentake of Rydall, in the north riding of the county of York, and 218 miles from London. It is on the river Rye, in a beautiful valley. It is well built, and had formerly a strong castle, which was demolished by Cromwell. There is a good market, which is held on Saturday. Near it are the ruins of Revaulx Abbey, converted into a splendid modern mansion. The population amounted in 1801 to 1449, in 1811 to 1415, in 1821 to 1520, and in 1831 to 1485.

HELMSTEDT, a city of the duchy of Brunswick, in Germany, the capital of the circle of the same name. It stands near the river Elze, and is fortified. It contains two churches, an orphan-house, three hospitals, 659 houses, and 5420 inhabitants. It was formerly the seat of a university of great celebrity. There are manufactures carried on of flannels and other woollen goods, and bleacheries, tanneries, and some distilleries. Long. 10. 56. 55. E. Lat. 51. 13. 45. N.

HELMUND, Heermund, or Hirmund, a river of Khorassan, and the largest of any in that country, has its rise to the west of Cabul, in the hill called Kohi Baba. It runs south-west through the Hazara country, and passing southward, it crosses the great roads from Candahar to Herat at Greeshk, a distance of 260 miles, and its course is through very high and steep hills. It falls into the lake of Seestan, after a course of 360 miles. It is a very large river in summer, from the melting of the snows; and it is a common practice with the inhabitants to try to shoot arrows across, or to sling stones, which they are not able to accomplish. In the cold weather it is only breast deep. There are two boats at the Greeshk Pass, but for the greater part of the year the river is fordable. Its stream is swelled by several considerable tributaries.

HELOISE, celebrated on account of her unfortunate affection for her tutor Abelard, and for her Latin letters to him after they had retired from the world. She died abbess of Paraclete in 1163. See Abelard.

HELOS, in *Ancient Geography*, a maritime town of Laconia, situated between Trinasus and Acriæ. In Pausanias's time it was in ruins. This district was called Helotea, and the people *Helotes*, *Helotæ*, *Helei*, and *Heleatæ*, by Stephanus, and *Ilotæ* by Livy. Being subdued by the Lacedæmonians, they were all reduced to a state of public slavery, or made the slaves of the public, on the condition that they could neither recover their liberty nor be sold out of the territory of Sparta. Hence the term ἐιλωτευειν, in Harpocration, for being in a state of slavery; and hence also the Lacedæmonians called the slaves of all nations whatsoever *helotes*. The epithet is *Heloticus*.

HELOTS, in Grecian antiquity, the slaves of the Spartans. The freemen of Sparta were forbidden the exercise of any mean or mechanical employment, and therefore the whole care of supplying the city with necessaries devolved upon the Helots.

HELSINGBORG, a city of Sweden, in the province of Malmoe. It stands at the entrance, and the narrowest part, of the Sound. It is a lively place of trade, being the principal entrance to Sweden from the Danish dominions. There is no harbour; but the vessels are moored to the mole, or bridge of boats. It contains 350 well-built houses, and 2150 inhabitants. It is in long. 12. 38. 27. E. and lat. 56. 2. 55. N.

HELSINGFORS, a circle of the Russian government of Finland, on the Gulf of Bothnia, extending over 6808 square miles, and comprehending three cities or towns, 6692 villages or farms, 21,952 families, and a population of 175,000 persons. The northern part is mountainous; but the southern is low and level, and produces sufficient corn for the demand of the inhabitants. It yields for exportation some hemp and flax, and a little iron for home use. The capital, of the same name, is situated on the sea-shore, and, since it has come under the Russian dominion, has been regularly fortified. The harbour is deep, safe, and spacious, and is frequented by foreign ships, as well as by those belonging to the city. The chief trade consists in the export of planks, masts, spars, corn, and salted fish. It contains three churches, 1100 houses, and 9105 inhabitants. Long. 26. 55. E. Lat. 60. 5. N.

HELSTONE, a town in the county of Cornwall, in the hundred of Kerriar, 276 miles from London. It stands on the river Loe, which forms a harbour near the town. It is one of the chief markets for tin, and has a stannery for affixing a stamp to prove its purity. The tower of the church, ninety feet in height, is a conspicuous sea-mark. It consists of four streets crossing each other at right angles, with a stream of water running through them. It is a borough governed by a mayor and aldermen, and returns one member to the House of Commons, chosen by about 300 voters. It has a good market, which is held on Saturday. The inhabitants amounted in 1801 to 2248, in 1811 to 2297, in 1821 to 2671, and in 1831 to 3293.

HELVETIC, something which has a relation to the inhabitants of the Swiss cantons, who were anciently called *Helvetii*.

HELVETII, a people of Belgica, in the neighbourhood of the Allobroges and the Provincia Romana. They were famed for bravery and a predilection for war. The *Civitas Helvetia* was divided into four pagi or cantons, situated to the south and west of the Rhine, by which they were divided from the Germans; and extending towards Gaul, from which they were separated by Mount Jura on the west, and by the Rhone and the Leman Lake on the south, and therefore called a Gallic nation. (Tacitus, Cæsar, Strabo, Ptolemy, Pliny.)

HELVETIUS, Claude Adrian, a man of letters, and celebrated French philosopher, was born at Paris about the beginning of 1715. After receiving the rudiments of his education in his father's house, he was sent to the College of Louis-le-Grand, where he discovered greater indications of genius than any of his fellow-students, and thus gained the esteem of the professor of rhetoric, by whom particular attention was paid to his education. By his elegant and graceful exterior he endeavoured to ingratiate himself with the fair sex; but he was soon convinced, that although external advantages may dazzle for the moment, nothing but intellectual accomplishments can command esteem and respect. The circumstance which led him to perceive the absolute necessity of mental improvement, in order to be truly esteemed and admired, is worthy of notice. When walking alone in one of the public gardens, he discovered a most extravagant figure amidst a circle of young and amiable ladies. This was the geometer Maupertuis, who engrossed all the care and attention of this charming group, notwithstanding the ridiculous and grotesque singularity of his dress, appearance, and manners. This convinced Helvetius, that if he wished to be sincerely admired or esteemed, dancing, tennis, and all other bodily exercises must give place to the cultivation of the mind. Immediately, therefore, he became a solitary, recluse student; the mathematics in particular attracted his attention; and in a short time he was admitted as the companion of some of the most distinguished literary characters of the period in which he lived. Voltaire and Montesquieu were amongst his early acquaintance; and with the latter he contracted a cordial and lasting friendship. The first literary production of Helvetius was of the poetical kind, consisting of epistles on happiness; but these were not communicated to the public until after his decease. When read in private, however, they were much admired, and Voltaire considered them as a strong proof of the didactic and philosophical powers of their author. When the *Esprit des Loix* of Montesquieu appeared, the work was studied by Helvetius with the utmost care and attention; and his only objection to it was, that it did not contain the first ideas respecting the things of which it professed to treat. Instead of examining systems of legislation, and comparing them with each other, Helvetius was of opinion, that the nature of man should first be studied, and that the laws for governing him should be founded on the principles of his own constitution. This seemed to him true philosophy, and with such ideas he determined to undertake a work which might supply what he conceived to be defects in the publication of Montesquieu. Accordingly, in 1758 appeared his famous book *De l'Esprit*, which was published without the author's name, but which was condemned by the parliament of Paris, as tending to degrade the nature of man; a proceeding which had the effect of making the book be sought for with avidity all over France, as well as other European countries, and gave to the speculations of the author much more importance than perhaps they would have otherwise acquired. To avoid the malice of his enemies, he visited England in the year 1762; and in the following year went to Prussia, where he was received with every mark of respect by the king, who gave him lodgings in the palace, and admitted him into his familiar parties. He was uncommonly liberal to the indigent, some of whom but ill requited him; on which occasions he was wont to say to his friends, "If I were a king I would correct them; but as I am only rich, and they are poor, I do my duty in relieving them." Although his constitution was excellent, and his friends thence concluded that they would long enjoy the happiness of his society, he fell a victim to the gout in his head and stomach in the month of December 1771, being then in the fifty-sixth year of his age.

Besides his work *De l'Esprit*, Helvetius was the author of, 1. De l'Homme, de ses Facultés intellectuelles, et de son Education, in two vols. 8vo; 2. Le vrai sens du Systême de la Nature, London, 1774, in 8vo; 3. Le Bonheur, a poem in six cantos, London, 1772, in 8vo; all published after his death. Helvetius possessed considerable taste and ingenuity, some knowledge of human nature, and a turn for ridiculing the follies of mankind; but as a philosopher he was plausible rather than profound, fond of paradoxes, and so prone to scoff at what he considered as false religion, that his belief in the true faith came to be questioned. At the same time his works abound in just observations, often very happily expressed; and he displays a knowledge of the world, of which we but rarely meet with indications in the works of speculative men.

HELVIDIANS, a sect of ancient heretics, denominated from their leader Helvidius, a disciple of Auxentius the Arian, whose distinguishing principle was, that Mary, the mother of Jesus, did not continue a virgin, but had other children by Joseph.

HELVOETSLUYS, a town in the circle of Brill, in the province of Holland. It is a fortified naval station, with a good but small harbour, with docks and storehouses for equipping ships of war. It is the place of direct communication with England by the packets, which sail to and from Harwich twice in each week. The population, in 1831, was 1641 persons. Long. 4. 7. 52. E. Lat. 51. 49. 29. N.

HEMEL-HEMPSTED, a town of the hundred of Dacorum, in the county of Herts, twenty-three miles from London, on the river Gade, with a market on Thursday. The inhabitants amounted in 1801 to 2722, in 1811 to 3240, in 1821 to 3962, and in 1831 to 4759.

HEMEROBAPTISTS, a sect amongst the ancient Jews, so called from their washing and bathing every day, in all seasons, and observing this custom with the greatest solemnity, as a religious rite necessary to salvation. Epiphanius, who mentions this as the fourth heresy amongst the Jews, observes, that in other points these heretics entertained much the same opinions as the Scribes and Pharisees, only that they denied the resurrection of the dead, in common with the Sadducees.

The sect who pass in the East under the denomination of Sabians, calling themselves *Mendai Iiaki*, or "the disciples of John," and whom the Europeans entitle "the Christians of St John," because they yet retain some knowledge of the gospel, are probably of Jewish origin, and seem to have been derived from the ancient Hemerobaptists; at least it is certain that the John whom they consider as the founder of their sect bears no similitude to John the Baptist, but rather resembles the person of that name whom the ancient writers represent as the chief of the Jewish Hemerobaptists. These ambiguous Christians dwell in Persia and Arabia, but principally at Bassora; and their religion consists in bodily washings, performed frequently and with great solemnity, and attended with certain ceremonies, which the priests mingle with this superstitious service.

HEMERODROMI, compounded of ἡμεϱα, *day*, and δϱομος, *course*, amongst the ancients, were sentinels or guards appointed for the security and preservation of cities and other places. They went out of the city every morning as soon as the gates were opened, and kept all day patrolling round the place; sometimes also making excursions into the country, to see that there were no enemies lying in wait to surprise them.

HEMERODROMI were also a sort of couriers amongst the ancients, who only travelled one day, and then delivered their packets or dispatches to a fresh man, who run his day, and so on to the end of the journey. The Greeks had couriers of this kind, whom they derived from the Persians, as appears from Herodotus. Augustus also established couriers, who, if they did not relieve each other from day to day, yet did it from space to space, and that space was not very great.

HEMEROTROPHIS, in *Antiquity*, a measure of capacity, the same with the chœnix. It was so called from its containing only one day's food. The word is compounded of ἡμεϱα, *a day*, and τϱοφη, *food*.

HEMI, a word employed in the composition of different terms. It signifies the same with *semi* or *demi*, viz. half; being an abbreviate of ἡμισυς, which signifies the same thing. The Greeks retrenched the last syllable of the word ἡμισυς in the composition of words; and, after their example, we have done so too in most of the compounds borrowed from them.

HEMIBOLON, a weight often mentioned by the ancient writers in medicine, and expressing the half of their obolus, or the twelfth part of a drachm, that is, five grains.

HEMICYCLE, HEMICYCLIUM, compounded of ἡμισυς, *half*, and κυκλος, *circle*; a semicircle.

HEMICYCLE is particularly applied, in *Architecture*, to vaults in the cradle form, and arches or sweeps of vaults constituting a perfect semicircle. To construct an arch of hewn stone, they divide the hemicycle into so many voussoirs, taking care to make them an uneven number, that there may be no joint in the middle, where the keystone should be.

HEMICYCLIUM was also a part of the orchestra in the ancient theatre. Scaliger, however, observes that it was no standing part of the orchestra, being only used in dramatic pieces, where some persons are supposed to have arrived from sea, as in Plautus's *Rudens*.

The ancients had also a sort of sun-dial called *Hemicyclium*. It was a concave semicircle, the upper end or cusp of which looked to the north. There was a style or gnomon issuing from the middle of the hemicycle, of which that point corresponding to the centre of the hemicycle represented the centre of the earth; and its shadow was projected on the concavity of the hemicycle, which represented the space between one tropic and another, the sun's declination, the day of the month, hour of the day, and so forth.

HEMINA, in Roman antiquity, a liquid measure, which, according to Arbuthnot, was equal to half a wine pint English measure, its contents being 2·818 solid inches.

HEMISPHERE (*Hemisphærium*, compounded of ἡμισυς, *half*, and σφαιρα, *sphere*), in *Geometry*, is one half of a globe or sphere, when divided by a plane passing through its centre.

Hemisphere, in *Astronomy*, is particularly used for one half of the mundane sphere. The equator divides the sphere into two equal parts, called the *northern* and *southern hemispheres*. The horizon also divides the sphere into two parts, called the *upper* and the *lower hemispheres*.

Hemisphere is also used for a map or projection of half the terrestrial globe, or half the celestial sphere, on a plane. Hemispheres are frequently called *planispheres*.

HEMISTICH, in *Poetry*, denotes half a verse, or at least a verse not completed. Of this there are frequent examples in Virgil's *Æneid;* but whether they were left unfinished by design or not is disputed amongst the learned.

HEMITONE, in the ancient music, was what we now call a half note or semitone.

HEMP, the *cannabis sativa* of Linnæus, is a very valuable plant, from which cloths and cordage of various kinds are manufactured. It does not appear that the ancients were acquainted with the use of hemp, in respect of the thread it affords. Pliny, who speaks of the plant in his natural history (lib. xx. c. 23), says not a word of this, contenting himself with extolling the virtues of its stem, leaves, and root. In fact, what some writers on Roman antiquities remark, that the hemp necessary for the use of war was all stored up into two cities of the western empire, Ravenna and Vienne, under the direction of two procurators, called *procuratores linificii*, must be understood of *linum* or flax.

Hemp is supposed to be a native of India, but it is now cultivated in various other countries, where it forms an article of very considerable commercial importance. Its uses, culture, and management are nearly the same as those of flax, but it is stronger and coarser in the fibre than that article. When pulled green, hemp is considered as a cleaner of the ground, but when grown for seed it is a very exhausting crop. Little of it is grown in this country, its cultivation not being deemed profitable; and the quantity raised in Ireland is also inconsiderable. But in Russia and Poland it is very extensively cultivated; and Italy yields not an inconsiderable quantity. Very good *huckaback* for towels and table-cloths, and different kinds of wearing apparel, are made from hemp; but its great consumption is in the manufacture of sail-cloth and cordage, to which purposes it is exceedingly well adapted by the strength of its fibre. Amongst the Hindus a favourite intoxicating liquor called *banga* is extracted from hemp; and in Egypt it is applied to the same purpose.

Great quantities of hemp are exported from Russia. It is assorted, according to its quality, into clean hemp, or firsts; out-shot hemp, or seconds; half-clean hemp, or thirds; and hemp codilla. Of the first three sorts there are annually exported from St Petersburg 2,000,000 poods; sixty-three of which make an English ton. English and American vessels are chiefly employed in this trade; and particular care is taken to ship the hemp in dry weather, as it is totally spoiled if it gets wet. Riga hemp brings a higher price than that of St Petersburg. It is divided into three sorts, viz. rein, rhine, or clean, out-shot, and pass-hemp. Of 530,820 cwt. of undressed hemp imported into this country in 1831, 506,803 were brought from Russia, 9472 from the East Indies, 7405 from Italy, 2262 from the Philippine Islands, 2248 from the United States, and some small quantities from a few other places. In 1832 the duty on hemp was reduced from 4s. 8d. to 1d. per cwt. a reduction which cannot fail to be beneficial to the trade.

Hemp, *Manilla*, commonly called Manilla white rope. Mr Crawfurd gives the following account of this article:—"Of the wild banana, one kind (*Musa textilis*) grows in vast abundance in some of the most northerly of the Spice Islands. In the great island of Mindanao, in the Philippines, it fills extensive forests. From the fibrous bark or epidermis is manufactured a kind of cloth, in frequent use among the natives. It also affords the material of the most valuable cordage which the indigenous products of the Archipelago yield. This is known to our traders and navigators under the name of Manilla rope, and is equally applicable to cables, and to standing or running rigging." (*Hist. of Archipelago*, vol. i. p. 412.)

Hemp (*Indian*), or *Sunn*. This consists of the fibre of the *crotolaria juncea*, a totally different plant from the *cannabis sativa*, which, as already stated, is never used by the Hindus for cloth or cordage. Sunn is grown in various places of Hindustan. The strongest, whitest, and most durable species is produced at Comercolly. During those periods of the late war when the intercourse with the Baltic was interrupted, and hemp bore an enormous price, large quantities of sunn were imported; but the fibre being comparatively weak, the article was not found to answer, and the importation has since been discontinued. (Milburn's *Orient. Commerce.*)

HEMS, an ancient city of Syria, on the borders of the desert. The present town stands on a fine plain, watered by a rivulet, and does not occupy above one fourth of the space within the walls. It was the ancient Emesa in the time of the Roman empire, and appears to have been fortified with walls about three miles in circumference. It successively changed masters in the various revolutions which took place in this part of Asia, and fell into decay. It contains many ruins and relics of antiquity. It is 120 miles south of Aleppo, and eight north of Damascus. Long. 37. 20. E. Lat. 34. 25. N.

HEMSKERCK, Egbert, called the *Old*, a celebrated Flemish painter of humorous conversations. We have no information as to the time in which he flourished, or the school in which he was taught. Though the taste of his compositions is but low, yet it ought to be considered that he took his subjects from nature; from persons in the meanest occupations, whose dress, actions, and manners could not furnish the imagination with any ideas of elegance; and to express their passions and humours undisguised seems to have been the utmost of his ambition. By frequenting fairs, merry-meetings, gaming-houses, and inns, he acquired a surprising power of connecting humorous circumstances. He designed and drew correctly, and his pictures have a strong effect, from his accurate management of the chiaroscuro. Some of his pictures have suffered from unskilful cleaners, and many things are sold as his which dishonour him; but his genuine works, well preserved, have a clearness and force equal to any of the Flemish artists.

HEN. See Ornithology.

Hen and Chickens, a group of small islands near the coast of New Zealand, in the South Pacific Ocean. Long. 180. 1. W. Lat. 35. 53. S. This is also the name of a group of islands in the Eastern Seas. Long. 118. 3. E. Lat. 5. 30. S.

HENAULT, Charles John Francis, president of the parliament of Paris, was born at Paris in 1685. He early discovered a sprightly, benevolent disposition; and his penetration and aptness were soon distinguished by the success of his studies. On quitting college, Hénault entered the Oratory, where he soon attached himself to the study of eloquence; and on the death of the Abbé Réné, reformer of La Trappe, he undertook to pronounce his panegyric; but as this did not meet the approbation of Massillon, he quitted the Oratory after two years; and his father bought for him, of Mareschal Villeroi, the office of *lieutenant des chasses*, and the government of Corbeli. In 1707, he gained the prize of eloquence at the French academy; and next year he carried off another at the Académie des Jeux Floraux. In 1713 he brought out a tragedy on the stage, under the disguised name of Fuselier. As he was known to the public only by some lighter pieces, *Cornelia the Vestal* met with little success; and he therefore locked it up without printing. But in his old age his passion for these subjects revived; and Horace Walpole happening to be at Paris in 1768, where he formed a friendship with Hénault, obtained this piece, and had it printed at his own press. In 1751 M. Hénault, under a borrowed name, brought out a second tragedy, entitled *Marius*, which was well received and printed. He had been admitted as counsellor in parliament in 1706, with a dispensation on account of his age; and in 1710 he was appointed president of the first chamber of inquests. These important places, which he determined to fill in a becoming manner, engaged him in the most solid studies. He spent several years in making himself master of the Roman law, and the ordonnances of the French kings, with their customs and public law. On the death of the Cardinal Dubois, in 1732, he succeeded in his place at the French academy. Cardinal Fleury recommended him to succeed himself as director; and he pronounced the éloge of M. de Malezieux.

M. Hénault's favourite study was history, not a bare collection of dates, but a knowledge of the laws and manners of nations; and to obtain this he drew instruction from private conversations, a method he so strongly recommends in his preface. After having thus discussed the most important points of public law, he undertook to collect and publish the result of his inquiries; and he is deservedly accounted the first framer of chronological abridgments, in which, without stopping at detached facts, he attends only to those forming a chain of events which perfect or alter the government and character of a nation, and traces only the springs which exalt or humble a nation, extending or contracting the space it occupies in the world. The first edition of his work, the result of forty years' reading, appeared in the year 1744, under the auspices of the Chancellor d'Aguesseau, and with the modest title of Essay. The success it met with surprised him. He made continual improvements in it, and it has gone through many editions, and been translated into Italian, English, and German.

In 1755, he was chosen an honorary member of the Academy of Belles Lettres, being then a member of the academies of Nanci, Berlin, and Stockholm. He composed three comedies, namely, *La Petite Maison*, *Le Jaloux de Lui-même*, and *La Réveil d'Epiménide*. The subject of the last was the Cretan philosopher, who is pretended to have slept twenty-seven years. He is introduced fancying that he had slept but one night, and astonished at the change in all around him; he mistakes his mistress for his mother; but discovering his mistake, offers to marry her, which she refuses, though he still continues to love her. The queen was particularly pleased with this piece, and ordered the president to restore the philosopher's mistress to her former youth; he accordingly introduced Hebe, and this episode produced an agreeable entertainment.

A delicate constitution made him liable to much illness, which, however, did not interrupt the serenity of his mind. One morning, after a quiet night, he felt an oppression, which the faculty pronounced a suffocating cough. He then received the sacraments. It was believed the next night would be his last; but by noon the following day he was out of danger. "Now I know what death is," said he; "it will not be new to me any more." He never forgot it during the remaining seven years of his life, which, like all the rest, were gentle and calm. He died on the 24th of November 1770, in his eighty-fifth year. The principal works of President Hénault are, 1. Nouvelle Abrégé Chronologique de l'Histoire de la France, 1768, in 4to; 2. Histoire Critique de l'établissement des Français, dans les Gaules, ouvrage inedit du Président Hénault, imprimé sur le Manuscrit original écrit de sa Main, Paris, 1801, in two vols. 8vo; 3. Lettre du Président Hénault sur la Régale, addressée à l'Abbé Velly, originally published in the *Mercure de France;* 4. Lettres du Président Hénault à Marmontel, au sujet d'un Extrait de l'Abrégé de l'Histoire de De Thou, in the collection of Fontanieu; 5. Mémoire sur les Abrégés Chronologiques, *Mém. de l'Acad. des Inscrip.;* 6. Discours qui remportent le prix d'éloquence de l'Academie Française, 1707, par Hénault, Conseiller au Parlement, Paris, 1707, in 4to; 7 Pièces de Théâtre, en Vers et en Prose, a collection which contains *Cornélie Vestale*, *François II.*, the *Petite Maison*, the *Jaloux de Lui-même*, the *Réveil d'Epiménide*, and the *Temple des Chimères*.

HENDECAGON, in *Geometry*, a figure having eleven sides and as many angles.

HENDON, a village of the hundred of Gore, in the county of Middlesex, on the river Brent, seven miles from London. Within the parish are many elegant villas, and a public classical school for the education of independent dissenters. The population amounted in 1801 to 1955, in 1811 to 2589, in 1821 to 3100, and in 1831 to 3110.

HENED-PENNY, in our old writers, a customary payment of money, instead of hens, at Christmas. Du Cange is of opinion that it may be hen-penny, *gallinagium*, or a composition for eggs; but Cowel thinks it is misprinted *hened-penny* for *heved-penny* or *head-penny*.

HENERY ISLE, a small island lying due south from Bombay. It is about 600 yards in circumference, and nearly of a circular form. It is fortified and well inhabited. In 1790 it belonged to Ragojee Angria, and was a principal rendezvous of private vessels, though within sight of Bombay. Near it is another small island named Kenery, which is also fortified, and of considerable strength. It was taken possession of and fortified by Sevajee in 1679. In 1790 it belonged to the Peshwa, and was also the haunt of pirates. Henery is situated in long. 72. 50. E. and lat. 18. 42. N.

HENGTCHEOU, a city of China of the first rank, in the province of Houquang, situated on the river Heng. It has a manufactory of paper, and there are also silver mines in the neighbourhood. Long. 112. E. Lat. 26. 36. N.

HENIOCHAS, or HENIOCHUS, a northern constellation, the same as Auriga.

HENLEY-IN-ARDEN, a town of the county of Warwick, in the parish of Wooton-Wawen and hundred of Borlichway, 105 miles from London. It stands in what was formerly the forest of Arden, and has a chapel of ease and a good market. The population amounted in 1801 to 1098, in 1811 to 1055, in 1821 to 1249, and in 1831 to 1214.

HENLEY-ON-THAMES, a town of the hundred of Benfield, in the county of Oxford, divided from Buckinghamshire by the river Thames, over which there is an elegant bridge. It is thirty-five miles from London, and, though an ancient, is a well-built town, with a good market, which is held on Thursday. It is surrounded with the seats of nobility and gentry. The church is large and the tower lofty, and both are said to have been erected by Cardinal Wolsey. It is a borough, governed by a mayor and aldermen, and in ancient times returned two members to parliament. The population amounted in 1801 to 2948, in 1811 to 3117, in 1821 to 3509, and in 1831 to 3618.

Henley, *John*, better known by the appellation of *Orator Henley*, a very singular character, was born at Melton-Mowbray, Leicestershire, in 1691. His father, the reverend Simon Henley, and his grandfather by his mother's side, John Dowel, were both vicars of the same parish. Having passed through his exercises at Cambridge, and his examination for the degree of bachelor, with the particular approbation of Mr Field, Mr Smales, and the master of the college, he returned to his native place, upon which he was desired by the trustees of the school in Melton, first to assist in, and then to take the direction of that school, which he raised from a declining to a flourishing condition. In this seminary he established a practice of improving elocution by the recitation of passages in the classics, morning and afternoon. Whilst at Melton, he was invited by a letter from the reverend Mr Newcombe to become a candidate for a fellowship in St John's; but as he had long been absent, and therefore lessened his personal interest, he declined appearing as a competitor. Here likewise he began his *Universal Grammar*, and finished ten languages, with dissertations prefixed, as the most ready introduction to any tongue whatsoever. In the beginning of this interval he wrote his poem on Esther, which was well received. He was ordained a deacon by Dr Wake, then Bishop of Lincoln; and after having taken his degree in arts, was admitted to priest's orders by Dr Gibson, his successor in that see. Having early formed a resolution to improve himself with all the advantages of books and conversation, he determined on the first opportunity to proceed to London. But he laid the basis of future proficiency in assisting at the curacy of his native town, where he preached many occasional sermons, particularly one at the assizes at Leicester; he then gave a voluntary warning for the choice of a new master and curate, and went to town recommended by above thirty letters from the most considerable men in the country, both of the clergy and laity, but against the inclination of his neighbours and his school, which was now, as from his first entrance upon it, still advancing. In town he published a translation of Pliny's Epistles, of several works of the Abbé Vertot, and of Montfaucon's Italian Travels in folio. His most generous patron was the Earl of Macclesfield, who gave him a benefice in the country, the value of which to a resident would have been above L.80 a year; he had likewise a lecture in the city, and preached more charity sermons about town, was more numerously followed, and raised more money for the poor children, than any other preacher, however dignified or distinguished.

Henley preached on Sundays upon theological matters, and on Wednesdays upon all other sciences. He used every Saturday to print an advertisement in the *Daily Advertiser*, containing an account of the subjects he intended to discourse on the ensuing evening at his Oratory, near Lincoln's-Inn-Fields, with a sort of motto before it, which was generally a sneer at some public transaction of the preceding week. His audience was generally composed of the lowest ranks; and it is well known that he collected a great number of shoemakers, by announcing that he could teach them a speedy mode of operation in their business, which proved to be only the making of shoes by cutting off the tops of ready-made boots. He died in October 1756.

HENNEBON, a city of the arrondissement of L'Orient, in the department of Morbihan, in France. It stands on the navigable river Blavet, about nine miles from the sea. It has a good harbour for small vessels, and an extensive corn-market. The population amounts to 4678. Long. 3. 22. 32. W. Lat. 47. 48. 1. N.

HENNEGAU, a province in the Netherlands. It is formed from the former French department of Jemmappes, with almost all of the ancient courtships of Hennegau and Tournay, and some few communes from Liege, from Namur, and from Brabant. The French department of the Ardennes bounds it on the south, south-west, and west sides; and it is otherwise enclosed by the other Netherland provinces. It extends over 1745 square miles. It is divided into three arrondissements, viz. Mons, Tournay, and Charleroy, and these are subdivided into 29 cantons and 423 communes, containing, in 1833, 604,957 inhabitants. In the northern and western parts the province is hilly and very woody. On the plains, and especially near Tournay, the soil is generally very fertile; and in the other parts, though stony, it may, by good cultivation, be highly productive. It produces so much corn as to spare three tenths of the crop for exportation. Like the rest of Flanders, it also yields great abundance of most excellent hemp, and possesses good wet and dry pasturage. It has some mines of iron, and several of coal, of which substance nearly two millions of chaldrons are extracted annually. The manufactures are extensive, consisting of carpets, cloths, cottons, printed calicoes, lace and lace-making thread, hosiery, glass, paper, ironmongery, and various smaller commodities. The inhabitants all adhere to the Roman Catholic church, and are under the ecclesiastical jurisdiction of the Bishop of Tournay, whose diocese comprehends 343 parishes, with their respective churches.

HENNERSDORF, a city of the kingdom of Saxony, in the bailiwick of the Elster and circle of Voightland. It contains 620 houses, with 4300 inhabitants, employed in making nankeens and other cottons, in gold and silversmiths' work, and in clock and watchmaking.

HENOTICUM ('Ενοτης, *union*, from ἐις, ἑνος, *one*), in *Ecclesiastical History*, a famous edict of the Emperor Zeno, published A. D. 482, and intended to reconcile and reunite the Eutychians with the Catholics. It was procured from the emperor by means of Acacius, patriarch of Constantinople, with the assistance of the friends of Peter Mongus and Peter Trullo. The sting of this edict consists in this, that it repeats and confirms all that had been enacted in the councils of Nice, Constantinople, Ephesus, and Chalcedon, against the Arians, Nestorians, and Eutychians, without making any particular mention of the council of Chalcedon. It is in form of a letter, addressed by Zeno to the bishops, priests, monks, and people of Egypt and Libya. It was opposed by the Catholics, and condemned in form by Pope Felix II.

HENRICANS, in *Ecclesiastical History*, a sect so called from Henry its founder, who, though a monk and hermit, undertook to reform the superstition and vices of the clergy. For this purpose he left Lausanne in Switzerland, and removing from different places, at length settled at Toulouse in the year 1147, and there exercised his ministerial function, till being overcome by the opposition of Bernard, abbot of Clairval, and condemned by Pope Eugenius III. at a council assembled at Rheims, he was, in 1148, committed to prison, and there he soon ended his days. This reformer rejected the baptism of infants, severely censured the corrupt manners of the clergy, treated the festivals and ceremonies of the church with the utmost contempt, and held clandestine assemblies for inculcating his peculiar doctrines.

HENRY, the name of several emperors of Germany, and kings of England and France. See England, France, and Germany.

Henry IV. king of France and Navarre, commonly styled *the Great*, was the son of Antony de Bourbon, chief of the branch of Bourbon, so called from a fief of that name which fell to them by marriage with the heiress of the estate. His mother was the daughter of Henry d'Albert, king of Navarre; a woman of masculine genius, intrepid, simple, and even rustic in her manners, but deeply versed in politics, and a zealous Protestant. He was born in 1553; and in 1569, when scarcely sixteen years of age, he was declared the Defender and Chief of the Protestants at Rochelle. The peace of St Germain, concluded in 1570, recalled to court the lords in the Protestant interest; and in 1572 Henry was married to Margaret de Valois, sister to Charles IX. king of France. It was in the midst of the rejoicings on account of these nuptials that the horrid massacre of the Protestants took place at Paris. By this infernal stroke of barbarous policy, Henry was reduced to the alternative of either changing his religion or being put to death; he chose the former, and was detained a state prisoner for three years. In 1587 he made his escape, and putting himself at the head of the Huguenot party, he exposed himself to all the risks and fatigues of a religious war, being often in want of the necessaries of life, and enduring all the hardships of the common soldiers; but this year he gained a victory at Courtras, which established his reputation in arms, and endeared him to the Protestants. On the death of Henry III. religion was urged as a pretext for one half of the officers of the French army rejecting him, and for the leaguers refusing to acknowledge him. A phantom, the Cardinal de Bourbon, was set up against him; but his most formidable rival was the Duke de Mayenne. However, Henry, with few friends, fewer important places, no money, and a very small army, supplied every deficiency by his activity and valour. He gained several victories over the duke, particularly that of Ivri in 1590, memorable for his heroic admonition to his soldiers: "If you love your ensigns, rally by my white plume; you will always find it in the road to honour and glory." Paris held out against him, notwithstanding his successes. But he took all the suburbs in one day, and might have reduced the city by famine, if he had not humanely suffered his own army to relieve the besieged; yet the bigoted friars and priests in Paris all turned soldiers, excepting four of the Mendicant order, and held daily military reviews and processions, with the sword in one hand and the crucifix in the other, on which they made the citizens swear rather to die with hunger than submit to Henry. The scarcity of provisions in Paris, however, became at last universal famine; bread had been sold, whilst any remained, for a crown the pound; at last it was made from the bones of the charnel-house of St Innocents; human flesh became the food of the obstinate Parisians, and mothers devoured the dead bodies of their children. In fine, the Duke of Mayenne, convinced that neither Spain nor the League would grant him the crown, determined to assist in giving it to the rightful heir. He engaged the state to hold a conference with the chiefs of both parties, which ended in Henry's abjuring the Protestant religion at St Denis, and being consecrated at Chartres in 1593. The following year Paris opened its gates; in 1596, the Duke of Mayenne was formally pardoned; and in 1598, peace was concluded with Spain. Henry now showed himself doubly worthy of the throne, by his encouragement of commerce, the fine arts, and manufactures, and by his patronage of men of ingenuity and sound learning of every country. But though the ferment of bigotry had been assuaged, the leaven was not destroyed. Scarcely a year passed without some attempt being made on his life; and at last the dagger of Ravaillac reached his heart whilst in his coach, in the streets of Paris, on the 14th of May 1610, in the fifty-seventh year of his age and twenty-second of his reign.

Henry VIII. king of England, was the second son of Henry VII. by Elizabeth, the eldest daughter of Edward IV. He was born at Greenwich, on the 28th of June 1491; on the death of his brother Arthur, in 1502, he was created Prince of Wales; and the following year he was betrothed to Catharine of Aragon, Prince Arthur's widow, the pope having granted a dispensation for the purpose. Henry VIII. ascended the throne on the 22d of April 1509, and his marriage with Catharine was celebrated about two months thereafter. In the beginning of his reign he left the government of his kingdom entirely to his ministers, and spent his time chiefly in tournaments, balls, concerts, and other expensive amusements. Nevertheless he was not so totally absorbed in pleasure as not to find leisure to sacrifice to the resentment of the people two of his father's ministers, Empson and Dudley. A house in London, which had belonged to the former, was, in the year 1510, given to Thomas Wolsey, who was now the king's almoner, and who from this period began to insinuate himself into Henry's favour. In 1513, Wolsey became prime minister, and from that moment governed the king and kingdom with absolute power. In this year Henry declared war against France, gained the battle of Spurs, and took the towns of Terouenne and Tournay; but before he embarked his troops he beheaded the Earl of Suffolk, who had long been confined in the Tower. In 1521, he sacrificed the Duke of Buckingham to the resentment of his prime minister Wolsey, and the same year obtained from the pope the title of Defender of the Faith.

Henry, having been eighteen years married, grew tired of his wife, and in the year 1527 resolved to obtain a divorce; but after many fruitless solicitations, finding it impossible to persuade the pope to annul his marriage with Catharine, he espoused Anne Boleyn in the year 1531. During this interval his favourite Wolsey was disgraced, and died; whilst Henry threw off the papal yoke, and burned three Protestants for heresy. In 1535, he put to death Sir Thomas More, Fisher, and others, for denying his supremacy; and suppressed all the lesser monasteries.

Having now possessed his second queen about five years, he fell violently in love with Lady Jane Seymour. Anne Boleyn was accused of adultery with her own brother, and with three other persons, and having been condemned, was beheaded on the 19th of May 1536. The day following he married Jane Seymour. In 1537, he put to death five of the noble family of Kildare, as a terror to the Irish, of whose disloyalty he had some apprehensions; and in the following year he executed the Marquis of Exeter, with four other persons of distinction, whose only crime was corresponding with Cardinal Pole. In 1538 and 1539, he suppressed all the monasteries in England, and seized their revenues for his own use. The queen having died in child-bed, he this year married the princess Ann of Cleves, but disliking her person, he immediately determined on a divorce; and his obsequious parliament and convocation unanimously pronounced the marriage void, for reasons too ridiculous to be stated.

His majesty being once more at liberty to indulge himself with another wife, fixed upon Catharine Howard, niece to the Duke of Norfolk, who was declared queen in August 1540; but they had been privately married some time before. Henry, it seems, was so entirely satisfied with this lady, that he daily blessed God for his present happiness. But his felicity was of short duration. He had not been married above a year, when the queen was accused of frequent prostitution, both before and since her marriage; and having confessed her guilt, she was beheaded in February 1542. In July 1543, he married his sixth wife, Lady Catharine Parr, the widow of John Neville Lord Latimer, and lived till the year 1547 without committing any more flagrant enormities; but finding himself now approaching his dissolution, he made his will; and, that the last scene of his life might resemble the rest of the piece, he determined to end the tragedy with the murder of two of his best friends and most faithful subjects, the Duke of Norfolk and his son the Earl of Surrey. The earl was beheaded on the 19th of January, and the duke was in like manner ordered for execution on the 29th, but he fortunately escaped by the king's death which, happened on the 28th. They were condemned without the shadow of a crime; but Henry's political reason for putting them to death was his apprehension that, if they were suffered to survive him, they would counteract some of his regulations in religion, and might be troublesome to his son. Henry died on the 28th January 1547, in the fifty-sixth year of his age, and was buried at Windsor.

Lord Herbert tries to palliate his crimes, and exaggerates what he is pleased to call his virtues. Bishop Burnet says, "he was rather to be reckoned among the great than the good princes;" but he afterwards acknowledges that "he is to be numbered among the ill princes," yet adds, "I cannot rank him with the worst." Sir Walter Raleigh, with more justice, says, "If all the pictures and patterns of a merciless prince were lost to the world, they might again be painted to the life out of the history of this king."

Henry *of Huntingdon*, an English historian of the twelfth century, was canon of Lincoln, and afterwards archdeacon of Huntingdon. He wrote, 1. A History of England, which ends with the year 1154; 2. A Continuation of the History of Bede; 3. Chronological Tables of the Kings of England; 4. A short treatise on the Contempt of the World; 5. Several books of epigrams and love-verses; 6. A poem on herbs. All these productions were written in Latin.

Henry *the Minstrel*, commonly called *Blind Harry*, an ancient Scottish author, distinguished by no particular surname, but well known as the author of an historical poem reciting the achievements of Sir William Wallace.

It is difficult to ascertain the precise time in which this poet lived, or when he wrote his history, as the two authors who mention him speak somewhat differently on these points. Dempster, who wrote in the beginning of the seventeenth century, says that he lived in the year 1361; but Major, who was born in the year 1446, says that he composed this book during the time of his infancy, which we must therefore suppose to have been a few years posterior to 1446; for if it had been composed that very year, the circumstance would probably have been mentioned. As little can we suppose, from Dempster's words, that Henry was born in 1361; for though he says that he *lived* in that year, we must naturally imagine that he had then attained the years of maturity, or had begun to distinguish himself in the world, rather than that he was only born at that time.

We are in entire ignorance of the family from which Henry was descended; though, from his writings, we should be led to suppose that he had received a liberal education. In these he discovers some knowledge of divinity, classical history, and astronomy, as well as of the languages. In one place he boasts of his celibacy, which seems to indicate his having engaged himself in some of the religious orders of that age. From what Major says of him, we may further suppose his profession to have been that of a travelling bard; though it does not appear that he was skilled in music, or that he had no other profession than that just mentioned. His being blind from his birth, indeed, makes this not improbable; but even this circumstance is not inconsistent with the supposition of his being a religious mendicant. "The particulars," says Major, "which he heard related by the vulgar, he wrote in the vulgar verse, in which he excelled. By reciting his histories before princes or great men, he gained his food and raiment, of which he was worthy." It is thus probable that he was a frequent visitor at the Scottish court; and welcomed by those great families who could boast of any alliance with the hero himself, or who took pleasure in hearing narrated either his exploits or those of his companions.

According to the most early account of Henry, it appears to have been at least fifty-six years after the death of Wallace that Henry was born; yet he is said to have consulted with several of the descendants of those who had been the companions of that hero whilst he achieved his most celebrated exploits, and who were still capable of ascertaining the veracity of what he published. His chief authority, according to his own account, was a Latin history of the exploits of Sir William, written partly by Mr John Blair and partly by Mr Thomas Gray, who had been the companions of the hero himself. Henry's account of these two authors is to the following purpose: "They became acquainted with Wallace when the latter was only about sixteen years of age, and at that time a student at the school of Dundee; and their acquaintance with him continued till his death, which happened in his twenty-ninth year. Mr John Blair went from the schools in Scotland to Paris, where he studied some time, and received priest's orders. He returned to Scotland in 1296, where he joined Wallace, who was bravely asserting the liberties of his country. Mr Thomas Gray, who was parson of Libberton, joined Wallace at the same time. They were men of great wisdom and integrity, zealous for the freedom of Scotland; and were present with Wallace, and assisted him, in most of his military enterprises. They were also his spiritual counsellors, and administered to him ghostly comfort. The history written by these two clergymen was attested by William Sinclair, bishop of Dunkeld, who had himself been witness to many of Wallace's actions. The bishop, if he had lived longer, was to have sent their book to Rome, for the purpose of obtaining the sanction of the pope's authority."

The book which Henry thus appeals to as his principal authority is now lost, so that we have no opportunity of comparing it with what he has written. The character given of Henry by Dempster, however, is more favourable than that given by Major. The former tells us that "he was blind from his birth; a man of singular happy genius; he was indeed another Homer. He did great honour to his native country, and raised it above what was common to it in his age. He wrote, in the vernacular verse, an elaborate and grand work, in ten books, of the deeds of William Wallace." But in this account there is a mistake, for the poem contains twelve books; but Dempster, who wrote in a foreign country, and had not a printed copy of Henry's work by him when he composed his eulogium, is excusable in a mistake of this kind. It is conjectured that he wrote his *Actis and Deidis of Shyr Wilham Wallace* about 1446, when he must have been an old man.

If we compare Henry's *Wallace* with Barbour's *Bruce*, the result must be a decision in favour of the latter work. The *Bruce* of Barbour is evidently the work of a politician as well as a poet. The characters of the king, his brother, Douglas, and the Earl of Moray, are carefully discriminated, and their separate talents always employed with judgment, by which means every event is prepared and rendered probable; but the *Actis and Deidis of Shyr Wilham Wallace* is a mere romance, in which the hero hews down entire squadrons with his single arm, and is indebted for every victory to his own physical strength. Both poems abound with descriptions of battles; but in those of Barbour our attention is successively directed to the cool intrepidity of the king, the brilliant temerity of his brother Edward, and the enterprising stratagems of Douglas; whilst in the work of the Blind Minstrel we find little else than a disgusting picture of hatred, revenge, murder, and bloodshed. As a poetical story-teller, however, he has considerable merit; and the numerous editions through which his *Wallace* has passed sufficiently attests, if not the genius of the poet, at all events the popularity of his subject. The only known manuscript of this poem, from which all the printed copies have been taken, is that in the Advocates' Library, which bears date 1488. The first printed edition was that of Edinburgh, 1570; but perhaps the best and most correct is that published by the Rev. Dr Jamieson, Edinburgh, 1820. Morrison's edition, Perth, 1790, is also deserving of commendation, as being the first in which the text was given with any regard to accuracy.

Henry.

Henry *Prince of Wales*, eldest son of King James VI. of Scotland, by Anne, sister of the king of Denmark, and one of the most accomplished princes of the age in which he lived, was born on the 19th of February 1594. Besides his knowledge of the learned languages, he spoke the French and Italian; and he had made a considerable progress in philosophy, history, fortification, mathematics, and cosmography, in which last branches he was instructed by that excellent mathematician Mr Edward Wright. He aspired to know something of every thing, and to excel in what was most excellent. He had a just opinion of the great abilities of Sir Walter Raleigh; and is reported to have said, in allusion to the long imprisonment of Raleigh, that no king but his father would keep such a bird in a cage. That eminent writer, soldier, and statesman, had a reciprocal regard for the prince, to whom he had designed to address a discourse on the Art of War by Sea, which his highness's death discouraged the author from finishing. He had also intended, and, as he expresses it, hewn out a second and third volume of his History of the World, which were to have been dedicated to his highness; "but it has pleased God," says he, "to take that glorious prince out of this world," a prince, "whose unspeakable and never-enough-lamented loss hath taught me to say with Job, *Versa est in luctum cithara mea, et organum meum in vocem flentium.*" The prince died in November 1612. Dr Welwood, in his Notes on Wilson's Life of King James I. informs us, though without giving any authority, that when the prince fell sick, the queen sent to Sir Walter Raleigh for some of his celebrated cordial, which she herself had taken some time before in a fever with remarkable success. Raleigh sent it, together with a letter to the queen, in which he expressed a tender concern for the prince; and, boasting of his medicine, said, "that it would certainly cure him or any other of a fever, except in case of *poison*." Sir Anthony Weldon suggests that the prince was poisoned; and the same notion is countenanced by Wilson and by Dr Welwood. Bishop Burnet likewise informs us, that Colonel Titus had heard King Charles I. declare, that the prince his brother was poisoned by means of Viscount Rochester, afterwards Earl of Somerset. But it will perhaps be sufficient to oppose to all such suggestions the unanimous opinion of the physicians who attended the prince during his sickness, and opened his body after his death; from which, as Dr Welwood himself observes, there can be no inference drawn that he was poisoned. To this may be added the authority of Sir Charles Cornwallis, who was well informed and above all suspicion in this point, and who pronounces the rumours spread of his highness having been poisoned as groundless; affirming that his death was natural, and occasioned by a violent fever.

Henry, *Philip*, a pious and learned nonconformist minister, son of Mr John Henry, page of the back stairs to James duke of York, was born at Whitehall in 1631. He was admitted into Westminster school at about twelve years of age; became the favourite of Dr Bushby; and was employed by him, with some others, in collecting materials for the Greek Grammar which he afterwards published. From Westminster he removed to Christ-Church, Oxford, where, having obtained the degree of master of arts, he was taken into the family of Judge Pulston, at Emeral, in Flintshire, as tutor to his sons, and preacher at Worthenbury. He soon afterwards married the only daughter and heiress of Daniel Matthews of Broad-oak, near Whitchurch, by whom he became possessed of a competent estate. When the king and episcopacy were restored, he refused to conform, was ejected, and retired with his family to Broad-oak, at which place, or in the immediate neighbourhood, he spent the remainder of his life, relieving the poor, employing the industrious, instructing the ignorant, and exercising every opportunity of doing good. His moderation in his nonconformity was eminent and exemplary; and upon all occasions he bore testimony against uncharitable and schismatical separation. In church-government he wished for Archbishop Usher's reduction of episcopacy. But he thought it lawful to join in the common prayer in public assemblies, which, during the time of his silence and restraint, he devoutly and reverently attended along with his family.

Henry, *Matthew*, an eminent dissenting minister and author, was the son of the former, and was born in the year 1662. He continued under his father's care till he was eighteen years of age, by which time he had become well skilled in the learned languages, especially Hebrew, which his father had rendered familiar to him from his childhood; and from first to last the study of the Scriptures formed his principal employment. He completed his education in an academy kept at Islington by Mr Doolittle, and was afterwards entered as a student of law in Gray's Inn, where he became well acquainted with the civil and municipal law of his own country; and from his application and great abilities it was thought he would have become very eminent in that profession. But at length, resolving to devote his life to the study of divinity, he, in 1685, retired into the country, and was chosen pastor of a congregation at Chester, where he lived about twenty-five years, greatly esteemed and beloved by his people. He had several calls from London, which he constantly declined; but he was at last prevailed on to accept an unanimous invitation from a congregation at Hackney. He wrote, 1. Expositions of the Bible, in five vols. folio; 2. The Life of Mr Philip Henry; 3. Directions for daily Communion with God; 4. A method for Prayer; 5. Four Discourses against Vice and Immorality; 6. The Communicant's Companion; 7. Family Hymns; 8. A Scriptural Catechism; and, 9. A Discourse concerning the Nature of Schism. He died of apoplexy, at Nantwich, in 1714, and was interred at Trinity Church, in Chester.

Henry, *Dr Robert*, author of the History of Great Britain, was the son of James Henry, farmer at Muirtown, in the parish of St Ninians, North Britain, and of Jean Galloway, daughter of Mr Galloway of Burrowmeadow, in Stirlingshire. He was born on the 18th of February 1718; and having early resolved to devote himself to a literary profession, was educated first under Mr John Nicolson at the parish-school of St Ninians, and for some time at the grammar-school of Stirling. He completed his course of academical study at the university of Edinburgh, and afterwards became master of the grammar-school of Annan. He was licensed to preach on the 27th of March 1746, and was the first licentiate of the presbytery of Annan after its institution as a separate presbytery. Soon afterwards he received a call from a congregation of Presbyterian dissenters at Carlisle, where he was ordained in November 1748. In this situation he remained twelve years, and on the 13th of August 1760 became pastor of a dissenting congregation at Berwick-upon-Tweed. Here he married, in 1763, Ann Balderston, daughter of Thomas Balderston, surgeon in Berwick, by whom he had no children, but with whom he enjoyed to the end of his life a large share of domestic happiness. He was removed from Berwick to be one of the ministers of Edinburgh in November 1768; officiated in the church of the New Grey Friars from that time until November 1776; and then became colleague-minister in the Old Church, and remained in that situation till his death. The degree of doctor in divinity was conferred upon him by the university of Edinburgh in 1770; and in 1774 he was unanimously chosen moderator of the general assembly of the church of Scotland, being the only person on record who had obtained that distinction the first time he was a member of assembly.

These facts contain the outline of Dr Henry's life, which, in fact, exhibits few events interesting to the biographer. Though he must have been always distinguished amongst his private friends, he had few opportunities of being known to the public until he was translated to Edinburgh. The composition of sermons must have occupied the chief part of his time during his residence at Carlisle, as his industry in that situation is known to have rendered his labours in this department easy to him during the remainder of his life. But even there he found leisure for other studies; and the knowledge of classical literature, in which he eminently excelled, soon enabled him to acquire an extent of information which qualified him for something more important than he had hitherto in his view.

Soon after his removal to Berwick, Henry published a scheme for raising a fund for the benefit of the widows and orphans of Protestant dissenting ministers in the north of England. This idea was probably suggested to him by the prosperity of the fund which had about thirty years before been established as a provision for ministers' widows in Scotland. But the situation of the clergy of Scotland was very different from the circumstances of the dissenting ministers in England. Annuities and provisions were to be secured to the families of dissenters, without subjecting the individuals, as in Scotland, to a proportional annual contribution, and without such means of creating a fund as could be the subject of an act of parliament to secure the annual payments. The acuteness and activity of Dr Henry surmounted these difficulties; and, chiefly by his exertions, this useful and benevolent institution commenced about the year 1762. The management was intrusted to him for several years; and its success exceeded the most sanguine expectations which were formed of it.

It was probably about the year 1763 that he first conceived the idea of his History of Great Britain; a work which has long been established in the public opinion, and will probably be regarded by posterity, not only as having enlarged the sphere of history, and gratified our curiosity on a variety of subjects which fall not within the limits prescribed by preceding historians, but as one of the most accurate and authentic repositories of historical information which this country has produced. The plan adopted by Dr Henry is sufficiently explained in his general preface. In every period, it arranges, under separate heads or chapters, the civil and military history of Great Britain; the history of religion; the history of our constitution, government, laws, and courts of justice; the history of learning, of learned men, and of the chief seminaries of learning; the history of arts; the history of commerce, of shipping, of money or coin, and of the price of commodities; and the history of manners, virtues, vices, customs, language, dress, diet, and amusements. Under these seven heads, which extend the province of the historian greatly beyond its usual limits, every thing curious or interesting in the history of any country may be comprehended. But it certainly required a more than common share of literary courage to attempt on so large a scale a subject so intricate and extensive as the history of Britain from the invasion of Julius Cæsar. That Dr Henry neither overrated his powers nor his industry, could only have been proved by the success and reputation of his works.

But he soon found that his residence at Berwick was an insuperable obstacle to the minute researches which the execution of his plan required. His situation there excluded him from the means of consulting the original authorities; and though he attempted to find access to them by means of his literary friends, and with their assistance made some progress in his work, his information was notwithstanding so incomplete, that he found it impossible to prosecute his plan to his own satisfaction, and was at last compelled to relinquish it.

By the friendship of Mr Gilbert Laurie, lord provost of Edinburgh, and one of his majesty's commissioners of excise in Scotland, who had married the sister of Mrs Henry, he was removed to Edinburgh in 1768; and it is to this event that the public are indebted for his prosecution of the History of Great Britain. His access to the public libraries, and the means of supplying the materials which these did not afford him, were from that time used with so much diligence and perseverance, that the first volume of his History, in quarto, was published in 1771, the second in 1774, the third in 1777, the fourth in 1781, and the fifth in 1785. The sixth volume was published after his death. These volumes comprehend the most intricate and obscure periods of our history; and when we consider the scanty and scattered materials which Dr Henry has digested, and the accurate and minute information which he has given us, under every chapter of the work, we must entertain a high opinion both of the learning and industry of the author, and of the vigour and activity of his mind; especially when it is added, that he employed no amanuensis, but completed the manuscript with his own hand, and that, excepting the first volume, the whole book, such as it is, was printed from the original copy. Whatever corrections were made on it were inserted by interlineations, or in revising the proof sheets. He found it necessary, indeed, to confine himself to a first copy, from an unfortunate tremor in his hand, which made writing extremely inconvenient, obliged him to write with his paper on a book placed on his knee instead of a table, and unhappily increased to such a degree that in the last years of his life he was often unable to take his victuals without assistance. An attempt which he made after the publication of the fifth volume, to employ an amanuensis, did not succeed. Never having been accustomed to dictate his compositions, he found it impossible to acquire a new habit; and though he persevered only a few days in the attempt, it had a sensible effect on his health, which he never afterwards recovered. An author has no right to claim indulgence, and is still less entitled to credit, from the public, for any thing which can be ascribed to negligence in committing his manuscripts to the press; but considering the difficulties which Dr Henry surmounted, and the accurate research and information which distinguish his History, the circumstances which have been mentioned are far from being uninteresting, and must add considerably to the opinion formed of his merit amongst men who are judges of what he has done. He did not profess to study the ornaments of language; but his arrangement is uniformly regular and natural, and his style simple and perspicuous. More than this he has not attempted, and this cannot be denied him. He believed that the time which might be spent in polishing or rounding a sentence was more usefully employed in investigating and ascertaining a fact. Hence, as a book of facts and solid information, supported by authentic documents, his History will stand a comparison with any other similar work of the same period.

But Dr Henry had other difficulties to surmount than those which related to the composition of his work. Not having been able to transact with the booksellers to his satisfaction, the five volumes were originally published at the risk of the author. When the first volume appeared, it was censured with unexampled acrimony and perseverance. Magazines, reviews, and even newspapers, were filled with abusive remarks and invectives, in which both the author and the book were treated with contempt and scurrility. When an author has once submitted his works to the public, he has no right to complain of the just severity of criticism. But Dr Henry had to contend with the inveterate scorn of malignity. In compliance with the usual custom, he had permitted a sermon to be published which he had preached in 1773 before the Society in Scotland for propagating Christian Knowledge, a composition containing plain good sense on a common subject, from which he expected no reputation. This was eagerly seized on by the adversaries of his History, and torn to pieces with a virulence and asperity which no want of merit in the sermon could justify or explain. An anonymous letter had appeared in a newspaper vindicating the History from some of the unjust censures which had been published, and asserting, from the real merit and accuracy of the book, the author's title to the approbation of the public. An answer appeared in the course of the following week, charging him, in terms equally confident and indecent, with having written this letter in his own praise. The efforts of malignity seldom fail to defeat their purpose, and to recoil upon those who direct them. Dr Henry had many friends, and till lately had not discovered that he had any enemies. But the author of the anonymous letter was unknown to him, till the learned and respectable Dr Macqueen, from the indignation excited by the confident petulance of the answer, informed him that the letter had been written by him. These anecdotes are still remembered. The abuse of the History, which began in Scotland, was renewed in some of the periodical publications in South Britain; though it is justice to add, without meaning to refer to the candid observations of English critics, that in both kingdoms the asperity originated in the same quarter, and that paragraphs and criticisms written at Edinburgh were printed in London. The same spirit appeared in Strictures published on the second and third volumes; but by this time it had in a great measure lost the attention of the public.

The progress of his work introduced Dr Henry to more extensive patronage, and in particular to the notice and esteem of the Earl of Mansfield. That nobleman thought the merit of Dr Henry's History so considerable, that, without any solicitation, after the publication of the fourth volume, he applied personally to the king to bestow on the author some mark of his royal favour. In consequence of this, Dr Henry was informed by a letter from the secretary of state, of his majesty's intention to confer on him an annual pension for life of L.100, "considering his distinguished talents and great literary merit, and the importance of the very useful and laborious work in which he was so successfully engaged, as titles to his royal countenance and favour." Dr Henry had kept very accurate accounts of the sales of his work from the time of the original publication; and after his last transaction conveying the copyright to a London bookseller, he found that his profits had amounted in all to about L.3300; a striking proof of the intrinsic merit of a work which had forced its way to the public esteem, in spite of the malignant opposition with which it had to struggle.

The prosecution of his History had been Dr Henry's favourite object for almost thirty years of his life. He had naturally a sound constitution, and a more equal and larger portion of animal spirits than is commonly possessed by literary men. But from the year 1785 his bodily strength became sensibly impaired. Notwithstanding this, he persisted steadily in preparing his sixth volume, which brings down the history to the accession of Edward VI. The materials of this volume were left in the hands of his executors almost completed. Scarcely any thing remained unfinished but the two short chapters on arts and manners; and even for these he had left materials and authorities so distinctly collected, that there was no great difficulty in supplying what was wanting. This sixth volume was published in the year 1793, with a life of the author prefixed; and it was found entitled to the same favourable reception from the public which had been given to the former volumes. Dr Henry's original plan extended from the invasion of Britain by the Romans to his own times; and men of literary curiosity must regret that he did not live to complete his design; but he has certainly finished the most difficult parts of his subject. The periods after the accession of Edward VI. afford materials more ample, better digested, and much more within the reach of common readers. Till the summer of 1790 he was able to pursue his studies, though not without some interruptions. But at that time his health greatly declined; and, with a constitution quite worn out, he died on the 24th of November of that year, in the seventy-third year of his age.

HENRYSON, Robert, one of the most celebrated of the early Scottish poets, is described as chief schoolmaster of Dunfermline, and this is almost the only particular of his life that is sufficiently ascertained. According to one writer, he was a notary public, as well as a schoolmaster; and another is inclined to identify him with Henryson of Fordell, the father of James Henryson, who was king's advocate and justice clerk, and who perished in the fatal battle of Floddon. This very dubious account seems to have originated with Sir Robert Douglas; who avers that Robert Henryson appears to have been a person of distinction in the reign of James the Third, and that he was the father of the king's advocate. Douglas refers to a certain charter, granted by the abbot of Dunfermline in 1478, where Robert Henryson subscribes as a witness;[1] but in this charter he certainly appears without any particular distinction, as he merely attests it in the character of a notary public. A later writer is still more inaccurate when he pretends that the same witness is described as Robert Henryson of Fordell:[2] in this and other two charters which occur in the chartulary of Dunfermline, he is described as a notary public, without any other addition.[3] That the notary public, the schoolmaster of Dunfermline, and the proprietor of Fordell, were one and the same individual, is by no means to be admitted upon such slender and defective evidence. Henryson, or, according to its more modern and less correct form, Henderson, was not at that period an uncommon surname. It is not however improbable that the schoolmaster may have exercised the profession of a notary. While the canon law prevailed in Scotland, this profession was generally exercised by ecclesiastics, and some vestiges of the ancient practice are still to be traced: every notary designates himself a *clerk* of a particular diocese; and by the act of 1584, which under the penalty of deprivation prohibited the clergy from following the profession of the law, they still retained the power of making testaments; so that we continue to admit the rule of the canon law, which sustains a will attested by the parish priest and two or three witnesses.[4] If therefore Henryson was a notary, it is highly probable that he was also an ecclesiastic, and if he was an ecclesiastic, he could not well leave any legitimate offspring. The poet, in one of his works, describes himself as "ane man of age;" and from Sir Francis Kinaston we learn that "being very old he dyed of a diarrhea or fluxe." With respect to the period of his decease, it is at least certain that he died before Dunbar,

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[1] Douglas's Baronage of Scotland, p. 518.

[2] Sibbald's Chronicle of Scottish Poetry, vol. i. p. 88.

[3] Chartulary of Dunfermline, f. 64. a.—Robert Henryson is a witness to other two charters which occur in the same record, f. 63. a. b. His only mark of distinction is that of being designated *Magister*, while the names of several other witnesses appear without this title. He had perhaps taken the degree of master of arts.

[4] Decretales Gregorii IX. lib. iii. tit. xxvi. cap. x.

Henryson. who in his Lament, printed in the year 1508, commemorates him among other departed poets.

> In Dunfermling he hes tane Broun,
> With gude Mr. Robert Henryſoun.

The compositions of Henryson evince a poetical fancy, and, for the period when he lived, an elegant simplicity of taste. He has carefully avoided that cumbrous and vitiated diction which had begun to prevail among the Scotish as well as the English poets. With his power of poetical conception he unites no inconsiderable skill in versification: his lines, if divested of their uncouth orthography, might often be mistaken for those of a much more modern poet. His principal work is the collection of Fables, thirteen in number, which have been printed in various forms. They are written in a pleasing manner, and are frequently distinguished by their arch simplicity; but in compositions of this nature, brevity is a quality which may be considered as almost indispensable, nor can it be denied that those of Henryson sometimes extend to too great a length. The collection is introduced by a prologue, and another is prefixed to the fable of the lion and the mouse. The latter prologue exhibits a curious specimen of the literature of that age. In a delightful morning of June, the poet wanders into a wood, and reclines himself, in the midst of flowers, under the shade of a hawthorn; where, having made the sign of the cross, he falls asleep, and fancies himself to be accosted by a person of a goodly appearance. This venerable stranger proves to be Æsop; who is here represented as a Roman and a poet, and in whom it is not easy to recognise the reputed author of the fables written in Greek prose. Mr Tyrwhitt, who was equally familiar with classical and with Gothic literature, has remarked that in many passages quoted from Æsop by writers of the middle ages, it is difficult to ascertain what author they mean.

Henryson's Tale of the vponlands Mouse and the burgesse Mouse may be regarded as one of his happiest efforts in this department. The same tale, which is borrowed from Æsop, has been told by many other poets, ancient as well as modern. Babrius has dispatched the story of the two mice in a few verses,[1] but Henryson has extended it over a surface of several pages. To this fable of the Scotish poet, it does not, in the opinion of Dr Nott, seem improbable that Sir Thomas Wyatt might have been indebted, if not for the idea of his first satire, at least for the manner of telling the story.[2] Henryson's Tale of Sire Chauntecleire and the Foxe is evidently borrowed from Chaucer's Nonnes Preestes Tale. From these apologues some curious fragments of information may be gleaned. That of the Sheepe and the Dog contains all the particulars of an action before the consistory court, and probably as complete an exposure of such transactions as the author could prudently hazard. The proceedings of the ecclesiastical courts seem about this period to have been felt as a common grievance; and they are still more decidedly reprehended in the Satyre of Sir David Lindsay, whose works furnish many valuable contributions to the history of manners and customs.

Another conspicuous production of Henryson is the Testament of Cresseid,[3] which is a sequel to Chaucer's Troylus and Creseyde, and is commonly printed among the works of that poet.[4] It evidently rises above the ordinary standard of that period, and on some occasions evinces no mean felicity of conception. The silent interview between Troilus and Cresseid is skilfully delineated; and the entire passage has been described as beautiful by a very competent judge of old poetry.[5] It is unnecessary to remark that for "the tale of Troy divine," neither Chaucer nor Henryson had recourse to the classical sources:[6] this, like some other subjects of ancient history, had been invested with all the characteristics of modern romance; nor could the Scotish poet be expected to deviate from the models which delighted his contemporaries. Sir Troilus is commended for his knightly piety; a temple is converted into a *kirk;* Mercury is elected speaker of the parliament; and Cresseid, on being afflicted with a leprosy, is consigned to a spittal-house, in order to beg with cup and clapper. The personages are ancient, but the institutions and manners are all modern.

Henryson's tale of Orpheus is not free from similar incongruities, and possesses fewer attractions; it is indeed somewhat languid and feeble, and may have been a lucubration of the author's old age. Sir Orpheus is represented as a king of Thrace, and is first dispatched to heaven in search of the lost Eurydice.

> Quhen endit was the ſangis lamentable,
> He tuke his harp, and on his breſt can hyng,
> Syne paſsit to the hevin, as ſais the fable,
> To ſeke his wyf, bot that auailit no thing:
> By Wadlyng ſtrete[7] he went but tarying,
> Syne come doun throu the ſpere of Saturn ald,
> Quhilk fader is of all thir ſternis cald.[8]

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[1] Babrii Fabularum choliambicarum libri tres, collegit Fr. Xav. Berger, p. 9. Monachii, 1816, 8vo.

[2] Nott's Essay on Wyatt's Poems, p. cxliii.—In the Appendix, No. vi. Dr Nott has printed Henryson's fable from the Harleian MS.

[3] The Testament of Cresseid, compylit be M. Robert Henrysone, Sculemaister in Dunfermeling. Imprentit at Edinburgh be Henrie Charteris, 1593, 4to.—"Ffor the author of this supplement," says Sir Francis Kinaston, "called the Testament of Creseid, which may passe for the sixt and last booke of this story, I have very sufficiently bin informed by Sr. Tho. Ereskin, late earle of Kelly, and divers aged schollers of the Scottish nation, that it was made and written by one Mr. Robert Henderson, sometime cheife schoole-master in Dumfermling, much about the time that Chaucer was first printed and dedicated to King Henry the 8th by Mr. Thinne, which was neere the end of his raigne. This Mr. Henderson wittily observing that Chaucer in his 5th booke had related the death of Troilus, but made no mention what became of Creseid, he learnedly takes upon him, in a fine poeticall way, to expres the punishment and end due to a false unconstant whore, which commonly terminates in extreme misery." See the Loves of Troilus and Creseid, written by Chaucer; with a Commentary by Sir Francis Kinaston, p. xxix. Lond. 1796, 8vo. Kinaston had translated into Latin rhyme two books of Chaucer's poem, and had published them under the title of *Amorum Troili et Creseidæ libri duo priores Anglico-Latini.* Oxoniæ, 1635, 4to. He completed his version of the poem, together with a commentary; and his manuscript at length came into the possession of Mr Waldron, who announced his intention of committing it to the press, but did not find encouragement to proceed beyond a short specimen.

[4] This poem is quoted as Chaucer's, by Mr Strutt in his View of the Dress and Habits of the People of England, vol. ii. p. 279, and by Mr Douce in his Illustrations of Shakspeare, vol. i. p. 15. 487.

[5] Scott's Notes to Sir Tristrem, p. 362.

[6] See Warton's Hist. of English Poetry, vol. ii. p. 220, and Douce's Illustrations of Shakspeare, vol. ii. p. 65.

[7] Watling Street is a name given to one of the great Roman ways in Britain. (Horsley's Roman Antiquities of Britain, p. 387. Lond. 1732, fol.) This passage, which to some persons may appear so unintelligible, will be best explained by a quotation from Chaucer's House of Fame, b. ii.

> Lo, quod he, caſte vp thyne eye,
> Se yonder, lo, the Galaxye,
> The whiche men clepe the Milky Way,
> For it is whyte; and ſome perfay
> Callen it Watlynge ſtrete.

[8] Heire begynnis the Traitie of Orpheus Kyng, and how he yeid to Hewyn and to Hel to ſeik his Quene: and ane othir Ballad in the lattir end. Edinburgh, *Chepman and Myllar*, 1508, 4to.

Having searched the sun and planets without success, he directs his course towards the earth, and in his passage is regaled with the music of the spheres. His subsequent adventures are circumstantially, but not very poetically detailed. In enumerating the various characters whom he finds in the domains of Pluto, the poet is guilty of a glaring anachronism: here Orpheus finds Julius Cæsar, Nero, and even popes and cardinals; and it is likewise to be remarked that the heathen and the Christian notions of hell are blended together. But such anachronisms are very frequently to be found in the writers of the middle ages. Mr Warton remarks that Chaucer has been guilty of a very diverting, and what may be termed a double anachronism, by representing Creseyde and two of her female companions as reading the Thebaid of Statius. Like the fables of Henryson, his tale of Orpheus is followed by a long moral; and here he professes to have derived his materials from Boethius and one of his commentators.

The Bludy Serk is an allegorical poem of considerable ingenuity. The poet represents the fair daughter of an ancient and worthy king as having been carried away by a hideous giant, and cast into a dungeon, where she was doomed to linger until some valiant knight should achieve her deliverance. A worthy prince at length appeared as her champion, vanquished the giant, and thrust him into his own loathsome dungeon. Having restored the damsel to her father, he felt that he had received a mortal wound. He requested her to retain his bloody shirt, and to contemplate it whenever a new lover should present himself. It is unnecessary to add that the interpretation of this allegory involves the high mysteries of the Christian faith. The poem bears an obvious resemblance to two distinct tales which occur in the *Gesta Romanorum.* In the first of these, a noble lady having been cruelly oppressed by a tyrant, is relieved by a valiant pilgrim, who falls in the moment of victory. According to his injunctions, she places his staff and scrip in her chamber; but on being addressed by three kings, in whom we are instructed to recognize the devil, the world, and the flesh, she afterwards removes these memorials, and forgets her obligations. The other tale represents the daughter of a king as having suffered dishonour from a tyrannical duke. When reduced to poverty and wretchedness, she is accosted at the wayside by a certain valiant knight, who, on condition of obtaining her hand, undertakes to fight the oppressor, and to recover her inheritance. A fierce combat ensues. Before he slays his antagonist, he receives a mortal wound, which, after an interval of three days, terminates his life. She hangs up his bloody armour in a chamber, and on being addressed by any new suitor, she surveys this memorial of her deliverer, and declares her resolution to form no new attachment.[1]

The Abbay Walk is of a solemn character, and is not altogether incapable of impressing the imagination. Its object is to inculcate submission to the various dispensations of Providence, and this theme is managed with some degree of skill. Of his poem entitled the Garment of Gude Ladyis, Lord Hailes has remarked that "the comparison between female ornaments and female virtues, is extended throughout so many lines, and with so much of a tire-woman's detail, that it becomes somewhat ridiculous."[2] But the most beautiful of Henryson's productions is Robene and Makyne, the earliest specimen of pastoral poetry in the Scottish language. We consider it as superior in many respects to the similar attempts of Spenser and Browne: it is free from the glaring improprieties which sometimes appear in the pastorals of those more recent writers, and it exhibits many genuine strokes of poetical delineation. The shepherd's indifference is indeed too suddenly converted into love; but this is almost the only instance in which the operations of nature are not faithfully represented. The story is skilfully conducted, the sentiments and manners are truly pastoral, and the diction possesses wonderful terseness and suavity.

The Fables of Henryson have lately been reprinted[3] from the edition of Andrew Hart; of which the only copy known to exist was lately added to that great repository of Scottish literature, the Advocates Library. It is a small octavo volume, which, although in a very frail condition, cost no small price. This edition, printed in 1621, is not however the first; and indeed the title-page indicates the work to be "newlie reuised and corrected." In the library of Sir Andrew Balfour, which was sold by auction in 1695, there appears to have been a copy of an edition printed at Edinburgh in 1570. And after a short interval the work was exhibited in an English dress: "The fabulous Tales of Esope and Phrygian, compiled moste eloquently in Scottishe metre, by Mr. Robert Henrison, and now lately Englished." London, printed by Richard Smith, 1577, 8vo. Of this edition there is a copy in the library of Sion College. Among the Harleian manuscripts in the British Museum are preserved "The morall Faibillis of Esope, compylit be Maister Robert Henrisoun, Scolmaister of Dunfermling, 1571." This is apparently the date of the transcript, which is conjectured to have been taken from the edition of the preceding year. The manuscript, as Mr Pinkerton has stated, "is well writen and preserved, and has some curious illuminations, tho poorly done."[4] Ten of the fables, together with several other poems of the same author, are to be found in Bannatyne's manuscript. The various works of Henryson afford so excellent a specimen of the Scottish language and versification, that a complete collection, printed with due accuracy and accompanied with proper illustrations, could not fail to be highly acceptable to the lovers of our early literature. (X.)

HEPATIC, in *Medicine* and *Anatomy*, any thing belonging to or connected with the liver.

HEPATOSCOPIA (formed of ἡπαρ, *liver*, and σκοπεω, *I consider*), in *Antiquity*, a species of divination, in which predictions were made by inspecting the livers of animals.

Hepatoscopia is also used as a general name for divination by entrails.

HEPHÆSTIA, in Grecian antiquity, an Athenian festival in honour of Vulcan, the principal ceremony of which consisted of a race, performed in the following manner: The antagonists were three young men, one of whom, by lot, took a lighted torch in his hand, and began his course; if the torch was extinguished before he finished the race, he delivered it to the second, and he in like manner to the third; and the victory was his who first carried the torch lighted to the end of the race. To this successive delivering of the torch we find many allusions in ancient writers, particularly the poets.

HEPHÆSTIO, one of the chief favourites of Alexander the Great, was the son of Amyntor of Pella, the capital of Macedonia. He accompanied Alexander in his expedition against the Persians; and yet it is not a little surprising that he held no military command till after the battle of Arbela, B. C. 331, when he was appointed leader of a squadron of horse. (Arrian, iii. 15.) From this time his advancement to superior command was rapid, for we find him next year, B. C. 330, in the expedition against the

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[1] Gesta Rhomanorum, cum applicationibus moralizatis ac mysticis, f. xiii. xxvii. edit. Hagenaw, 1508, 4to.

[2] Hailes's Ancient Scottish Poems, p. 279. Edinb. 1770, 12mo.

[3] Edinb. 1832, 4to. This edition was printed for the Maitland Club.

[4] Pinkerton's List of the Scotish Poets, p. c.

Parthians and Hyrcanians, hipparchos, or colonel, of a regiment. (iii. 27.) In the campaign against the inhabitants of Sogdiana, he was appointed to the command of a brigade, and was then sent with Perdiccas into the country of Peucelastis, on the banks of the Indus, where he took the chief town. (iv. 16, 22, 23.) After the battle in which Porus was defeated on the banks of the Hydaspes, B. C. 327, Hephæstio was sent with a body of troops against another Porus, who reigned over the country along the banks of the Hydraotes. (v. 21; Diodor. xvii. 21.) As a reward for his services, he received from his royal friend Drypetis, the daughter of Darius, last king of Persia. (Arrian, vii. 4.) But he did not long survive the successful termination of Alexander's exploits; for being taken ill at Ecbatana, where all had assembled to return thanks to the gods with more than ordinary solemnity for their success, Hephæstio suddenly died, to the inconsolable grief of Alexander. (vii. 14; Diodor. Sic. xvii. 114, 115.)

HEPHÆSTIO, a grammarian of Alexandria, in Egypt, who lived A. D. 150, and is supposed to have been one of the preceptors of Ælius Verus, mentioned by Julius Capitolinus in his life of that emperor. (*Vit. Veri*, c. 2.) Suidas states that he was a voluminous writer, though chiefly on grammar and metres; but, of all his works, nothing has been preserved except an Elementary Treatise on Metres. (Εγχειριδιον περι μετρων και ποιηματων.) Though this work is by no means complete, nor always correct, still it is valuable as being the only one on that subject which has reached us. It has been illustrated by numerous scholia; and there is an introduction to it (προλεγομενα), ascribed to the celebrated Longinus, which was first published by Hudson in the preface to his edition of the work (περι ὑψους), Oxford, 1710. The principal editions of this work of Hephæstio are, Florent. ap. Junt. 1526; Par. ap. Turnebum, with scholia, 1553; Trajecti ad Rhenum, ap. Pauw, 1726; but the best is by Gaisford, Oxford, 1810.

HEPHTHEMIMERIS (composed of ἑπτα, *seven*, ἡμισυς, *half*, and μερος, *part*), in the Greek and Latin poetry, a sort of verse consisting of three feet and a syllable; that is, of seven half feet.

HEPHTHEMIMERIS, or *Hepthemimeres*, is also a cæsura after the third foot; that is, on the seventh half-foot. It is a rule that this syllable, though it be short in itself, must be made long on account of the cæsura, or to render it an *hephthemimeris*.

HEPTACHORD, in the ancient poetry, signified verses which were sung or played on seven chords, that is, on seven different notes. In this sense it was applied to the lyre when it had but seven strings. One of the intervals is also called an *heptachord*, as containing the same number of degrees between the extremes.

HEPTAGON, in *Geometry*, a figure consisting of seven sides and as many angles. In fortification, a place is termed a *heptagon* which has seven bastions for its defence.

HEPTAGONAL NUMBERS, in *Arithmetic*, a sort of polygonal numbers, in which the difference of the terms of the corresponding arithmetical progression is 5. One of the properties of these numbers is, that if they be multiplied by 40, and 9 be added to the product, the sum will be a square number.

HEPTANGULAR, in *Geometry*, an appellation given to figures which have seven angles.

HEPTARCHY (compounded of the Greek ἑπτα, *septem*, seven, and αρχη, *imperium*, government), a government composed of seven persons, or a country governed by seven persons, or divided into seven kingdoms. The Saxon heptarchy included all England, which was cantoned out into seven petty independent kingdoms. See BRITAIN.

HERACLEA, an ancient city of Romania, being the see of an archbishop of the Greek church, and also a seaport. It was a famous place in former times, and there are still some remains of its ancient splendour. Theodore Lascaris took it from David Comnenus, emperor of Trebisond, after which it fell into the hands of the Genoese; but Mahommed II. took it from them, and since that time it has been in the possession of the Turks. It is situated near the sea. Long. 27. 58. E. Lat. 40. 59. N.

HERACLEONITES, a sect of Christians, the followers of Heracleon, who refined upon the Gnostic divinity, and maintained that the world was not the immediate production of the Son of God, but that he was only the occasional cause of its being created by the demiurgos. The Heracleonites denied the authority of the prophecies of the Old Testament; maintaining that they were mere random sounds in the air, and that St John the Baptist was the only true voice that directed to the Messiah.

HERACLIDÆ, the descendants of Hercules, who at the time of their father's death were residing with Ceyx, king of Trachis, who generously protected them till he was forced by the threats of Eurystheus to refuse them any longer refuge. They fled to Athens, where they received the protection of Theseus, dwelt in the Tetrapolis, and, together with the Athenians under the command of Hyllus and Iolaus, fought a battle against Eurystheus at the pass of Sciron. The Argive king fell, and the result of this battle was the possession by the Heraclidæ of the whole Peloponnesus, where they ruled for one year, at the expiration of which a pestilence drove them back again to Attica. They were succeeded by the Pelopidæ, against whom the expeditions of the Heraclidæ were now directed. Hyllus again collected his forces, and met the Arcadians, Ionians, and Achæans at the isthmus, where he fell in single combat with Echemus, the son of Aëropus, prince of Tegea; upon which the Heraclidæ promised not to renew the attempt for fifty, or some say a hundred years. They made two unsuccessful attempts under Cleodæus and Aristomachus; but at last, led by Temenus, they met the united force of the Peloponnesus, under the command of Tisamenus, the grandson of Agamemnon, and completely defeated it, 1104 B. C. This event, which is said to have happened eighty years after the fall of Troy, and 328 years before the first Olympiad, gave the Heraclidæ, along with the Dorians, entire possession of the country. (Diod. iv. 57, 58. Apollodor. ii. 8, ad fin. Herod. ix. 26. Paus. ii. 13, 18; iii. 1; iv. 2; v. 3; Müller's *Dorians.*)

HERACLIDES, surnamed Ponticus, because he was a native of Heraclea in Pontus, was the son of Euthyphron, of noble birth and of great riches. Of his private history only a few particulars have come down to us, which are found in Suidas and Diogenes Laertius (v. 86). At Athens we find him the disciple of Plato, who died 347 B. C.; of Speusippus, who taught 347–339 B. C.; and of Aristotle, who taught at Athens 334–322 B. C. On his return to his native city he expelled a tyrant, and established freedom; but he is accused of having arrogated to himself more power than was consistent with the principles which he advocated. He persuaded the inhabitants of Heraclea that an oracle had commanded him to be presented with a golden crown; but whilst he was in the act of being crowned, he fell down in a fit of apoplexy. Having recovered consciousness, but aware that he was dying, it is said that he wished a friend to remove his body and substitute a serpent, that his fellow-citizens might believe that he had been carried to heaven. Such stories, however, ought to be regarded with great suspicion. He was the author of many works of considerable merit, though both Cicero (*Nat. Deor.* i. 13) and Plutarch (*Camil.* 22) speak of his judgment with no respect; whilst Aristoxenus and Chamæleon render us suspicious of his literary honesty. His ethical writings were principally in the form of a dialogue, and treated of justice, moderation, self-restraint, religious feelings, firmness, virtue, and happiness. His physical works contained treatises on reason, the soul, nature, on things in heaven and in hell, on life, and on goodness. Amongst his grammatical writings are mentioned a work in two books on the age of Homer and Hesiod, on Archilochus and Homer, and on the qualities of Sophocles and Euripides. (For a detailed account of his works, the reader may consult Clinton's *Fasti Hellenici*, vol. ii. p. 470.) Some extracts from his treatise on the Constitutions of various States remain. They are usually published along with the *Variæ Historiæ* of Ælian. The best edition is that by Coray, Paris, 1805. There is a separate edition by Kœler, *Fragmenta de Civitatibus*, Halæ, 1804.

HERACLIDES, the author of a work on incredible events (*περι ἀπισων*), and another on Homeric allegories (*ἀλληγοριαι ʽΟμηρικαι*), which has been falsely ascribed to the native of Heraclea. We have no means of discovering at what time Heraclides flourished, or of what city he was a native; but his works are not without value, chiefly as supplying us with many quotations from lost poets. In the first we have a number of wonderful stories after the manner of Palæphatus, but all naturally resolved. In the second he has endeavoured to explain the mythic stories of Homer as allegories, in order to relieve Homer from the charge of impiety, to which he thinks he would otherwise be exposed. It was first published along with Palæphatus and some other authors, at Venice, by Aldus (1505), then by Gessner, Basle (1544), and by Gale in his *Opuscula Mythologica*, Amstel. 1688. The best edition is that by Heyne, *Heraclidæ Allegoriæ Homericæ, cum notis Schow.* Götting. 1782; *De Incredibilibus*, Gr. et Lat. ed Teucher, Lemgo, 1796. The Allegories have been translated into German by Schulthess, Zurich, 1779.

HERACLITUS, a celebrated philosopher of Ephesus, in Asia Minor, flourished about B. C. 503, in the reign of Darius, son of Hystaspes. Of his personal history we know nothing more than that he was the son of Blyson, attended the lectures of the philosophers Hippasus and Xenophanes, and made a particular study of the doctrines of the Pythagoreans. Heraclitus was one of those spirits whose eye was formed so as to view only the miseries of human life, and who gave vent to their sensibility by tears, as Democritus did by laughter. He was usually called the Weeping Philosopher. He was a voluminous writer, but his most esteemed work was a treatise on nature, which, however, was so obscure, that he obtained the surname of Σκοτεινος. It is said that Euripides sent this work to Socrates, and that the philosopher having read it, remarked that all he could understand was very good, but that much of it was unintelligible. Heraclitus retired from intercourse with men to some deserted spot, where he could pursue without interruption his philosophical speculations; but his austere mode of living brought on a dropsy, and finding no relief, he determined to destroy himself by fire, and thus perished in his sixtieth year. Others say that he was devoured by dogs. Heraclitus regarded fire as the beginning and end of all things, as a matter subtile, eternal, unalterable, and ever moving. The less subtile portions of fire produced air, those of air generated water, and from this again was formed earth. The soul he considered as an igneous substance, or an exhalation (*αναθυμιασις*). He was in fact a materialist, and admitted only body, form, and motion. Every thing was only a change of body, death only a change of form. This treatise was first published by Crates, and put into Greek verse by Scythinus. Some fragments of it which remain have been published by Stephens, with other pieces, in a work entitled *Poësis Philosophica*, Paris, 1573. Also *Fragmenta et Literæ*, Gr. et Lat. ed. Lubin, Rostock, 1601. See likewise *De principio rerum naturalium ex mente Heracliti physici exercitatio*, Lips. 1697; *De rerum naturalium genesi ex mente Heracliti physici dissertatio*, Lips. 1702.

HERACLIUS, an eastern emperor, descended from a Cappadocian family, was sent to subdue the tyrant Phocas, whom he totally vanquished in the year 610. In consequence of this victory, young Heraclius was raised to the throne by the suffrages of the senate and people. He confined in a monastery Crispus, the son-in-law of Phocas, whose defection had contributed to his success. Having humbly requested peace from the Persian monarch, who was extending his conquests all over the Asiatic part of the empire, his exorbitant and unjust conditions so exasperated Heraclius, that he at once started from inglorious ease into a conspicuous hero, raised, by vast exertions, a considerable army, conquered the king of Persia, and established his winter-quarters on the banks of the Halys. He next year penetrated into the very heart of Persia, and having resisted the attack of a threefold army of Persians, he surprised the town of Salban. Another of his expeditions was against the Tigris; and he fought a battle near the site of the ancient Nineveh in 627, about the end of the year, at which time he gained a complete victory over the Persians, having slain three of their chiefs with his own hand. He recovered three hundred Roman standards, and set a vast number of captives at liberty. In 628 he made the Persian king put an end to the persecution of the Christians, renounce the conquests of his father in the Roman empire, and restore the true cross, which had been taken from Jerusalem. When at Emesa, he first heard of the name of Mahommed, who invited him to embrace his new faith, but without success. He brought a reproach on his name by adhering to the doctrine of the Monothelites, but chiefly by espousing his niece Martina for his second wife, by whose influence he divided the succession between Constantine and Heracleonas, his son by Martina. He fell into a dropsical complaint, by which he was carried off in the month of February 641, in the thirty-first year of his reign.

HERALD, a term supposed to be derived from *heer*, an army, and *healt*, a champion.

The principal employment of heralds in early times was to demand redress of injuries from foreign powers, carry messages of amity or defiance, and proclaim war and peace; whence they came also to record and emblazon armorial bearings, and to marshal great public solemnities.

In the days of chivalry they were introduced into this island from France; and as in that country, and indeed also in Rome so likewise, both in England and Scotland they were in high repute. The chief of them was styled king of arms, and crowned at his installation to office by the sovereign himself; and as the sovereign and other lords had their *armiger* or armour-bearer, so every herald had his *signifer* or ancient, or, as he was called from the French, pursuivant, that is, follower or attendant.

In 1450 the heralds of England were by King Richard II. incorporated into a college like the *collegium fecialium* of Rome. The earl marshal of England is superior of the college, and has the right of appointing the members of whom it consists, namely, three kings at arms, six heralds at arms, and four pursuivants at arms. The *kings* are garter, clarencieux, and norroy; of whom garter, instituted and created by King Henry V. to attend on the order of the garter, is principal. His distinguishing colour is *blue*; that of the "provincial kings," as clarencieux and norroy are called, is *purple*. Clarencieux was ordained by King Edward IV., when, on attaining the dukedom of Clarence by the death of his brother, he made the herald which properly belonged to the Duke of Clarence a king of arms, with power to marshal and dispose of funerals, and other processions, throughout the realm of England on the south side of Trent, as the office of norroy is the like on the north. The *heralds* are styled of York, Lancaster, Chester, Windsor, Richmond, and Somerset. They are esquires by creation, and rank according to seniority of appointment. For some time past the crown has occasionally issued a warrant to the earl marshal to create extraordinary heralds; but these receive no salary, which the king's ordinary heralds and pursuivants at arms do. The *pursuivants* are now reckoned of a sort in the number of heralds, and commonly succeed in the place of heralds, as these die or are preferred. Their names are Blue-mantle, Rouge-croix, Rouge-dragon, and Portcullis. The meetings of the heralds' college are termed chapters; and matters are determined therein by a majority of voices. The earl marshal sits in the midst of his court, attended sometimes by one or more of the judges. He has also belonging to his court a pursuivant messenger to serve his precepts, a crier, a doctor of the civil law, and the clerk or registrar, on either side of whom are placed the officers at arms to give their opinions when required.

In Scotland there is but one principal herald or king of arms. He is called *Lyon* from the cognisance of Scotland, as one of the signiferi or pursuivants is called Unicorn from the supporters of the shield; and, as early as the coronation of King Robert II. on the 27th of March 1371, we find lyon king of arms called in with his attending heralds by the lord marischal of Scotland, sworn, and crowned. (MS. Account of the Coronation, *apud* Chalmers, *Caledonia*, vol. i. p. 763, note.) Indeed it would seem that heralds are of greater antiquity in Scotland than in England; and it is not unlikely that norroy, the most ancient of the English kings of arms, had his origin in the wars of the borders. That the Scottish king of arms was at one time dependent on the marischal of Scotland, as the English heralds are on the marshal of England, there is clear circumstantial, though certainly, from the state of the records, no direct evidence. That dependence, however, did not continue, and lyon has long held his place by commission under the great seal, and been recognised as the head of the office of arms; nor is there any such rule acknowledged here as that established in the heralds' college at London, that none can be a king of arms before he is a herald. Jurisdiction in arms, also, which was heretofore in all the heralds jointly, is now exercised only by the king of arms, who himself performs the duties of his place by *deputies* of his own appointment. This devolution of duty to a deputy may be traced up to about the year 1663, when lyon first obtained the style of lord lyon king of arms. The *heralds* are Rothesay, Ross, Snowdon, Marchmont, Islay, and Albany. The *pursuivants* are Unicorn, Ormond, Carrick, Bute, Dingwall, and Kintyre. The number of each thus appears to be six, as it has been for at least three hundred years past; but in the end of the fifteenth century there were but five each, including the lyon herald. They receive their commission from the lord lyon, usually for life; and the only duty they now perform is to attend at royal proclamations, coronations, and other great public solemnities. Attached to this department of the office of arms are now also six *trumpeters*, officers apparently of modern origin. The *macers* used likewise to be reckoned amongst the officers at arms, and in early times were placed after the pursuivants; but, from the institution of the Court of Session, they took precedence of them, and are now altogether detached from the heralds' office, and wait only on the judges of the above court. They receive their commission from the crown, excepting one, which is hereditary, and executed by deputy. After the pursuivants are accordingly to be ranked the *messengers* at arms, of whom there is now, by statute 1587, c. 46, a certain number in every shire of the kingdom. They are admitted and removed by the lord lyon, and their duty is to execute the process and letters of the superior courts. The jurisdiction and authority of the Scottish king of arms is thus twofold; one over the officers at arms, in which respect he may not inaptly be regarded as in many respects at the head of the executive department of the law here; and the other in relation to bearings and ensigns armorial. The lord lyon also appoints a *procurator fiscal* to sue before him, a messenger to act as his *macer*, and a *clerk and registrar*.

Immemorial usage and the king's concession of arms are the main pillars of the law of arms. They give the fundamental right to use ensigns armorial, and to have those ensigns matriculated in the heralds' books. Where neither usage nor royal concession appears, the discretion of the college arises; and as the principles on which coat armour is awarded were never very clearly defined, it is not surprising that the power to purchase arms became the criterion of fitness to bear them; and that, as Bailey says, " In our days all are accounted gentlemen that have money, and if a man hath no coat of arms, the king of arms can sell him one." The principles which regulate the heralds' court at Edinburgh are stated in the Report of the Commission on Courts of Justice in Scotland, anno 1821. Under that commission Mr George Tait, advocate, late lyon-depute, was examined on oath, and being interrogated, according to what rules or ordinances cases respecting the grant of arms, or competition of claims between different parties, are determined, he deponed, that he was not aware of any record of precedents in cases of this nature, and he had not since his appointment had occasion to decide any formal or regular question of competition; but that the rules according to which he would form his opinion, and which he had observed in as far as he had been called to decide on claims presented, were those to be found in the acts of the Scottish parliament, 1592, c. 127, and 1672, c. 21, and the rules laid down by Sir George Mackenzie, by Nisbet, and other writers on heraldry. And being interrogated, if there was any restriction observed with respect to the class or description of persons to whom a grant of arms would be allowed, he deponed that such grants were not refused in any case where the person applying was respectable, which he understood to be conformable to the practice now observed in all other colleges of arms; but with regard to the right of bearing *supporters*, he conceived it to be competent to be granted only in a very few cases, which cases Mr Tait enumerated at length, but which, it is enough here to say, may be reduced to those in which the claim rests on the immemorial use of supporters by the claimant's family, or on the claimant or his ancestor being either a peer of the realm, or else one of the ancient *barones minores*, or, lastly, on the king's concession of supporters.

From the earl marshal of England an appeal lies to the king in council. The case was probably the same in Scotland, and both the language and context of the statutes above named imply that the lord lyon is, under his majesty, king and sovereign within the office of arms; but for some time past the Court of Session have treated his jurisdiction as subject to their review and control.

By the statutes imposing and regulating the assessed taxes, an annual duty of 12s. was made payable by every person using or wearing any armorial bearing or ensign, which duty is doubled if the party be liable in house-duty, and quadrupled if he be liable in the duty on a carriage.

(U. U. U.)

HERALDRY,

efin on, Origi &c.

Is the science which teaches how to blazon, or explain in proper terms, all that belongs to coats-of-arms, and how to marshal, or dispose regularly, different arms on a field; and it also teaches whatever relates to the marshalling of solemn cavalcades, processions, and other public ceremonies, at coronations, installations, creations of peers, nuptials, christening of princes, funerals, and the like. Arms, or coats-of-arms, are hereditary marks of honour, composed of fixed and determined colours and figures, granted by sovereign princes as a reward for military valour, shining virtue, or signal public service, and which serve to denote the descent and alliance of the bearer, or to distinguish states, cities, societies, or orders, civil, ecclesiastical, and military.

Thus heraldry is the science of which *arms* are the proper object; but yet they differ much both in their origin and in their antiquity. Heraldry, according to Sir George Mackenzie, "as digested into an art, and subjected to rules, must be ascribed to Charlemagne and Frederick Barbarossa, for it did begin and grow with the feudal law." Sir John Ferne is of opinion that we borrowed *arms* from the Egyptians, meaning probably from the hieroglyphics of that people. Sir William Dugdale mentions that arms, as marks of honour, were used by great commanders in war, necessity requiring that their persons should be notified to their friends and followers. Nisbet, in his System of Heraldry, says that arms owe their rise and beginning to the light of nature, and that signs and marks of honour were made use of in the first ages of the world, and by all nations, however simple and illiterate, to distinguish the noble from the ignoble. We find from Homer, Virgil, and Ovid, that the ancient heroes had different figures on their shields, by which their persons were distinctly known. Alexander the Great, desirous to honour those of his captains and soldiers who had done any glorious action, and also to excite emulation amongst the rest, granted them certain badges to be borne on their armour, pennons, and banners; and at the same time ordained that no person or potentate throughout his empire should attempt or presume to give or tolerate the bearing of those signs upon the armour of any other man, but that it should be a power reserved to himself, which prerogative has ever since been claimed and exercised by all other kings and sovereign princes within their dominions.

From these and many other opinions, it may with some confidence be inferred that in all ages men have made use of figures of living creatures, or symbolical signs, to denote the bravery and courage either of their chief or nation, to render themselves more terrible to their enemies, and also to distinguish themselves or families, as names do individuals. Agrippa, in his treatise on the vanity of sciences (c. 81), has collected many instances of these marks of distinction, anciently borne by kingdoms and states which were any way civilized. Thus the Egyptians bore an ox, the Athenians an owl, the Goths a bear, the Romans an eagle, the Franks a lion, and the Saxons a horse, which last is still borne in the arms of his Britannic majesty. As to hereditary arms of families, Camden, Spelman, and others agree that they began towards the end of the seventeenth century. According to Menestrier, a French writer whose authority is of great weight in this matter, Henry l'Oiseleur, or the Falconer, who was raised to the imperial throne of the West in 920, by regulating tournaments in Germany gave occasion to the establishment of family arms, or hereditary marks of honour, which are undeniably more ancient and better observed amongst the Germans than in any other nation. Menestrier likewise asserts, that with tournaments came coats-of-arms, which were a sort of livery, made up of several lists, fillets, or narrow pieces of stuff of different colours, whence came the fess, the bend, the pale, and other devices, which were the original charges of family arms; for they who had never been at tournaments had not such marks of distinction. Those who engaged in the crusades also took up several figures hitherto unknown in armorial ensigns; such as alerians, bezants, escalop-shells, martlets, and the like, but more particularly crosses, of different colours for the sake of distinction. From this it may be concluded that heraldry, like most human inventions, was insensibly introduced and established; and that, after having been rude and unsettled for many ages, it was at last methodised, perfected, and fixed, by the crusades and tournaments.

Hereditary Arms, &c.

These marks of honour are called *arms*, from their being principally worn in war and in tournaments by military men, who had them engraved, embossed, or depicted on shields, targets, banners, or other martial instruments. They are also called *coats-of-arms*, from the custom of the ancients embroidering them on the coats which they wore over their arms, as heralds do to this day. Arms are distinguished by different names, to denote the causes of their bearing; such as, arms of *dominion*, of *pretension*, of *concession*, of *community*, of *patronage*, of *family*, of *alliance*, of *succession*. Arms of *dominion* or sovereignty are those which emperors, kings, and sovereign states constantly bear, and which are, as it were, annexed to the territories, kingdoms, and provinces they possess. Thus the three lions are the arms of England, the fleurs-de-lis those of France, and so on. Arms of *pretension* are those of kingdoms, provinces, or territories, which a prince or lord has some claim to, and which he adds to his own, although these kingdoms or territories be possessed by a foreign prince or other lord. Thus the kings of England have quartered the arms of France with their own ever since Edward III. laid claim to the kingdom of France, which happened in the year 1330, on account of his being son to Isabelle, sister to Charles the Handsome, who died without issue. Arms of *concession*, or augmentation of honour, are either entire arms, or else one or more figures, granted by princes as a reward for some extraordinary service. We read in history that Robert Bruce, king of Scotland, allowed the Earl of Wintoun's ancestor to bear, in his coat-armour, a crown supported by a sword, to show that he and the clan Seaton, of which he was the head, had supported his tottering crown. Queen Anne granted to Sir Cloudesly Shovel, rear-admiral of Great Britain, a cheveron between two fleurs-de-lis in chief, and a crescent in base, to denote three great victories which he had gained, two over the French and one over the Turks. Arms of *community* are those of bishoprics, cities, universities, academies, societies, companies, and other bodies corporate. Arms of *patronage* are such as governors of provinces, lords of manors, patrons of benefices, and others, add to their family arms, as a token of their superiority, rights, and jurisdiction. These arms have introduced into heraldry, castles, gates, wheels, ploughs, rakes, harrows, and the like. Arms of *family*, or *paternal arms*, are those which belong to one particular family, and distinguish it from others, and which no person is suffered to assume without committing a crime that sovereigns have a right to restrain and punish. Arms of *alliance* are those which families or private persons take up and join to their own, to denote the alliances which they

Of the Escutcheon.

have contracted by marriage. This sort of arms is either impaled, or borne in an *escutcheon of pretence*, by those who have married heiresses. Arms of *succession* are such as are taken up by those who inherit certain estates, manors, and other hereditaments, either by will, entail, or donation, and which they either impale or quarter with their own arms; and this multiplies the titles of some families from necessity, and not through ostentation, as some have imagined.

These are the eight classes under which the different kinds of arms are generally arranged; but there is a sort which blazoners call *assumptive arms*, being such as are assumed by the caprice or fancy of upstarts, though of ever so mean extraction, who, being advanced to a degree of fortune, take them without any legal title. This is considered as a great abuse of heraldry, and common only in Britain, no such practice being permitted on the Continent.

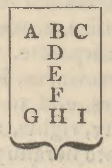
We now proceed to consider the essential and integral parts of arms, which are, the ESCUTCHEON, the TINCTURES, the CHARGES, and the ORNAMENTS.

I.—OF THE SHIELD OR ESCUTCHEON.

THE *shield* or *escutcheon* is the shield or ground on which are represented the figures that make up a coat-of-arms. These marks of distinction were originally put on bucklers or shields before they were placed on banners, standards, flags, and coat-armour; and wherever they may be fixed, they are still represented on a plain or superficies the form of which resembles a shield.

Shields, in heraldry called *escutcheons* or *scutcheons*, from the Latin word *scutum*, have been, and still are, of different forms, according to the usages of different times and nations. Amongst ancient shields, some were almost like a horseshoe, and others triangular, somewhat rounded at the bottom. The people who inhabited Mesopotamia, now called *Diarbekir*, made use of this sort of shield. Sometimes the shield was heptagonal, that is, had seven sides. The first of this shape is said to have been used by the celebrated triumvir Marc Antony. That of knights-banneret was square, like a banner. As to modern escutcheons, those of the Italians, particularly of ecclesiastics, are generally oval. The English, French, Germans, and other nations, have their escutcheons formed different ways, according to the carver's or painter's fancy. But the escutcheon of maids, widows, and such as are born ladies, and are married to private gentlemen, is generally of the form of a lozenge. Sir George Mackenzie mentions one Muriel, countess of Strathern, who carried her arms in a lozenge, in 1284; a circumstance which shows how long we have been conversant with heraldry.

Armorists distinguish several parts or points in escutcheons, in order to determine exactly the position of the bearings they are charged with. Thus, in the annexed outline of an escutcheon,



A is the dexter chief, B the precise middle chief, C the sinister chief, D the honour point, E the fess point, F the nombril point, G the dexter base, H the middle precise base, and I the sinister base.

The knowledge of these points is of great importance, and ought to be well observed, for they are frequently occupied with things of different kinds. It is necessary to observe, that the dexter side of the escutcheon is opposite to the left hand, and the sinister side to the right hand, of the person who looks on it.

Of Tinctur Furs, &

II.—OF TINCTURES, FURS, LINES, AND DIFFERENCES.

1. *Of Tinctures.*

BY *tinctures* is meant that variable hue of arms which is common both to shields and their bearings. According to the French heralds, there are but seven tinctures in armoury, of which two are metals, and the other five colours. The metals are gold, termed *or;* and silver, termed *argent.* The colours are blue, termed *azure;* red, termed *gules;* green, termed *vert;* purple, termed *purpure;* and black, termed *sable.* When natural objects, such as animals, plants, celestial bodies, and the like, are introduced into coats-of-arms, they retain their natural colours, which is expressed in this science by the word *proper.* Besides the five colours above mentioned, the English writers on heraldry admit two others, namely, orange, termed *tenny;* and blood-colour, termed *sanguine.* But these two are rarely to be found in British bearings.

These tinctures are represented in engravings and drawings by dots and lines (as in fig. 3, No. 1–9), which are the invention of the ingenious Silvester de Petra Sancta, an Italian author of the seventeenth century. Thus, *or* is expressed by dots; *argent* needs no mark, and is therefore plain; *azure,* by horizontal lines; *gules,* by perpendicular lines; *vert,* by diagonal lines from the dexter chief to the sinister base points; *purpure,* by diagonal lines from the sinister chief to the dexter base points; *sable,* by perpendicular and horizontal lines crossing each other; *tenny,* by diagonal lines from the sinister chief to the dexter base points, traversed by horizontal lines; *sanguine,* by lines crossing each other diagonally from dexter to sinister, and from sinister to dexter.

Plate CCLXIV

Sir George Mackenzie observes, that some fantastic heralds have blazoned not only by the ordinary colours and metals, but by flowers, days of the week, parts of a man's body, and the like, and have been condemned for it by the heralds of all nations. Yet, he adds, the English have so far owned this fancy, that they lay it down as a rule that the coats of sovereigns should be blazoned by the planets, and those of noblemen by precious stones. According to this rule, which some think judicious, though Cartwright and others reprobate it as absurd, the relative blazonry would stand thus:

Or	Topaz	Sol.
Argent	Pearl	Luna.
Sable	Diamond	Saturn.
Gules	Ruby	Mars.
Azure	Sapphire	Jupiter.
Vert	Emerald	Venus.
Purpure	Amethyst	Mercury.
Tenny	Jacinth	Dragon's-head.
Sanguine	Sardonix	Dragon's-tail.

"But I crave leave to say," continues Sir G. Mackenzie, "that these are but mere fancies, and are likewise unfit for the art, for these reasons: 1*st,* The French, from whom the English derive their heraldry, not only in principles, but in words of the French language, do not only not use these different ways of blazoning, but treat them *en ridicule.* 2*dly,* The Italian, Spanish, and Latin heralds use no such different forms, but blazon by the ordinary metals and colours. 3*dly,* Art should imitate nature; and as it would be an unnatural thing in common discourse not to call red *red* because a prince wears it, so it is unnatural to use these terms in heraldry. And it may fall out to be very ridiculous in some arms; for instance, if a prince had for his arms an *ass couchant* under his burden *gules*, how ridiculous would it be to say he had an *ass couchant Mars?* A hundred other examples might be given; but it is enough to say, that this is to confound colours with charges, and the things that are borne with colours. 4*thly*, It makes the art unpleasant, and deters gentlemen from studying it, and strangers from understanding what our heraldry is; nor could the arms of our princes and nobility be translated in this disguise into Latin or any other language. But that which convinces most that this is an error is, because it makes that great rule unnecessary, whereby colour cannot be put upon colour, nor metal upon metal; but this cannot hold but where metals and colours are expressed." The English heralds give different names to the roundlet (No. 10), according to its colour. Thus, if it be or, it is called a *bezant;* if argent, a *plate;* if azure, a *hurt;* if gules, a *torteau;* if vert, a *pompey;* if purpure, a *golpe;* if sable, a *pellet;* if tenny, an *orange;* and if sanguine, a *guze.* The French, and all other nations, do not admit such a multiplicity of names for this figure, but call them *bezants*, after an ancient coin struck at Constantinople, anciently *Byzantium*, if they are or and torteaux; or of any other tincture, expressing the same.

2. *Of Furs.*

Furs represent the hairy skin of certain beasts, prepared for the doublings or linings of robes and garments of state; and as shields were anciently covered with furred skins, they are therefore used in heraldry not only for the linings of the mantles, and other ornaments of the shields, but also in the coats-of-arms themselves.

There are three different kinds in general use, namely, 1. *Ermine*, which is a field argent, powdered with black spots, the tails of which terminate in three hairs (No. 11); 2. *Counter-ermine*, where the field is sable, and the powdering white (No. 12); and, 3. *Vair* (No. 15), which is expressed by blue and white skins, cut into the forms of little bells, ranged in rows opposite to each other, the base of the white ones being always next to that of the blue ones. Vair usually consists of six rows; if there be more or fewer, the number ought to be expressed; and if the colours be different from those above mentioned, they should likewise be expressed.

The English multiply the furs, as well as the names of the tinctures, though no other nation has adopted such varieties. Thus they give us, 1. *White*, which is the natural colour of the ermine, but is used upon no occasion except in the description of mantles. 2. *Ermines*, which is the same with contra-ermine. 3. *Erminois*, where the field is or, and the powdering sable (No. 13). 4. *Pean*, where the field is sable, and the powdering or (No. 14). The French use no such term; but they call all furs or doublings *des pannes* or *pennes*, a term which has possibly given rise to this mistake, and many others, on the part of those who did not understand the French language. 5. *Erminites*, the same as ermine, with the addition of a red hair on each side of the black. Sir George Mackenzie calls these distinctions "but fancies, for *erminites* signifies properly *little ermines.*" 6. *Counter-vair*, when the bells of the same tincture are placed base against base, and point against point (No. 16). 7. *Potent-counter-potent*, anciently called *vairy-cuppy*, as when the field is filled with crutches or potents counterplaced (No. 17).

It may not be improper to observe here, that the use of the tinctures took its rise from the several colours used by warriors whilst they were in the army, which Silvester de Petra Sancta proves by many citations. And because it was the custom to embroider gold and silver on silk, or silk on cloth of gold and silver, the heralds therefore appointed, that, in imitation of the clothes so embroidered, colour should never be used upon colour, nor metal upon metal.

3. *Of the Lines used in the parting of Fields.*

Escutcheons are either of one tincture or more than one. Those which are of one only, that is, when some metal, colour, or fur, is spread all over the surface or field, are said to have such a tincture predominant; but in those which have more than one, the field is divided by lines, which, according to their different forms, receive various names.

Lines may be either straight or crooked. Straight lines are carried evenly through the escutcheon, and are of four different kinds, viz. a perpendicular line | ; a horizontal, —; a diagonal dexter, \ ; a diagonal sinister, /. Crooked lines are those which are carried unevenly through the escutcheon, rising and falling. French armorists reckon eleven different sorts of these; Guillim admits of only seven; but there are fourteen distinct kinds, viz. 1. The engrailed; 2. the invected; 3. the wavy; 4. the embattled, or crenelle; 5. the nebule; 6. the regule; 7. the indented; 8. the dancette; 9. the dove-tail; 10. the grafted; 11. the embattled aronde; 12. the battled embattled; 13. the patee or dove-tail; and 14. the champaine. Under fig. 1.

The principal reason why lines are thus used in heraldry, is to distinguish bearings which would otherwise be the same; for an escutcheon charged with a chief engrailed, differs from one charged with a chief wavy, as much as if the one bore a cross and the other a saltier.

As the lines above mentioned serve to divide the field, it must be observed, that if the division consist of two equal parts formed by the perpendicular line, it is called *parted per pale;* by the horizontal line, *parted per fess;* by the diagonal dexter, *parted per bend;* and by the diagonal sinister, *parted per bend sinister.* If a field be divided into four equal parts by any of these lines, it is said to be *quartered*, and this may be done in two ways, viz.

1. Quartered or parted *per cross*, which is made by a perpendicular and horizontal line, crossing each other at the centre of the field, and dividing it into four equal parts called *quarters.* 2. Quartered or parted *per saltier*, which is made by two diagonal lines, dexter and sinister, crossing one another in the centre of the field, and likewise dividing it into four equal parts. Under fig. 1.

The escutcheon is sometimes divided into a greater number of parts, in order to place in it the arms of the several families to which one is allied; and in this case it is called a *genealogical achievement.* These divisions may consist of six, eight, twelve, and sixteen, quarters, and even sometimes of twenty, thirty-two, sixty-four, and upwards; there being examples of such divisions frequently exhibited at pompous funerals. An extraordinary instance of this kind was exhibited at the funeral of the Viscountess Townshend, whose corpse was brought from Dublin Castle to Rainhamhall in Norfolk; on which occasion one of the principal tenants on horseback carried before the hearse a genealogical banner, containing the quarterings of his lordship's and her ladyship's families, to the amount of upwards of 160 coats. But Sir William Dugdale justly objects to so many arms being clustered together in one shield or banner, on account of the difficulty of knowing and distinguishing one coat-of-arms from another.

4. *Of the Differences of Coats-of-Arms.*

Armorists have invented various differences or characteristical marks, by which bearers of the same coat-of-arms may be distinguished from one another, and their nearness to the principal bearer demonstrated; and these differences are to be considered as either ancient or modern.

Of Ancient Differences. Those which are called *ancient differences* consist in *bordures*,[1] which is a bearing that goes all round, and parallel to the boundary of the escutcheon, in the form of a hem, and always contains a fifth part of the field in breadth. Bordures were used in ancient times not only for distinguishing one nation or tribe from another, but also for noting a diversity between particular persons descended of one family and from the same parents. This distinction, however, was not expressly signified by invariable marks; nor were bordures always appropriated to denote the different degrees of consanguinity; for, as Sir Henry Spelman rightly observes, ancient heralds, being fond of perspicuous differences, often inverted the paternal tincture, or sometimes inserted another charge in the escutcheon, such as bends, croslets, cantons, or the like; an irregularity which, he supposes, has induced modern armorists to invent and make use of others.

Plate CCLXXVIII. fig. 1.

There are bordures of different forms and tinctures, as, for example, 1. Sable, a bordure argent, borne by the Earl of Thanet. When a border is plain, it is not necessary to mention it, as it is always so understood in heraldry, though it be not expressed; but if it has any other form, this must be signified. 2. Gules, a bordure engrailed argent, borne by Lord Gray. This is called *engrailed*, from the French word *engrêlé*, which signifies a thing the hail has fallen upon and broken off the edges, leaving it with little semicircles struck out of it. 3. Gules, a bordure engrailed or, borne by the Earl of Shrewsbury. In a bordure or ordinary formed of these lines, the points are represented on all sides towards the field, and the semicircles are turned towards the bordure or ordinary. 4. Argent, a bordure invected azure. This is quite contrary to the last, which turns its points from the bordure into the field. 5. Gules, a bordure indented argent. The word *indented* requires little explanation, the signification being obvious, from its figure, which is composed of tracks resembling teeth, called in Latin *dentes*. 6. Azure, a bordure ermine. 7. Vert, a bordure vair. 8. Ermine, a bordure compony, or gobony, or and sable. This is so termed from its being composed of small equal pieces. 9. Quarterly, azure and gules, a bordure compony argent and azure, borne by the Duke of Beaufort. 10. Azure, a bordure counter-compony argent and gules. But the counter-compony always consists of two tracks and no more. 11. Or, a bordure checky argent and sable. This has a great resemblance to the last bordure, having only one track more. Before blazoning, therefore, care must be taken to number them, so as to avoid taking the one for the other. 12. Gules, a bordure argent, charged with eight trefoils slipped proper, that is, vert. All nations use few terms in blazoning bordures; but English armorists have perplexed it, and rendered it unintelligible to all foreigners, by introducing several mystical proper names, amongst which may be reckoned the following, viz. They call a bordure, if charged with eight plants, fruits, flowers, or leaves, *verdoy* of such vegetables; or *enaluron* of such birds; *enurny* of beasts; *perflew* of furs; and *entoyre* of inanimate things, of whatsoever kind. 13. Gules on a bordure azure, eight stars or. 14. Argent, a bordure compony of the last and gules, the first charged with roses of the second, barbed and seeded proper. This bordure is borne by the Duke of Richmond. 15. Ermine, with a bordure engrailed gules, the coat-of-arms of Viscount Kingsland. This family is of French extraction, and allied to the Dukes of Lower Bretagne. 16. Argent, a bordure sable charged with eight bezants, borne by Lord Ranelagh. 17. Party per pale argent and gules, a bordure charged with eight escalops counterchanged; the coat of arms of Maule, Lord Panmure. This ancient family is originally French, and derives its surname from the lordship of Maule in Normandy, where the same arms are still to be seen in the parish church. 18. Azure, a bordure quarterly, the first and fourth ermine, the second and third counter-compony argent and azure. 19. Purpure, a bordure compony or and gules, each of the last charged with a bezant. 20. Quarterly or and gules, within a bordure vert, charged with eight escalops or. We shall conclude this head with observing, that a bordure is never of metal upon metal, and seldom of colour upon colour, but rather of the same tincture with the principal bearing or charge. Thus Dalziel of Glenae, whose predecessor was a younger brother of the family of Carnwath, has, within a bordure argent, the paternal coat of the ancient name of Dalziel, viz. sable, a hanged man with his arms extended, argent, and whom they formerly carried hanging on a gallows. This bearing, though so very singular for a coat-of-arms, was given as a reward to one of the ancestors of the Earl of Carnwath, to perpetuate the memory of a brave and hazardous exploit performed, in taking down from a gallows the body of a favourite and near relative of Kenneth II. who had been hung up by the Picts. The story is thus related by Nisbet: "The king being exceedingly grieved that the body of his minion and kinsman should be so disgracefully treated, he proffered a great reward to any of his subjects who would adventure to rescue his corpse from the disgrace his cruel enemies had unjustly put upon it; but when none would undertake this hazardous enterprise, at last a valorous gentleman came and said to the king, *Dalziel*, which signifies, 'I dare;' and he did actually perform that noble exploit to the king's satisfaction and his own immortal honour, and in memory of it got the aforesaid remarkable bearing; and afterwards his posterity took the word *Dalziel* for their surname; and the interpretation of it, *I dare*, continues even to this day to be the motto of that noble family." We can have no better proof of the truth of the tradition than this, that the heads of the ancient family in question have for ages carefully retained this bearing without any alteration or addition.

Of Modern Differences. The modern differences which the English have adopted, not only for distinguishing sons issued out of one family, but also for denoting the difference and subordinate degrees in each house from the original ancestors, are nine, viz. for the heir or first son, the label; second son, the crescent; third son, the mullet; fourth son, the martlet; fifth son, the annulet; sixth son, the fleur-de-lis; seventh son, the rose; eighth son, the cross-moline; ninth son, the double quatre-foil. By these differences the six sons of Thomas Beauchamp, the fifteenth Earl of Warwick, who died in the thirty-fourth year of the reign of Edward III. are distinguished in an old window of the church of St Mary at Warwick; so that although they are called *modern differences*, their usage among the English is ancient.

Plate CCLXXV under fi 1.

It must be observed, that of all the above-mentioned marks of distinction, none but the label is affixed on the coats-of-arms belonging to any of the royal family; which the authors of this peculiarity have, however, thought proper to distinguish by additional pendants and distinct charges on them.

As to the distinction to be made in the arms of the offspring belonging to each of the above-mentioned brothers, it is expressed by figures on the top and margin of the table contained in fig. 3. For instance, the heir or first son of the second house bears a crescent charged with a label during his father's lifetime only; the second son of the

Plate CCLXXV

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[1] Bordures are still introduced into English coats-of-arms, but for particular reasons, which heralds can best explain. They are by the French frequently taken for a principal figure, and numbered amongst the rest of the ordinaries.

second house, a crescent charged with another crescent; the third son of the second house, a crescent charged with a mullet; the fourth son of the second house, a crescent charged with a martlet; the fifth son of the second house, a crescent charged with an annulet; the sixth son of the second house, a crescent charged with a fleur-de-lis; and so on of the other sons, taking care to have them of a different tincture.

It is not certain in what part of the escutcheon these differences should be borne; for Guillim, Morgan, and others, give us many different examples of their position. The honour-point would be the most proper place, if the arms would admit of it; but that is not always the case, as the part in question may be charged with some figure in the paternal coat, which cannot with propriety receive the difference. There are instances where these are borne as perfect coats-of-arms, which are to be blazoned thus: The first is azure, a label argent. When such a label is borne as a difference, the pendants, according to Leigh, signify that he is but the third person; the dexter pendant referring to his father, the sinister to his mother, and the middle one to himself. The second is argent, a label of five points azure, borne by the name of Hentington. If a label has more or less than three pendants or points, they are to be expressed as in the foregoing example. The third is azure, a crescent argent, borne by the name of Lucy. The reason Leigh assigns for the second son having a crescent for a difference, is to show that he should increase the family by adding to its riches and reputation. The fourth is argent, a mullet sable, on a chief azure, a fleur-de-lis or; borne by the name of Rogers, in Gloucestershire. A mullet or spur was appointed for the third son's difference, to indicate that he should follow chivalry. The fifth is azure, a fleur-de-lis argent; borne by Digby Baron Digby of Geashill, in King's County, Ireland.

These examples, with many more which might be produced, demonstrate the impropriety of adopting these *modern differences* as marks of cadency to distinguish the different branches of a family; for it is impossible to distinguish the uncle or granduncle from the nephew or grandnephew, if each of them are second, third, or fourth sons; and in the course of succession these differences would multiply to such a number, that it would be impossible in most cases to delineate them distinctly. But as they are given by most of the English writers on heraldry, though no foreign nation uses them, it was thought proper to insert them here.

Sisters, except of the blood-royal, have no other mark of difference in their coats-of-arms, than the form of the escutcheon; and therefore they are permitted to bear the arms of their father, even as the eldest son does after his father's decease. The reason of this is said to be, that when they are married, they lose their surname, and receive that of their husbands.

Next to these diminutions Leigh, Guillim, and Dr Harris in his *Lexicon Technicum*, set forth at large different figures, which, they pretend, were formerly added to the coats of such as were to be punished and branded for cowardice, fornication, slander, adultery, treason, or murder, for which they give them the name of *abatements of honour;* but as they produce but one instance of such whimsical bearings, we have not inserted them here. Besides, arms being marks of honour, they cannot admit of any note of infamy; nor would any body now-a-days bear them if they were so branded. It is true, a man may be degraded for various crimes, particularly high treason; but in such cases the escutcheon is reversed, trodden upon, and torn in pieces, to denote a total extinction and suppression of the honour and dignity of the person to whom it belonged.

III.—OF THE CHARGES.

Of the Charges.

Armorists call a charge whatsoever is contained in the field, whether it occupy the whole or only a part thereof. All charges are distinguished by the names of *honourable ordinaries*, *subordinaries*, and *common charges*.

Honourable ordinaries, the principal charges in heraldry, are made of lines only, which, according to their disposition and form, receive different names. Sub-ordinaries are ancient heraldic figures, frequently used in coats of arms, and which are distinguished by terms appropriated to each of them. Common charges are composed of natural, artificial, and even chimerical objects or figures; such as planets, creatures, vegetables, instruments, and the like.

1. *Of Honourable Ordinaries.*

The most judicious armorists admit of only nine honourable ordinaries, viz. the chief, the pale, the bend, the bend sinister, the fess, the bar, the cheveron, the cross, and the saltier. Of these, six only have diminutives, which are as follow: That of the chief is a *fillet;* the pale has a *pallet* and *endorse;* the bend, a *bendlet*, *cost*, and *riband;* the bend sinister has the *scarp* and *bâton;* the bar, the *closet* and *barulet;* and the cheveron, a *cheveronel* and *couple-close.*

Of the Chief. The chief is an ordinary determined by a horizontal line, which, if it be of any other form but straight, must be expressed. It is placed in the upper part of the escutcheon, and contains in depth the third part of the field. Its diminutive is a fillet, the content of which is not to exceed one fourth of the chief, and it stands in the lowest part of the escutcheon. This ordinary is subject to be charged with variety of figures; and may be indented, wavy, nebule, and so forth.

Fig. 2.

1. Or, a chief indented azure; borne by Viscount Mountgarret. The family of the Butlers is descended from the ancient Counts of Brion in Normandy; but since Henry II. conferred the office of chief butler of Ireland upon one of the family, he and his successors have assumed the name of Butler. 2. Azure, a chief engrailed or. 3. Argent, a chief invected vert. 4. Vert, a chief undy or. 5. Azure, a chief nebule argent. 6. Or, a chief checky azure and argent. 7. Ermine, a chief quarterly or and gules; borne by the name of Peckham. 8. Argent, a chief sable; in the lower part thereof a fillet of the field. 9. Azure, fretty argent, a chief or; borne by Viscount Doneraile. This family is of French extraction, and is descended from Sir Robert Saint Leger, knight, who in 1066 accompanied William duke of Normandy in his expedition into England. 10. Argent, on a chief engrailed azure, a tortoise passant or; borne by the name of Bidgood. 11. Argent, on a chief gules, two spur revels or; borne by Lord St John of Bletshoe. This ancient family derive their surname from a place called St John in Normandy. 12. Argent, on a chief vert, two spears' heads erect of the field, the points imbrued gules; borne by Viscount Middleton. This family is lineally descended from George de Brodrick, who came into England in the reign of William II. 13. Or, on a chief sable, three escalops of the field, for the name of Graham; and borne quartered in the arms of the Duke, Marquis, and Earl of Montrose, with argent three roses gules. According to the Scottish writers, this family is descended from the renowned Greme or Græme, who in the year 404 was general of Fergus II.'s army, and in 420 forced his way through the wall built by the Romans between the rivers Forth and Clyde, in order to prevent the Scots from molesting them in their possessions; and the said breach has ever since been called *Græme's Dike.* 14. Argent, on a chief

indented gules, three crosses patee of the field; borne by the Earl of Egmont. This family is supposed to have sprung from a younger branch of the sovereign dukes of Bretagne in France. They were transplanted into Normandy before the Conquest, possessed of great estates and power, and were invested with the office of chief butler. 15. Azure, on a chief indented or, three spur revels gules; borne by the Earl of Drogheda. This family, which is of French extraction, came into England soon after the Conquest, and established their first residence in the manor of Moore Court, in the county of Kent. 16. Ermine, on a chief indented azure, three ducal coronets or; borne by the name of Lytton. 17. Azure, on a chief or, three martlets gules, for the name of Wray; and borne by Sir Cecil Wray, Bart. of Lincolnshire. 18. Ermine, on a chief gules; five lozenges of the first; borne by the name of Dixin. 19. Argent, fretty gules, on a chief of the second, three leopards' faces or; borne by Lord Ravensworth. 20. Ermine, a chief party per pale azure and or, on the dexter the sun in his splendour, on the sinister a cross patee gules; the arms of the bishopric of Raphoe, in Ireland.

Of the Pale. The pale is an ordinary, consisting of two perpendicular lines drawn from the top to the base of the escutcheon, and contains the third middle part of the field. Its diminutives are, the pallet, which is the half of the pale; and the endorse, which is the fourth part of a pale. This ordinary and the pallet may receive any charge, but the endorse should not be charged. The endorse, besides, is never used, except to accompany the pale in pairs, as cotises do the bend; but Sir John Ferne is of a different opinion.

Fig. 4. The following are examples: 1. Gules, a pale or; borne by the name of Grandmain. 2. Party per pale argent and gules, a pale counterchanged. 3. Argent, a pale between two endorses gules. 4. Party per pale, 1st, paly of six argent and sable; 2d, azure; borne by the name of Trenchard. 5. Pale of six or and azure. 6. Argent, three pallets undy sable; borne by the name of Downes. 7. Party per pale, argent and gules; borne by Earl Waldegrave. 8. Party per pale indented, or and gules; borne by Bermingham, baron of Athenry, in Ireland. This family, which are of English extraction, took their name from the town of Bermingham in the county of Warwick. 9. Quarterly per pale dove-tail, gules and or; borne by Lord Montfort. Sir Thomas Bromley, one of his lordship's ancestors, was by the 21st Elizabeth constituted lord high chancellor of England, in which post he died. 10. Argent, a pale flory counterflory sable. 11. Argent, a pale lozengy sable; borne by the name of Savage. 12. Argent, a pale indented vert; borne by the name of Dickson. 13. Argent, on a pale engrailed sable, three crescents or; borne by the name of Ashley. 14. Ermine on a pale engrailed azure, three lions' heads couped or; borne by the name of Avery. 15. Vert, on a pale radiant or, a lion rampant sable; borne by Lord Tyrawley, in Ireland, supposed to be descended from Milesius king of Spain, by his eldest son Hiberius, who, with his brother Heremon, established a colony in Ireland. 16. Azure, a pallet argent. 17. Vert, an endorse or. 18. Argent on two pallets sable, six cross croslets fitchy or; borne by the name of Bethunes, of the county of Salop. 19. Argent, two endorses gules, in chief three mullets sable; borne by the name of Vautort. 20. Azure, on a pale walled with three pieces on each side or, an endorse sable; borne by the name of Sublet de Noyers, a family of distinction in France.

Of the Bend and Bend Sinister. The bend is an ordinary formed by two diagonal lines, drawn from the dexter chief to the sinister base, and contains the fifth part of the field in breadth if uncharged; but if charged, then the third. Its diminutives are, the bendlet, which is the half of a bend; the cost or cotise, when two of them accompany a bend, which is the fourth part of a bend; and the riband, the moiety of a cost, or the eighth part of the field. There is also the bend sinister, which is of the same breadth as the bend, but drawn the contrary way. This is subdivided into a scarpe, which is the half of the bend, and into a baton, which is the fourth part of the bend, but does not extend itself to the extremities of the field, there being part of it seen at both ends.

The examples are, 1. Argent, a bend wavy sable; borne by the Earl of Portsmouth, descended from the Wallops of Hampshire, a Saxon family, who were possessed of lands to a considerable value in the county at the time of the Conquest. Plate CCLXXI. fig. 1. 2. Checky or, and azure, a bend ermine; borne by Viscount Dudley and Ward. 3. Azure, a bend engrailed argent, between two cotises or; borne by Lord Fortescue, as also by Baron Fortescue, in Ireland, this last nobleman bearing a crescent in his arms for difference.[1] 4. Sable, a bend argent between two cotices indented or; borne by the name of French. 5. Paly of six or and sable, a bend counterchanged; borne by Baron Baltimore. 6. Party per bend crenelle argent and gules; borne by the Earl of Cork and Orrery, in Ireland. 7. Argent, three bendlets, enhansed gules, as the English express it, though the phrase enhansed is used by no other nation. The proper blazon of this arms is, parted per bend, 1st, bendy of six gules and argent, and, 2d, of the last; borne by Lord Byron.[2] 8. Ermine, a bend voided gules; borne by the name of Ireton. 9. Argent, three bendlets wavy azure; borne by the name of Wilbraham. 10. Bendy of six pieces argent and azure. When the shield is filled with an equal number of bendlets of metal and colour, it is called *bendy;* but if the number of them be unequal, they are to be blazoned by the name *bendlets*, and their number specified. 11. Party per bend azure and argent, two bendlets engrailed counterchanged; borne by the name of Frenes. 12. Quarterly, or and gules, a bend over all vair; borne by the Duke of Dorset and Earl of Middlesex. 13. Gules on a bend argent, three trefoils slipped proper; borne by the Earl of Bristol, who derives his pedigree from Robert Fitz-Hervey, a younger son of Hervey duke of Orleans, who came over from France with William the Conqueror. 14. Argent, on a bend gules cotised sable, three pair of wings conjoined of the first; borne by Viscount Powerscourt, in Ireland. 15. Gules, on a bend contre ermine cotised or, three boars' heads couped argent; borne by Lord Edgcumbe, whose ancestors received their name from the manor of Edgcumbe in Devonshire. 16. Argent, a bend sinister gules. 17. Or, a bendlet gules. 18. Argent, a riband gules. The name of this bearing corresponds with its form, being long and narrow, in the shape of a riband. 19. Azure, a scarf or. This bearing is that kind of ornament which is used by officers on duty, and usually worn after the same manner. 20. This contains three batons; the first is company ermine and azure, set over the royal arms; the second is company argent and azure, set over the royal arms; the third is gules, charged with three roses argent, seeded and barbed proper, set over the royal arms.

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[1] The family of Fortescue is descended from Sir Richard le Forte, a person of extraordinary strength and courage, who accompanied William duke of Normandy in his invasion of England; and bearing a strong shield before the duke, at the battle of Hastings, had three horses killed under him, and from that signal event the name and motto of the family were assumed; for the Latin word *scutum*, or the old French word *escuc*, a shield, being added to *forte*, strong, composes their name; and the motto is, *Forte scutum salus ducum.*

[2] From Doomsday Book it appears that this family was possessed of numerous manors and lands in the reign of the Conqueror; and that Sir John Byron attended King Edward III. in his wars in France.

Of the Fess and Bar. The fess is an ordinary which is produced by two parallel lines drawn horizontally across the centre of the field, and contains in breadth the third part thereof. Some English writers think it has no diminutive, as a bar is a distinct ordinary of itself. The bar, according to their definition, is formed of two lines, and contains only the fifth part of the field; but this is not the only respect in which it differs from the fess; for there may be more than one in an escutcheon, placed in different parts of it, whereas the fess is limited to the centre-point. The bar has two diminutives; the barulet, which contains the half of the bar; and the closet, which is the half of the barulet. When the shield contains a number of bars of metal and colour alternate, of even number, that is called *barry* of so many pieces, expressing their number.

The examples are, 1. Argent, a fess indented sable; borne by Earl Delaware. 2. Argent, a fess wreathed azure and gules; borne by the Earl of Hyndford.[1] 3. Party per fess or and argent, a fess nebule gules; borne by the name of Anteshed. 4. Party per fess indented or and azure; borne by the name of Saunders. 5. Checky or and azure on a fess gules, a crescent argent for difference; borne by Lord Clifford of Chudley, descended from Walter de Clifford of Clifford Castle, in the county of Hereford, who came over into England with the Conqueror.[2] 6. Argent, on a fess azure, three lozenges or; borne by the Earl of Denbigh and Desmond, descended from the Earls of Hapsburg, in Germany; Geoffroy earl of Hapsburg being oppressed by Rodolph emperor of Germany. 7. Or, on a fess gules, three fleurs-de-lis of the first; borne by the name of Lennard. 8. Ermine, on a fess gules, a lion passant or; borne by Baron Craysfort, in Ireland. 9. Sable, a fess ermine, between three crescents or; borne by the Earl of Coventry, descended from John Coventry, a native of the city of Coventry, and afterwards mercer and Lord Mayor of London in the reign of Henry V. 10. Sable, a fess checky, or and azure, between three bezants; borne by the Earl and Baron of Londonderry.[3] 11. Or on a fess sable, between three Muscovy ducks proper, a rose of the field; borne by Viscount Bateman. 12. Sable, on a fess argent, between three leopards passant guardant or, three escalops gules; borne by the Earl of Hillsborough. 13. Or, a fess-couped gules, between two lions passant sable; borne by Lord Masham, descended from Sir John Masham, who flourished in the reign of King Henry VI. 14. Argent, a lion rampant guardant gules, debruised by a fess azure, between three étoiles issuing out of as many crescents of the second; borne by the Earl of Roscommon in Ireland.[4] 15. Or, two bars azure, a chief quarterly of the second and gules, the first and fourth charged each with two fleurs-de-lis of France, the second and third with a lion of England; borne by the Duke of Rutland and Marquis of Granby. 16. Barry of ten pieces argent and azure, over all six escutcheons 3, 2, 1, sable, each charged with a lion rampant of the first, armed, and langued gules, a crescent for difference; borne by the Earl of Salisbury, descended from the famous William Cecil, Lord Burghley, who left two sons, Thomas and Robert, both of whom were made earls in one day; Robert, the younger, being created Earl of Salisbury in the morning; and Thomas, the eldest, Earl of Exeter in the afternoon. 17. Gules, two bars or; borne by the Earl of Harcourt, descended from the Harcourts of Normandy, who took their name from a place called Harcourt in that province, where the family usually resided. 18. Ermine, two bars gules; borne by the Earl of Westmeath, Baron Delvin. 19. Argent, two bars indented sable; borne by the Earl of Athlone.[5] 20. Argent, three bars gemels gules; borne by the Earl of Barrymore.

Of the Cheveron. The cheveron, which represents two rafters of a house well joined together, or a pair of compasses half open, occupies the fifth part of a field with the English, but the French allow it the third. Its diminutives are, the cheveronel, which contains the half of a cheveron; and the couple close, which is the half of a cheveronel, that is, its breadth is only a fourth part of a cheveron. But this last diminutive is never borne except in pairs, or with a cheveron between two of them. The French have but one diminution of this ordinary, called *étaye*, containing the third part of its breadth.

The examples of cheverons are, 1. Argent, a cheveron gules between three torteaux; borne by the Earl of Harborough, lineally descended from Scherard, who possessed manors and lands in the counties of Cheshire and Lancashire in the reign of William the Conqueror. 2. Sable, a cheveron between three étoiles argent; borne by Lord Langdale, descended from the Langdales of Yorkshire, who resided at the town of Langdale, whence they took their name, in the reign of King John. 3. Sable, a cheveron between three leopards' heads or; borne by the Earl of Stafford.[6] 4. Argent, a cheveron between three griffons passant sable, a crescent for difference; borne by the Earl of Ailesford, descended from Herbert Fitz-Herbert, earl of Pembroke, and chamberlain to King Henry I. They took the name of Finch in the reign of King Edward I.[7] 5. Azure, a cheveron ermine between three escalops argent; borne by Viscount Townshend. This family is of Fig. 3.

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[1] Of this ancient family, which is said to assume their surname from the lands of Carmichael, in the county of Lanark, in Scotland, where they still have their chief seat, was Sir John Carmichael, who accompanied Archibald, earl of Douglas, to the assistance of Charles VI. of France, against the English; and signalizing his valour at the battle of Baughey in April 1421, and breaking his spear when the French and Scotch obtained the victory, had thereupon added to his paternal coat a dexter arm holding a broken spear, which is now the crest of the family.

[2] Fair Rosamond, mistress to Henry II. was of this family.

[3] Of this family, anciently of Bandfort, in the county of Dorset, was Thomas Pitt, who, in the reign of Queen Anne, was made governor of Fort St George in the East Indies, where he resided many years, and purchased a diamond, which he sold to the king of France for L.125,000 sterling, weighing 136 carats, and commonly known by the name of the *Pitt Diamond*.

[4] This noble family is derived from Logan, surnamed *Dilune* or *Delion*, which signifies brave and valiant, to whom the Duke of Aquitaine gave his daughter in marriage, in whose right, after her father's death, he became prince and sovereign of Aquitaine, which continued in his posterity till Henry II. married Alionora, daughter and heir to William V. duke of Aquitaine, and about 1172 obtained that principality by superior force; and, to prevent any disturbance, brought Sir Henry Delion or Dillon, and his brother Thomas, then infants, to England, their father being slain.

[5] Godart, the first earl, was descended of an ancient family in the United Provinces of Holland, where he was Baron de Reede and Ginkel. In 1691, he was a lieutenant-general of King William's forces in Ireland, where, in June the same year, he took Ballymore for the English, and, in July following, the town of Athlone.

[6] All genealogists agree that the name of *Wentworth* is of Saxon original, and taken from the manor of Wentworth in Yorkshire, where, in the reign of William the Conqueror, lived Reginald de Wenteworde, as it is spelt in Doomsday Book.

[7] One of the ancestors of this family was the Right Honourable Heneage Finch, earl of Nottingham, who was constituted lord high chancellor of England in 1675; and lord high steward on the trials of Philip earl of Pembroke, and William viscount Stafford, in 1680.

Of the Charges.

Norman extraction, and came into England about the time of the Conquest. 6. Azure, a cheveron between three mullets or; borne by Viscount Chetwind, of Ireland. 7. Argent, a cheveron gules, between three square buckles sable; borne by Lord Ducie, descended from the Ducies in Normandy. 8. Argent, a cheveron checky gules, and of the field, between three bugle-horns strung sable, garnished of the second; borne by Lord Semple. The first Lord Semple was Sir Robert, who, being much in favour with King James IV. was by him created Lord Semple in 1489. 9. Argent, a cheveron engrailed between three lions passant sable; borne by Viscount Strangford. 10. Quarterly argent and azure, a cheveron engrailed counter-changed; borne by the name of Chamber. 11. Party per cheveron engrailed gules and argent, three talbots' heads erased counter-changed; borne by Lord Feversham, descended from the Duncombes of Barley-end in Buckinghamshire. 12. Paly of six, argent and gules, on a cheveron azure, three cross-croslets or; borne by the name of Carpenter, Baron Carpenter of Killaghy in Ireland. 13. Azure, on a cheveron or, between three bezants, a bay leaf proper; borne by the Earl of Hopetoun, descended from Henry Hope, a native of Holland, who, about two centuries ago, came over and settled in Scotland. 14. Vert, on a cheveron between three unicorns' heads erased argent, horned and maned or, three mullets sable; borne by the name of Kerr, being the first and fourth quarters in the arms of Kerr, duke of Roxburghe, &c. This family is said to have come from Normandy. 15. Azure, on a cheveron or, between three bears' heads couped argent, muzzled gules, a roebuck's head erased, between two hands holding daggers all proper; borne by Mackay, Lord Reay.[1] 16. Ermine, on a cheveron azure, three foxes' heads erased or, and in a canton of the second a fleur-de-lis of the third; borne by the Earl of Ilchester, &c. 17. Or, two cheveronels gules, borne by Lord Monson, descended from John Monson, who flourished in the reign of King Edward III. and from whom descended another John, who attended King Henry V. in his wars in France. 18. Or, on a fess, between two cheveronels sable, three cross-croslets of the first; borne by the Earl of Orford. This family took their name from Walpole in Norfolk, where they resided before the Conquest. 19. Azure, three cheveronels interlaced or, and a chief of the last; borne by the name of Fitz-Hugh. 20. Argent, three cheveronels gules, in chief a label azure; borne by Viscount Barrington, &c. This family is of Norman extraction.

Of the Cross. The *cross* is an ordinary formed by the meeting of two perpendicular with two horizontal lines in the fess-point, where they make four right angles; the lines are not drawn throughout, but discontinued the breadth of the ordinary, which takes up only the fifth part of the field when not charged; but if charged, the third. It is borne as well engrailed, indented, &c. as plain. There is so great a variety of crosses used in heraldry, that it would be a difficult task to treat of them all. Guillim has mentioned thirty-nine different sorts; De la Columbière, seventy-two; Leigh, forty-six; and Upton declares he cannot ascertain all the various crosses borne in arms, as they are almost innumerable. As their different forms cannot be given here, we shall, therefore, only take notice of such as are most commonly seen at present in coats-of-arms.

Fig. 4.

The first is quarterly, ermine and azure, a cross or; borne by the Duke of Leeds. 2. Gules, a cross engrailed argent, a lozenge in the dexter chief of the second; borne by Lord Leigh. This family took their surname from the town of High Leigh in Cheshire, where they resided before the Norman conquest. 3. Gules, a cross argent fretty azure; borne by Viscount Taaffe of Corran, in Ireland. 4. Sable, a cross raguly or; borne by the name of Stoway. 5. Argent, on a cross sable, a leopard's face or; borne by Brydges, duke of Chandos. The ancestors of this noble family took their name from the city of Bruges in Flanders; and one of them, who came over with William the Conqueror, had a considerable share in the victory of Hastings. 6. Or, on a cross sable, a patriarchal cross of the field; borne by Vesey, Baron Knapton in Ireland. The family of Vescey or Vesey derives its origin from Charles the Great, king of France, and emperor of the West, who died at Aix-la-Chapelle in Germany, on the 28th of January 814. 7. Argent, on a cross gules, five escalops or; borne by the Earl of Jersey, descended from the family of Villiers in Normandy, some of whom came over to England with the Conqueror. 8. Sable, on a cross within a bordure engrailed or, five pellets; borne by the Earl of Brooke and Warwick. The ancestors of this family are of Norman extraction, and came over with William the Conqueror, who conferred on them manors and lands in England. 9. Argent, a cross bottony sable; borne by the name of Winwood. 10. Or, a cross-croslet gules, borne by the name of Taddington. 11. Azure, a cross potent fitchy or. This ensign is said to have been borne by Ethelred, king of the West Saxons. 12. Party per pale, gules and argent; a cross potent quadrate in the centre, between four crosses patee counter-changed; the arms of the episcopal see of Litchfield and Coventry. 13. Azure, a cross moline argent; borne by Bentinck, duke of Portland, descended from a family in the United Provinces of Holland, of which was William Bentinck, who in his youth was page of honour to the Prince of Orange, afterwards William III. king of Great Britain, and, on the accession of William and his consort, was made groom of the stole, privy-purse to his majesty, lieutenant-general of his majesty's army, and also created Baron of Cirencester, Viscount Woodstock, and Earl of Portland, in 1689. 14. Argent, a cross patonce sable; borne by the name of Rice. 15. Sable, a cross patee argent; borne by the name of Maplesden. 16. Azure, a cross flowery or; borne by the name of Cheney. This is said to have also been the arms of Edwin, the first Christian king of Northumberland. 17. Argent, six cross-croslets fitchy 3, 2, 1, sable, on a chief azure two mullets pierced or; borne by the Duke of Newcastle, descended from Jeffrey de Clinton. 18. Gules, a cheveron between ten crosses patee, six above and four below, argent; borne by the Earl of Berkeley, descended from Robert Fitz-Harding, who obtained a grant of Berkeley Castle in Gloucestershire, which the family still inherits, and whence they obtained the surname of Berkeley, from Henry, duke of Normandy, afterwards king of England. 19. Azure, three mullets or, accompanied with seven cross-croslets fitchy argent, three in chief, one in fess, two in flanks, and the last in base; borne by Lord Somerville. 20. Gules, three crosses recercelée, voided or, a chief vairy ermine and contre ermine; borne by Baron Willoughby de Broke, descended from William de Vernai, who flourished in the reign of King Henry I.

Of the Saltier. The saltier, which is formed by the bend and bend sinister crossing each other in right angles, as the intersecting of the pale and fess forms the cross, contains the fifth part of the field; but if charged, the third. In Scotland, this ordinary is frequently called a St Andrew's Cross. It may, like the others, be borne engrailed, wavy, &c. also between charges, or charged with any thing.

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[1] This family is said to derive their descent from Alexander, a younger son of Ochonacher, who, about the end of the twelfth century, came to Ireland. The fourth in descent from him was Donald of Strathnaver, whose son was named *Y More*; and from him began the surname of *Mac Y*, *Mackie*, or *Mackay*. Donald, the first lord of this family, was created baronet in 1625, and on the 20th of June 1628 was created Baron Reav of the county of Caithness, by Charles I.

The examples are, 1. Argent, a saltier gules; borne by the Duke of Leinster, descended from Otho, or Other, a powerful lord in the time of King Alfred, descended from the dukes of Tuscany. 2. Gules, a saltier argent, between twelve cross-croslets or; borne by the Earl of Plymouth, descended from Robert Fitz-Hicman, lord of the manor of Bloxham, Oxfordshire, in the 56th Henry III. 1272. 3. Vert, a saltier wavy ermine; borne by the name of Wakeman of Beckford, in Gloucestershire. 4. Ermine, a saltier counter-compony or and gules; borne by the name of Ulmston. 5. Argent, a saltier azure with a bezant in the centre; borne by Yorke, earl of Hardwicke. 6. Argent, on a saltier gules an escalop or; the arms of the bishoprick of Rochester. 7. Party per saltier, azure and argent, on a saltier gules, a crescent of the second for difference; quartered by Viscount Gage of Castle-Island, in Ireland. This noble family is of Norman extraction, and derives its descent from De Gaga or Gage, who attended William I. in his expedition to England; and, after the conquest thereof, was rewarded with grants of lands in the forest of Dean, and county of Gloucester. 8. Gules, on a saltier argent, a rose of the first barbed and seeded proper; borne by Lord Abergavenny, premier baron of England. 9. Or, on a saltier azure, nine lozenges of the first; the paternal arms of Dalrymple, earl of Stair. 10. Argent, on a saltier engrailed sable, nine annulets or; borne by the name of Leak. 11. Gules, a saltier between four crescents or; borne as the second and third quarters in the coat-of-arms of Lord Kinnaird. 12. Argent, a saltier engrailed between four roses gules, for Lennox; and borne as first and fourth quarters in the coat-of-arms of Lord Napier.[1] 13. Gules, a saltier or, surmounted of another vert; for the name of Andrews. 14. Azure, a saltier quarterly quartered or and argent; the arms of the episcopal see of Bath and Wells. 15. Party per saltier argent and gules, a saltier counter-changed. 16. Party per pale indented argent and sable, a saltier counter-changed; borne by persons of the name of Scot. 17. Argent, three saltiers couped and engrailed sable; borne by the name of Benton. 18. Argent, a saltier gules, and a chief ermine; borne by Fitz-Maurice, earl of Kerry, &c. This family is a branch of that of Kildare, who originally descended from the Grand Duke of Tuscany, and of which was Otho, a baron of Italy, whose son Walter, attending the Norman conqueror into England, was made constable of the castle of Windsor. 19. Sable, a saltier argent, on a chief azure, three fleurs-de-lis or; borne by the Earl of Upper Ossory, and Baron of Gowran in Ireland, descended from Heremon, the first monarch of the Milesian race in Ireland. After they had assumed the surname of Fitz-Patrick, they were for many ages kings of Ossory, in the province of Leinster. 20. Party per pale argent and gules, three saltiers counterchanged; borne by the name of Lane. These arms are also borne, without the least alteration, by the name of Kingsman.

Of the Charges.

2. *Of Sub-Ordinaries.*

Besides the honourable ordinaries and the diminutions already mentioned, there are other heraldic figures, called *sub-ordinaries*, or *ordinaries* only, which, by reason of their ancient use in arms, are of worthy bearing; namely, the gyron, franc-quarter, canton, pairle, fret, pile, orle, inescutcheon, tressure, annulet, flanches, flasques, voiders, billet, lozenge, gutts, fusil, rustre, mascle, papillone, and diaper. See Plate CCLXXVII. under fig. 1.

The *gyron* is a triangular figure formed by two lines, one drawn diagonally from one of the four angles to the centre of the shield, and the other is drawn either horizontal or perpendicular, from one of the sides of the shield, meeting the other line at the centre of the field. *Gyronny* is said, when the field is covered with six, eight, ten, or twelve gyrons in a coat-of-arms; but a French author contends that the true gyronny consists of eight pieces only. The *franc-quarter* is a square figure, which occupies the upper dexter quarter of the shield, but is rarely carried as a charge. The *canton* is a square part of the escutcheon, somewhat less than the quarter, but without any fixed proportion, representing the banner that was given to ancient knights-bannerets, and, generally speaking, possesses the dexter-chief point of the shield; but should it possess the sinister corner, which but seldom occurs, it must be blazoned a canton sinister. The *pairle* is a figure formed by the conjunction of the upper half of the saltier with the under half of the pale. The *fret* is a figure representing two little sticks in saltier, with a mascle in the centre interlaced. Gibbon terms it the *herald's true lover's knot*, but many dissent from his opinion. *Fretty* is said when the field or bearings are covered with a fret of six, eight, or more pieces. The *pile*, consisting of two lines terminating in a point, is formed like a wedge, and is borne engrailed, wavy, &c. It issues in general from the chief, and extends towards the base; yet there are some piles borne in bend, and issuing from other parts of the field. The *orle* is an ordinary composed of two lines going round the shield, the same as the bordure; but its breadth is but one half of the latter, and at some distance from the brim of the shield. The *inescutcheon* is a little escutcheon borne within the shield. Modern heralds give the name of *inescutcheon* to such as are borne single in the fess-point or centre, and call that which is fixed upon the fess-point *escutcheon of pretence*. The *tressure* is an ordinary commonly supposed to be the half of the breadth of an orle, and is generally borne flowery and counter-flowery, as it is also very often double, and sometimes treble. This double tressure forms part of the arms of Scotland, as marshalled in the royal achievement, and granted to the Scotch monarch by Charlemagne. The *annulet*, or ring, is a well-known figure, and is frequently found in arms throughout every kingdom of Europe. The *flanches* are formed by two curved lines, or semicircles, being always borne double. The *flasques* resemble the flanches, except that the circular lines do not go so near the centre of the field. The *voiders* are considered as a subordinate ordinary, and are not unlike the flasques, but they occupy less of the field. The *billet* is an oblong square figure, twice as long as broad. Some heralds

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[1] This family is said to be descended from the ancient thanes or stewards of Lennox in Scotland, but to have taken the surname of Napier from the following occurrence. King David II. in his wars with the English, about the year 1344, having convocated his subjects to battle, the Earl of Lennox sent his second son Donald, with such forces as his duty obliged him to furnish; and coming to an engagement, where the Scotch gave ground, this Donald, taking his father's standard from the bearer, and valiantly charging the enemy with the Lennox men, the fortune of the battle changed, and they obtained the victory; whereupon every one advancing, and reporting their acts, as the custom then was, the king declared they had all behaved valiantly, but that there was one among them who had *na pier*, that is, no equal; upon which the said Donald took the name of Napier, and had, in reward for his good services, the lands of Gosfield, and other estates in the county of Fife. For this tradition, however, we have been unable to find any sufficient authority.

Of the Charges.

imagine that they represent bricks for building; but others more properly consider them as representing folded paper or letters. The *lozenge* is an ordinary of four equal and parallel sides, but not rectangular; two of its opposite angles being acute, and the other two obtuse. *Gutts*, or drops, are round at bottom, waved on the sides, and terminate at the top in points. Heralds have given them different names, according to their different tinctures. Thus, if they are yellow, they are called *d'or;* if white, *d'eau;* if red, *de sang;* if blue, *de larmes;* if green, *de vert;* if black, *de poix.* The *fusil* is longer than the lozenge, having its upper and lower part more acute than the other two collateral middle parts, which acuteness is occasioned by the short distance of the space between the two collateral angles; and this space, if the fusil be rightly made, is always shorter than any of the four equal geometrical lines of which it is composed. The *rustre* is a lozenge pierced round in the middle. The *mascle* is pretty much like a lozenge, but voided or perforated throughout its whole extent, showing a narrow border.[1] *Papillone* is an expression used for a field or charge that is covered with figures like the scales of a fish. *Diapering* is said of a field or charge shadowed with flourishings or foliage, with a colour a little darker than that on which it is wrought. The Germans frequently use it; but it does not enter into the blazoning or description of an arms, and only serves to embellish the coat.

If the forementioned ordinaries have any attributes, that is, if they are engrailed, indented, wavy, &c. they must be distinctly specified, after the same manner as the honourable ordinaries.

Plate CCLXXX. fig. 2.

The following are examples of sub-ordinaries, viz. 1. Gules, an orle ermine; borne by the name of Humfranville. 2. Argent, three inescutcheons gules; borne by the name of Hay, and the second and third quarters in the coat-of-arms of Hay, earl of Kinnoull. The first of the name of Hay who bore these arms obtained them because he and his two sons, after having defeated a party of the Danes at the battle of Loncarty in the year 942, were brought to the king with their shields all stained with blood. 3. Argent, a fret sable; borne by Talmash, earl of Dysart. 4. Or, fretty of gules, a canton ermine; borne by Noel, earl of Gainsborough, descended from Noel, who came into England with William the Conqueror, and, in consideration of his services, obtained a grant of several manors and lands. 5. Gironny of eight pieces or and sable; the first and fourth quarters of the coat-of-arms of Campbell, now Marquis of Breadalbane, descended in regular succession from Duncan, the first Lord Campbell, ancestor of the family of Argyll. 6. Lozengy argent and gules; borne by Earl Fitz-William, descended from Sir William Fitz-William, marshal of the army of William the Conqueror at the battle of Hastings. 7. Sable, a mascle within a tressure flowery argent; borne by the name of Hoblethorne. 8. Gules, three mullets or, within a bordure of the latter, charged with a double tressure flowery, and counter-flowery with fleurs-de-lis of the first; borne by the family of Sutherland, &c. This family is amongst the oldest in Britain, if not in Europe; the title of Earl having been conferred on one of their ancestors in 1067. 9. Azure, a pile ermine; for the name of Wyche, and quartered as first and fourth in the coat-of-arms of Wyche. 10. Or, on a pile engrailed azure, three cross-croslets fitchy of the first; borne by the name of Rigdon. 11. Or, on a pile gules, three lions of England between six fleurs-de-lis azure; the first and fourth quarters of the Duke of Somerset, granted him by Henry VIII. on his marriage with Lady Jane Seymour. 12. Ermine, two piles issuing from the dexter and sinister sides, and meeting in base sable; borne by the name of Holles. 13. Argent, three piles, one issuing from the chief between the others reversed, sable; for the name of Hulse. 14. Azure, a pile wavy bendways or; borne by the name of Aldham. 15. Or, three piles in bend, each point enseigned with a fleur-de-lis sable; borne by the name of Norton. 16. Argent, three piles meeting near the point of the base azure; borne by the name of Bryan. 17. Party per pale and per bend or and azure counterchanged; borne by the name of Johnson. 18. Party per pale and per cheveron argent and gules counterchanged. 19. Party per pale chappé or and vert counterchanged. This is a bearing seldom to be met with. 20. Party per fess gules and argent, a pale counterchanged; borne by the name of Lavider.

3. *Of Common Charges borne in Coats-of-Arms.*

It has been already observed, that in all ages men have made use of the representation of living creatures, and other symbolical signs, to distinguish themselves in war; and that these marks, which were promiscuously used as hieroglyphics, emblems, and personal devices, gave the first notion of heraldry. But nothing shows the extent of human ingenuity more than the great variety of these marks of distinction, since they are composed of all sorts of figures, some natural, others artificial, and many chimerical or fantastical.

Hence it is that the sun, moon, stars, comets, meteors, and so on, have been introduced to denote glory, grandeur, power; that lions, leopards, tigers, serpents, stags, have been employed to signify courage, strength, prudence, swiftness. The application to certain exercises, such as war, hunting, music, has furnished lances, swords, pikes, arms, fiddles; architecture, columns, cheverons, &c.; and the other arts several things that relate to them. Human bodies, or distinct parts of them, also clothes and ornaments, have, for some particular intention, found a place in armorial bearings; and trees, plants, fruits, and flowers, have likewise been admitted to denote the rarities, advantages, and singularities of different countries. The relation of some creatures or figures to particular names has farthermore been a very fruitful source of variety in arms. Thus the family of Coningsby bears three coneys; that of Arundel, six swallows; that of Urson, a bear; that of Lucie, three pikes, in Latin *tres lucios pisces;* that of Starkey, a stork; that of Castlemain, a castle triple-towered; and that of Shuttleworth, three weavers' shuttles.

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[1] Authors are divided about the resemblance of a mascle, some taking it for the mash of a net, and others for the spots of certain flints found about Rohan; and as no writer has given a clearer account in support of this last opinion than Colombier, author of *La Science Héraldique*, we shall transcribe it for the satisfaction of the curious. "Rohan," says he, "bears gules, nine mascles, or, 3, 3, 3. Opinions have varied very much about the origin of the mascles or mashes, as being somewhat like the meshes of nets; but for my own part, having often observed that those things which are remarkable and singular in some countries, have sometimes occasioned the lords thereof to represent them in their escutcheons, and to take them for their arms, I am of opinion, that the lords of Rohan, who, I believe, are the first that bore those figures in their arms, though descended from the ancient kings and princes of Bretagne, took them, because in the most ancient viscounty of Rohan, afterwards erected into a duchy, there are abundance of small flints, which being cut in two, this figure appears on the inside of them; as also the carps, which are in the fish-ponds of that duchy, have the same mark upon their scales; which, being very extraordinary, and peculiar to that country, the ancient lords of the same had good reason, upon observing that wonder, to take those figures for their arms, and to transmit them to their posterity, giving them the name of *macles*, from the Latin word *macula*, signifying a spot; whence some of that house have taken for their motto, *Sine macula macla*, that is, a mascle without a spot."

Besides these natural and artificial figures, there are chimerical or imaginary ones used in heraldry, the result of fancy and caprice; such as centaurs, hydras, phœnixes, griffons, hippogriffs, dragons, and the like. This great variety of figures shows the impossibility of comprehending all common charges in a work of this nature; therefore such only shall be treated of as are most frequently borne in coats-of-arms, or escutcheons.

Art. 1.—*Of Natural Figures borne in Coats-of-Arms.*

Amongst the multitude of natural things which are used in coats-of-arms, those most usually borne are, for the sake of brevity as well as perspicuity, distributed into the following classes: viz. *Celestial figures*, as the sun, moon, stars, &c. and their parts; *effigies* of men, women, &c. and their parts; *beasts*, as lions, stags, foxes, boars, &c. and their parts; *birds*, as eagles, swans, storks, pelicans, &c. and their parts; *fishes*, as dolphins, whales, sturgeons, trouts, &c. and their parts; *reptiles* and *insects*, as tortoises, serpents, grasshoppers, &c. and their parts; *vegetables*, as trees, plants, flowers, herbs, &c. and their parts; *stones*, as diamonds, rubies, pebbles, rocks, and the like. These charges have, as well as ordinaries, various attributes or epithets, which express their qualities, positions, and dispositions. Thus the sun is said to be *in his glory*, *eclipsed*, and the moon *in her complement*, *increscent;* animals are said to be *rampant*, *passant;* birds have also their denominations, such as *close*, *displayed;* and fishes are described to be *hauriant*, *naiant*, and so forth.

1*st. Examples of Celestial Figures.*—1. Azure, a sun in his glory; borne by the name of St Clere, and found in the first and fourth quarters of the coat-of-arms of the Marquis of Lothian. 2. Azure, one ray of the sun, bendways gules, between six beams of that luminary argent; borne by the name of Aldam. 3. Argent, five rays of the sun issuing out of the sinister corner gules; borne by the name of Mudtshideler, a family of distinction in Franconia. 4. Or, a sun eclipsed. This bearing is seldom to be met with, except in emblematic or hieroglyphic figures, and might be expressed sable, because that hue is accidental and not natural. 5. Gules, the moon in her complement or, illustrated with all her light proper. This is sufficient without naming the colour, which is argent. 6. Azure, a moon decrescent proper; borne by the name of Delaluna. 7. Gules, a moon increscent or; borne by the name of Descus. 8. Argent, a moon in her *detriment*, sable. This word is used in heraldry to denote her being eclipsed. 9. Azure, a crescent argent; borne by the name of Lucy. This bearing is also used as a difference, being assigned to the second son, as before mentioned. 10. Gules, three crescents argent; borne by Oliphant, Lord Oliphant. 11. Azure, a crescent between three mullets argent; borne by Arbuthnot, Viscount and Baron Arbuthnot. 12. Gules, a star issuing from between the horns of a crescent argent. 13. Azure, a star of sixteen points argent; borne by the name of Huitson. 14. Argent, three mullets pierced sable; borne by the name of Wollaston. 15. Azure, six mullets, 3, 2, 1, or; borne by the name of Welsh. 16. Ermine, a mullet of six points gules pierced; borne by the name of Hessenhul. 17. Argent, a rainbow with a cloud at each end proper. This is part of the crest to the Earl of Hopetoun's coat-of-arms. The whole of it is a globe split on the top, and above it is the rainbow and clouds. 18. Party per fess crenelle gules and azure, three suns proper; borne by the name of Pierson. 19. Gules, a mullet between three crescents argent; borne by the name of Oliver. 20. Gules, a chief argent, on the lower part thereof a cloud, the sun's resplendent rays issuing throughout proper; borne by the name of Leeson.

Of the Charges.

Fig. 4.

2*d. Examples of Effigies of Men, &c. and their Parts.*—1. Azure, the Virgin Mary crowned, with her babe in her right arm and a sceptre in her left, the coat-of-arms of the bishopric of Salisbury. 2. Azure, a presbyter sitting on a tombstone, with a crown on his head surmounted by a glory or, his right hand extended, and holding in his left hand an open book argent, with a sword cross his mouth gules; the coat-of-arms of the bishopric of Chichester. 3. Azure, a bishop habited in his pontificals sitting on a chair of state, and leaning on the sinister side thereof, holding in his left hand a crosier, his right being extended towards the dexter chief of the escutcheon, all or, and resting his feet on a cushion gules, tasseled of the second; the coat-of-arms of the bishopric of Clogher in Ireland. 4. Azure, a bishop habited in his pontificals, holding before him, in a pale, a crucifix proper; the coat-of-arms of the Bishop of Waterford in Ireland. 5. Or, a man's leg couped at the midst of the thigh azure; borne by the name of Haddon. 6. Azure, three sinister hands couped at the wrist, and erected argent; borne by the family of Malmains. 7. Argent, three sinister hands couped at the wrist, and erected gules; borne by the name of Maynard. 8. Argent, a man's leg erased at the midst of the thigh sable; borne by the name of Prime. 9. Gules, three legs armed proper, conjoined in the fess point at the upper part of the thighs, flexed in triangles, garnished and spurred, or. This is the coat-of-arms of the Isle of Man; and is quartered by the Duke of Atholl, titular lord or king of that island. 10. Gules, three dexter arms vambraced fessways, in pale proper; borne by the name of Armstrong. 11. Or, three legs couped above the knee sable; borne by the name of Hogg. 12. Vert, three dexter arms conjoined at the shoulders in the fess point, and flexed in triangle or, with fists clenched argent; borne by the name of Tremaine. 13. Argent, a man's heart gules, with two equilateral triangles interlaced sable; borne by the name of Villages, a family of distinction in Provence. 14. Azure, a sinister arm, issuing out of the dexter-chief, and extended towards the sinister base argent. 15. Argent, a dexter hand couped at the wrist, and erected, within a bordure engrailed sable; borne by the name of Manly. 16. Argent, a man's heart gules, ensigned with a crown or, and on a chief azure, three mullets of the first. The paternal coat of the name of Douglas, and quartered in the arms of the Dukes of Hamilton and Queensberry; as also in those of the Earls of Morton and March. 17. Gules, a Saracen's head affrontée, erased at the neck argent, environed about the temples with a wreath of the second and sable; borne by the name of Mergith. 18. Argent, three blackamoors' heads couped proper, banded about the head argent and gules; borne by the name of Tanner. 19. Gules, three bezants, each charged with a man's face affrontée proper; borne by the name of Gamin. 20. Or, a blackamoor's head couped proper, banded about the head argent; borne by the name of Ustoc.

When half of the face, or little more, of human figures, is seen in a field, it is then said to be *in profile*; and when the head of a man, woman, or other animal, is represented with a full face, it is termed *affrontée*.

Plate CCLXXXI. fig. 1.

3*d. Examples of the different Positions of Lions, &c. in Coats-of-Arms.*—1. Or, a lion rampant gules; quartered by Percy, duke of Northumberland. 2. Azure, a lion rampant-guardant or; borne by the name of Fitz-Hammond. 3. Gules, a lion rampant-reguardant or; quartered by Cadogan, Lord Cadogan. 4. Ermine, a lion saliant gules; borne by the name of Worley. 5. Azure, a lion statant-guardant or; borne by the name of Broomfield. 6. Or, a lion passant gules; borne by the name of Games. 7. Argent, a lion passant guardant gules crowned or;

quartered by Ogilvy, earl of Findlater. 8. Gules, a lion sejant argent. 9. Or, a lion rampant double-headed azure; borne by the name of Mason. 10. Sable, two lions rampant-combatant or, armed and langued gules; borne by the name of Carter. 11. Azure, two lions rampant-adossés or. This coat-of-arms is said to have been borne by Achilles at the siege of Troy. 12. Sable, two lioncels counter-passant argent, the uppermost towards the sinister side of the escutcheon, both collared gules; borne by the name of Glegg.[1] 13. Argent, a demi-lion rampant sable; borne by the name of Mervin. 14. Gules, a lion couchant between six cross-croslets, three in chief, and as many in base, argent; for the name of Tynte. 15. Azure, a lion dormant or. 16. Or, out of the midst of a fess sable, a lion rampant naissant gules; borne by the name of Emme.[2] 17. Azure, three lioncels rampant or; borne by Fienes, Viscount and Baron Saye and Sele. 18. Gules, a tri-corporated lion issuing from three parts of the escutcheon, all meeting under one head in the fess point or, langued and armed azure; borne by the name of Crouchback. This coat appertained to Edmund Crouchback, earl of Lancaster, in the reign of his brother King Edward I. 19. Gules, a bezant between three demi-lions rampant argent; borne by Bennet, earl of Tankerville, descended from the family of the Bennets in Berkshire, who flourished in the reign of King Edward III. 20. Party per pale azure and gules, three lions rampant argent; borne by Herbert, earl of Pembroke, descended from Henry Fitz-Roy, natural son to Henry I.

It is to be observed that, if a lion, or any other beast, be represented with its limbs and body separated, so that they remain upon the field at a small distance from their natural places, it is then termed *Dehaché*, or *couped in all its parts;* of which remarkable bearing there is an instance in armory, namely, or, a lion rampant gules, dehaché, or couped in all its parts, within a double tressure flowery and counter-flowery of the second; borne by the name of Maitland.

Fig. 2.

4th. Examples of other Quadrupeds and their Parts, borne in Coats-of-Arms.—1. Sable, a camel statant argent; borne by the name of Camel. 2. Gules, an elephant statant argent, tusked or. 3. Argent, a boar statant gules, armed or; borne by the name of Trewarthen. 4. Sable, a bull passant or; borne by the name of Fitz-Geffrey. 5. Sable, three nags' heads erased argent; borne by Blayney, Baron Blayney of Monaghan, in Ireland, descended in a direct line from Cadwallader, a younger son of the Prince of Wales. 6. Argent, three boars' heads erased and erect sable, langued gules, for the name Booth. 7. Azure, three boars' heads erased or; quartered by Gordon, duke of Gordon, &c. Of this family, which took their surname from the barony of Gordon in the county of Berwick, there have been, besides those in North Britain, several of great distinction in Muscovy. In the time of King Malcolm IV. 1160, it was very numerous, and flourished in the county of Berwick. 8. Argent, three bulls' heads erased, sable, armed or; borne by Skeffington, earl of Massareene. 9. Argent, two foxes counter-saliant, the dexter surmounted of the sinister gules; for the name of Kadrod Hard, an ancient British family, from which are descended the Wynns, who bear this quartered, second and third, in their coat-of-arms. 10. Argent, three bulls passant sable, armed and unguled or; for Ashley, and quartered by Ashley Cooper, earl of Shaftesbury, descended from Richard Cooper, who flourished in the reign of Henry VIII., and purchased the manor of Paulet in the county of Somerset, of which the family are still proprietors. 11. Ermine, three cats passant in pale argent; for the name of Adams. 12. Gules, two greyhounds rampant or, respecting each other; borne by the name of Dogget. 13. Or, an ass's head erased sable; borne by the name of Hackwell. 14. Gules, three lions gambs erased argent; for the name of Newdigate. 15. Argent, three lions' tails erected and erased gules; borne by the name of Cork. 16. Azure, a buck's head cabossed argent; borne by Legge, earl of Dartmouth, descended from Signior de Lega, an Italian nobleman, who flourished in Italy in the year 1297. 17. Argent, two squirrels sejant adossée gules, for the name of Samwell. 18. Gules, a goat passant argent; borne by the name of Baker. 19. Sable, a stag standing at gaze argent; borne by the name of Jones of Monmouthshire 20. Azure, three holy lambs or; borne by the name of Row.

Fig. 3

5th. Examples of Birds, Fishes, Reptiles, &c.—1. Ermine, an eagle displayed sable; borne by the name of Beddingfield. 2. Gules, a swan close proper; borne by the name of Leigham. 3. Argent, a stork sable, membered gules; borne by the name of Starkey. 4. Gules, a pelican in her nest with wings elevated, feeding her young ones or, vulned proper; borne by the name of Carne. 5. Argent, three peacocks in their pride proper; borne by the name of Pawne. 6. Sable, a goshawk argent, perching upon a stock in the base-point of the escutcheon of the second, armed, jessed, and belled or; borne by the name of Wheele. 7. Or, a raven proper; borne by the name of Corbet. 8. Argent, three cocks gules, crested and jow-lopped sable, a crescent surmounted of a crescent for difference; borne by Cockayne, Viscount Cullen, of Donegal in Ireland. 9. Sable, a dolphin naiant embowed or, borne by the name of Symonds. This animal is borne by the eldest son of the French king, and next heir to the crown, no other subject in that kingdom being permitted to bear it. 10. Argent, three whales' heads erect and erased sable; borne by the name of Whalley. 11. Gules, three escalops argent; borne by Keppel, earl of Albemarle, descended from Arnold Joost van Keppel, a nobleman of the province of Guelderland in Holland, who came over into England with the Prince of Orange in 1688, to whom he was then a page of honour, and was by him created a peer of England, by the title of Earl of Albemarle, in the duchy of Normandy in France, 10th February 1696. 12. Azure, three trouts fretted in triangle argent; borne by the name of Troutbeck. 13. Vert, a grasshopper passant or. 14. Azure, three bees, two and one, volant, in pale argent; borne by the name of Bye. 15. Vert, a tortoise passant argent; borne by the name of Gawdy. 16. Gules, an adder nowed or; borne by the name of Nathiley.[3] 17. Ermine, a rose gules barbed and seeded proper; borne by Boscawen, Viscount Falmouth, descended from Richard Boscawen, in the county of Cornwall, who flourished in the reign of King Edward VI. 18. Azure, three laurel leaves slipped or; borne by the name of Leveson, and quartered by Granville-Leveson Gower, Earl Gower, &c. 19. Azure, three garbs or; borne by the name of Cumming. 20. Gules, three cinquefoils argent; borne by Lambart, baron of Cavan, in Ireland. This ancient family is of French extraction.

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[1] It is the natural disposition of the lion not to bear a rival in the field; therefore two lions cannot be borne in one coat-of-arms, but must be supposed to be lions' whelps, called *lioncels;* except when they are parted by an ordinary, or so disposed that they seem to be distinctly separated from each other. In the two preceding examples they are called *lions*, because in the 10th they seem to be striving for the sovereignty of the field, which they would not do unless they were of full growth; and in the 11th they are supposed to represent two valiant men, whose dispute being accommodated by the prince, are leaving the field, their pride not suffering them to go both one way.

[2] This form of blazon is peculiar to all living things which are found issuing out of the midst of some ordinary or other charge.

[3] Adders, snakes, and serpents, are said to represent many things, which being according to the fancy of the ancients, and a few modern authors who have adopted their opinions, it is needless to enlarge upon. It is certain they often occur in armory; but the noblest is that of the duchy of Milan, viz. "argent, a serpent gliding in pale azure, crowned or, vorant an infant issuing gules." The occasion of this bearing was as follows: Otho, first viscount of Milan, on his way to the Holy Land with Godfrey of Bouillon, defeated and slew in single combat the great giant Volux, a man of extraordinary stature and strength, who had challenged the bravest of the Christian army. The viscount having killed him, took his armour, and amongst it his helmet, the crest of which was a serpent swallowing an infant, worn by him to strike terror into those who should be so bold as to engage him.

It is to be observed, that trees and plants are sometimes said to be trunked, eradicated, fructuated, or raguled, according as they are represented in arms.

Art. 2.—*Of Artificial Figures borne in Coats-of-Arms.*

After the various productions of nature, artificial figures, the objects of art and mechanism, claim the next rank. They may be distributed into the following classes, viz. *Warlike instruments*, as swords, arrows, battering-rams, gauntlets, helmets, spears, pole-axes; *ornaments* used in royal and religious ceremonies, as crowns, coronets, mitres, wreaths, crosiers; *architecture*, as towers, castles, arches, columns, plummets, battlements, churches, portcullises; *navigation*, as ships, anchors, rudders, pendants, sails, oars, masts, flags, galleys, lighters, and so on.

All these bearings have different epithets, serving to express their position, their disposition, or their form. Thus swords are said to be erect, pommeled, hilted; arrows, armed, feathered; towers, covered, embattled; and so of all others, as will more fully appear by the following examples: 1. Sable, three swords, their points meeting in the base argent, pommeled and hilted or, a crescent in chief of the second for difference; borne by Powlet, duke of Bolton, descended from Hercules, lord of Tournon in Picardy, who came over to England with Jeffrey Plantagenet, earl of Anjou, third son of King Henry II., and amongst other lands had the lordship of Paulet in Somersetshire conferred on him. 2. Argent, three battering-rams barways in pale, headed azure and hooped or, an annulet for difference; borne by Bertie, earl of Abington. 3. Azure, three left-hand gauntlets with their backs forward or; borne by Fane, earl of Westmoreland, descended from the Fanes, an ancient family which resided at Badsal in Kent. 4. Azure, three arrows, their points in base or; borne by Archer, Lord Archer, descended from John de Archer, who came over from Normandy with William the Conqueror. 5. Gules, two helmets in chief proper, garnished or, in a base of a garb of the third; borne by Cholmondeley, earl of Cholmondeley, descended from the ancient family of Egerton in Cheshire, which flourished in the time of the Conquest, from whom also the Duke of Bridgewater was descended. 6. Argent, a ship with its sails furled up sable; quartered by Hamilton, earl of Abercorn. The descent of this family is from that of the Duke of Hamilton. 7. Or, an anchor in pale gules; quartered by Johnston, marquis of Annandale. The Johnstons are an ancient and warlike family, and derive their surname from the barony of Johnston in Annandale. 8. Sable, three spears' heads erect argent, imbrued gules, on a chief or, as many pole-axes azure; borne by King, Lord King. 9. Gules, three clarions or; quartered by Carteret, earl of Granville. This ancient family derives its pedigree from Offerey de Carteret, who attended William the Conqueror in his descent upon England, and contributed to the victory he obtained over Harold, at Hastings, in 1066. 10. Argent, a maunch sable; borne by Hastings, earl of Huntingdon, descended from Hugh de Hastings, a younger son of the ancient and noble family of the Hastings, earl of Pembroke, of which was William de Hastings, steward of the household to King Henry I. 11. Azure, a circular wreath argent and sable, with four hawks' bells joined thereto in quadrature or; borne by Jocelyn, Viscount Jocelyn.[1] 12. Gules, three towers argent; quartered by Fowler, Viscount Ashbrook. 13. Gules, two keys in saltier argent, in chief a royal crown proper; the arms of the archbishopric of York. 14. Gules, two swords in saltier argent, pommeled and hilted or; the arms of the bishopric of London. 15. Sable, a key in bend, surmounted by a crosier in bend sinister, both or; the arms of the bishopric of St Asaph. 16. Gules, two keys adossée in bend, the uppermost argent, the other or, a sword interposed between them in bend sinister of the second, pommeled, and hilted of the third; the arms of the bishopric of Winchester. 17. Gules, three mitres with their pendants or; the arms of the bishopric of Chester. 18. Sable, three ducal coronets paleways or; the arms of the bishopric of Bristol. 19. Gules, a sword erect in pale argent, pommeled and hilted or, surmounted by two keys in saltier of the last; the arms of the bishopric of Exeter. 20. Gules, three ducal coronets or; the arms of the bishopric of Ely.

Of the Charges.

Art. 3.—*Of Chimerical Figures.*

The last and the oddest kind of bearings in coats-of-arms is comprehended under the name of *chimerical figures;* that is, such figures as have no real existence, but are mere fabulous and fantastical inventions. These, charges, griffons, martlets, and unicorns excepted, are so uncommon in British coats, that in order to make up the same number of examples hitherto contained in each collection, several foreign bearings are introduced; which, however, as they are conformable to the laws of heraldry, may also contribute both to entertain and instruct the reader. Those most in use are the following, namely, angels, cherubims, tritons, centaurs, martlets, griffons, unicorns, dragons, mermaids, satyrs, wiverns, harpies, cockatrices, phœnixes.

Plate CCLXXXII. fig. 1.

These, like the foregoing charges, are subject to various positions and dispositions, which, from the principles already laid down, will be easily understood by the following examples: 1. Gules, an angel standing affrontée, with his hands conjoined and elevated upon his breast, habited in a long robe close girt argent, his wings displayed or; borne by the name of Brangor de Cerevisia, a foreign prelate, who assisted at the council of Constance in 1412. 2. Sable, a cheveron between three cherubim or; borne by the name of Chaloner of Yorkshire and Cheshire. 3. Azure, a fess indented between three cherubim argent. These arms were granted to John Ayde, Esq. of Doddington in Kent, by Sir William Segar, garter. 4. Gules, a cherub having three pair of wings, the uppermost and lowermost counter-crossed saltierways, and the middlemost displayed argent; borne by the name of Buocasoco, a foreign prelate. This example is copied from Menestrier's *Méthode du Blason.* 5. Azure, a griffon segreant or, armed and langued gules, between three crescents argent; quartered by Bligh, Lord Clifton. 6. Gules, three martlets or; borne by the name of Macgill. This bird, which is represented without feet, is given for a difference to younger brothers, to put them in mind that, in order to

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[1] This noble family is of great antiquity; for, after the Romans had been masters of Britain for five hundred years, wearied with the wars, they took their final leave of it, and carried away with them a great many of their brave old British soldiers, who had served them in their wars both at home and abroad, to whom they gave Armorica in France, for their former services, which country was from them afterwards denominated Little Britain. It is supposed that there were some of this family amongst them; and that they gave the name of *Jocelyn* to a town in this country, which still preserves the name; and it is thought probable that they returned with William the Conqueror, since in 1066 we find mention made of Sir Gilbert Jocelyn.

External Ornaments.

raise themselves, they should trust to the wings of virtue and merit, and not to their legs, having but little land to set their feet on. 7. Azure, three mullets argent within a double tressure counter-flowery or, in the centre a martlet of the last; borne by Murray, Lord Elibank. 8. Sable, a cockatrice displayed argent, crested, membered, and jowlopped gules. 9. Argent, a mermaid gules, crined or, holding in her right hand a comb, and in her left a mirror, both proper; borne by the name of Ellis. 10. Argent, a wivern, his wings elevated, and his tail nowed below him gules; borne by the name of Drakes. 11. Or, a dragon passant vert. 12. Gules, a centaur or sagittary in full speed reguardant proper. This was the coat-of-arms of Stephen of Blois, son of Adela, daughter of William the Conqueror, and of Stephen, earl of Blois; who, grounding his pretension to the crown of England on this descent, was proclaimed king in 1135, and reigned till the 25th of October 1154. 13. Argent, an unicorn sejant sable, unguled and horned or; borne by the name of Harling. 14. Argent, a dragon's head erased vert, holding in his mouth a sinister hand couped at the wrist gules; borne by the name of Williams. 15. Gules, three unicorns' heads couped or; borne by the name of Paris. 16. Argent, a wivern volant bendways sable; borne by the name of Raynon. 17. Azure, a lion sejant guardant winged or, his head encircled with a glory, holding in his fore-paws an open book, in which is written, *Pax tibi, Marce, Evangelista meus;* over the dexter side of the book a sword erect, all proper. These are the arms of the republic of Venice. 18. Azure, a bull saliant and winged or, borne by the name of *Cadenet*, a family of distinction in Provence. 19. Argent, a wivern with a human face affrontée hooded, and winged vert; borne by the Buseraghi, an ancient and noble family of Lucca. 20. Azure, a harpy displayed, armed, crined, and crowned or. These are the arms of the city of Nuremberg in Germany.

To the above-mentioned figures may be added the montegre, an imaginary creature, supposed to have the body of a tiger with the head and horns of a satyr; also those which have a real existence, but are said to be endowed with extravagant and imaginary qualities, as the salamander, beaver, cameleon, and others.

IV.—OF THE EXTERNAL ORNAMENTS OF ESCUTCHEONS.

The ornaments which accompany or surround escutcheons were introduced to denote the birth, dignity, or office, of the persons to whom the coat-of-arms appertained; and this was practised both amongst the laity and the clergy. Those which are most in use consist of ten sorts, viz. crowns, coronets, mitres, helmets, mantlings, chapeaux, wreaths, crests, scrolls, and supporters.

1. *Of Crowns.*

The first crowns were only diadems, bands, or fillets; but afterwards they were composed of branches of various trees, and then flowers were added to them. Amongst the Greeks, the crowns given to those who carried off the prize at the Isthmian games were of pine; at the Olympic, of laurel; and at the Nemean, of smallage. The Romans also had various crowns to reward martial exploits and extraordinary services done to the republic. Examples of some of these crowns are frequently met with in modern achievements.

But modern crowns are only used as an ornament, which emperors, kings, and independent princes set on their heads, in great solemnities, both to denote their sovereign authority, and to render themselves more imposing to their subjects. Those most in use in heraldry are as follow:

1*st.* The imperial crown, which is made of a circle of gold, adorned with precious stones and pearls, heightened with fleurs-de-lis, bordered and seeded with pearls, and raised in the form of a cap voided at the top like a crescent. From the middle of this cap rises an arched fillet enriched with pearls, and surmounted with a mound on which is a cross of pearls. No. 1.

2*d.* The crown of the kings of Great Britain, which is a circle of gold, bordered with ermine, enriched with pearls and precious stones, and heightened up with four crosses patee and four large fleurs-de-lis alternately; from these rise four arched diadems adorned with pearls, which close under a mound, surmounted with a cross like those at the bottom. No. 2.

3*d.* The crown of the kings in France, which is a circle enamelled, adorned with precious stones, and heightened up with eight arched diadems, rising from as many fleurs-de-lis, which conjoin at the top under a double fleur-de-lis, all of gold. No. 3.

4*th.* The crowns of Spain, Portugal, and Poland, are all three of the same form, and are described by Colonel Parsons in his *Genealogical Tables of Europe.* A ducal coronet, heightened up with eight arched diadems, which support a mound, ensigned with a plain cross. Those of Denmark and Sweden are both of the same form, and consist of eight arched diadems, rising from a marquis's coronet, which conjoin at the top under a mound ensigned with a cross-bottony. The crowns of most other kings are circles of gold, adorned with precious stones, heightened up with large trefoils, and closed by four, six, or eight diadems, supporting a mound, surmounted of a cross.

5*th.* The Grand Signior bears over his arms a turban, enriched with pearls and diamonds, under two coronets, the first of which is made of pyramidical points heightened up with large pearls, whilst the uppermost is surmounted with crescents. No. 4.

6*th.* The pope, or bishop of Rome, appropriates to himself a tiara or long cap of golden cloth, from which hang two pendants embroidered and fringed at the ends, *semée* with crosses of gold. This cap is enclosed by three marquises' coronets; and has on its top a mound of gold, on which is a cross of the same, sometimes represented by engravers and painters pometted, recrossed, flowery, or plain. It is a difficult matter to ascertain the time when the popes assumed the three coronets above mentioned. A succession of the supreme pontiffs, engraved and published by order of Clement XIII. for the edification of his subjects in Great Britain and Ireland, represents Marcellus, who was chosen bishop of Rome in the year 310, and all his successors, adorned with such a cap; but it appears from good authority, that Boniface VIII. who was elected to the see of Rome in the year 1295, first compassed his cap with a coronet; whilst Benedict XII. in 1335, added to it a second, and John XXIII. in 1411, a third, with a view to indicate that the pope is the sovereign priest, the supreme judge, and the sole legislator, amongst Christians. No. 5.

2. *Of Coronets.*

The coronet of the Prince of Wales, or eldest son of the king of Great Britain, was anciently a circle of gold set round with four crosses patee, and as many fleurs-de-lis alternately; but since the restoration it has been closed with one arch only, adorned with pearls, surmounted by a mound and cross, and bordered with ermine like the king's. No. 7.

Besides this coronet, the Prince of Wales has another distinguishing mark of honour, peculiar to himself, called by the vulgar the prince's arms, namely, a plume of three ostrich-feathers, with an ancient coronet of a prince of Wales. Under this, in a scroll, is the motto, *Ich Dien,* which in the German or old Saxon language signifies *I serve.* This device was first assumed by Edward, prince of Wales, commonly called the *Black Prince*, after the famous battle of Cressy, in 1346, where having with his own hand killed John, king of Bohemia, he took from his head such a plume as that here described, and put it on its own. No. 6.

The coronet of all the intermediate sons and brothers of the kings of Great Britain is a circle of gold bordered with ermine, heightened up with four fleurs-de-lis and as many crosses patee alternate. No. 8. The particular and distinguishing form of such coronets as are appropriated to princes of the blood-royal is described and settled in a grant of Charles II. in the thirteenth year of his reign. The coronet of the princesses of Great Britain is a circle of gold bordered with ermine, and heightened up with crosses-patee, fleurs-de-lis, and strawberry leaves alternate (No. 9); whereas a prince's coronet has only fleurs-de-lis and crosses.

A duke's coronet is a circle of gold bordered with ermine, enriched with precious stones and pearls, and set round with eight large strawberry or parsley leaves. No. 10. A marquis's coronet is a circle of gold bordered with ermine, set round with four strawberry leaves and as many pearls on pyramidical points of equal height alternate. No. 11. An earl's coronet is a circle of gold bordered with ermine, heightened up with eight pyramidical points or rays, on the tops of which are as many large pearls, which are placed alternately with as many strawberry leaves, but the pearls much higher than the leaves. No. 12. A viscount's coronet differs from the preceding ones as being only a circle of gold bordered with ermine, with large pearls set close together on the rim, without any limited number, which is the prerogative above the baron, who is limited. No. 13. A baron's coronet, which was granted by King Charles II., is formed with six pearls set at equal distances on a gold circle bordered with ermine, four of which only are seen on engravings, paintings, and the like, to show that he is inferior to the viscount. No. 14. The eldest sons of peers, above the degree of a baron, bear their father's arms and supporters with a label, and use the coronet appertaining to their father's second title; and all the younger sons bear their arms with proper differences, but use no coronets.

As the crown of the king of Great Britain is not quite like that of other potentates, so most of the coronets of foreign noblemen differ a little from those of the British nobility. For example, the coronet of a French earl is a circle of gold with eighteen pearls set on the brim of it; a French viscount's coronet is a circle of gold only enamelled, charged with four large pearls; a French baron's coronet is a circle of gold enamelled and bound about with a double bracelet of pearls; but these coronets are only used on French noblemen's coats-of-arms, and not worn on their heads, as the British noblemen and their ladies do at the king's coronation.

3. *Of Mitres.*

The archbishops and bishops of England and Ireland place a mitre over their coats-of-arms. It is a round cap pointed and cleft at the top, from which hang two pendants fringed at both ends; with this difference, that the bishop's mitre is only surrounded with a fillet of gold, set with precious stones (Plate CCLXXXIII. fig. 1, No. 6), whereas the archbishop's issues out of a ducal coronet. (Plate CCLXXXII. fig. 2, No. 15.) This ornament, with other vestments, is still worn by the archbishops and bishops of the church of Rome, whenever they officiate with solemnity; but it is never used in England, otherwise than on coats-of-arms, as before mentioned.

4. *Of Helmets.*

External Ornaments.

The helmet was formerly worn as a defensive weapon, to cover the bearer's head, and is now placed over a coat-of-arms as its chief ornament, and the true mark of gentility. Several sorts have been distinguished, 1*st*, by the matter they are made of; 2*dly*, by their form; and, 3*dly*, by their position.

1*st*, As to the matter they are, or rather were, made of, the helmets of sovereigns were of burnished gold damasked; those of princes and lords, of silver figured with gold; those of knights, of steel adorned with silver; and those of private gentlemen, of polished steel. 2*dly*, As to their form, those of the king and the royal family, and noblemen, of Great Britain, are open-faced and grated, and the number of bars serves to distinguish the bearer's quality; that is, the helmet appropriated to the dukes and marquises is different from the king's, by having a bar exactly in the middle, and two on each side, making but five bars in all (No. 1), whereas the king's helmet has six bars, or three on each side (No. 7). The other grated helmet with four bars is common to all degrees of peerage under a marquis. The opened-faced helmet without bars denotes baronets and knights. The close helmet is that for all esquires and gentlemen. 3*dly*, Their position is also looked upon as a mark of distinction. The grated helmet in front belongs to sovereign princes. The grated helmet in profile is common to all degrees of peerage. The helmet standing direct without bars, and the beaver a little open, denotes baronets and knights. Lastly, the side-standing helmet, with the beaver close, is the manner of wearing it peculiar to esquires and gentlemen. See Nos. 1, 2, 3, 4, 7.

Plate CCLXXXII. fig. 3.

5. *Of Mantlings.*

Mantlings are pieces of cloth jagged or cut into flowers and leaves, which now serve as an ornament for escutcheons. They were the ancient coverings of helmets, to preserve them, or the bearer, from the injuries of the weather, as also to prevent the evil consequences of their too much dazzling the eye in action. But their shape must have undergone a great alteration since they have been out of use, and therefore they might more properly be termed *flourishings* than *mantlings.* The French heralds assure us that these mantlings were originally no other than short coverings which commanders wore over their helmets, and that, going into battle with them, they often, on coming away, brought them back in a ragged manner, occasioned by the many cuts which they had received on their heads; and therefore the more hacked they were, the more honourable they were accounted; as our colours in time of war are the more esteemed for having been shot through in many places. Sometimes skins of beasts, as lions, bears, and such like, were thus borne, to make the bearer look more terrible, and that gave occasion to the doubling of mantlings with furs.

6. *Of Chapeaux.*

A chapeau is an ancient hat, or rather cap, of dignity, worn by dukes, generally scarlet-coloured velvet on the outside, lined and turned up with fur, and frequently to be met with above an helmet, instead of a wreath, under gentlemen's and noblemen's crests. Heretofore they were seldom to be found, as of right appertaining to private families; but by the grants of Robert Cooke, clarencieux, and other succeeding heralds, these, together with ducal coronets, are now frequently to be met with in families, who yet claim not above the degree of gentlemen. (Plate CCLXXXII. fig. 3, No. 5.)

External Ornaments.

7. *Of the Wreath.*

The wreath is a kind of roll made of two skeins of silk of different colours twisted together, which ancient knights usually wore as a head-dress when equipped for tournaments. The colours of the silk are always taken from the principal metal and colour contained in the coat-of-arms of the bearer. They are still accounted one of the lesser ornaments of escutcheons, and are placed between the helmet and the crest. In the time of Henry I. and long afterwards, no man who was under the degree of a knight had his crest set upon a wreath; but this, like other prerogatives, has been so far infringed, that every body now-a-days wears a wreath.

8. *Of Crests.*

The crest is the highest part of the ornaments of a coat-of-arms. It is called *crest*, from the Latin word *crista*, which signifies comb or tuft, such as many birds have upon their heads, as the peacock, pheasant, and others, in allusion to the place on which it is fixed.

Crests were formerly great marks of honour, because they were only worn by heroes of great valour, or by such as were advanced to some superior military command, in order that they might be the better distinguished in an engagement, and thereby rally their men if dispersed; but they are at present considered as a mere ornament. The crest is frequently a part either of the supporters, or of the charge borne in the escutcheon. Thus the crest of the royal achievement of Great Britain is a lion guardant crowned, and the crest of France is a double fleur-de-lis. Out of the many crests borrowed from supporters, are the following, namely, the Duke of Montagu's, a griffon's head couped or, backed and winged sable; the Marquis of Rockingham's, a griffon's head argent, gorged with a ducal coronet; the Earl of Westmoreland's, a bull's head argent, pyed sable, armed or; and Lord Archer's, out of a mural crown or, a wivern's head argent. There are several instances of crests which relate to alliances, employments, or names; and which on that account have been changed.

9. *Of the Scroll.*

The scroll is the ornament placed above the crest, containing a motto, or short sentence, alluding thereto, or to the bearings, or to the bearer's name. Thus, the motto of the Earl of Cholmondeley is, *Cassis tutissima virtus*, "Virtue is the safest helmet," on account of the helmet in the coat-of-arms; and the motto of Lord Fortescue is, *Forte scutum salus ducum*, "A strong shield is the safety of the commanders," alluding to the name of that ancient family. Sometimes, however, the motto has reference to neither, but expresses something divine or heroic; as that of the Earl of Scarborough, *Murus æreus conscientia sana*, "A good conscience is a wall of brass." Others are enigmatical, as that of the royal achievement, which is, *Dieu et mon droit*, "God and my right," introduced in 1340 by Edward III., when he assumed the arms and title of king of France, and began to prosecute his claim, which occasioned long and bloody wars, fatal by turns to both kingdoms; or that of the Prince of Wales, *Ich dien*, "I serve," the origin of which has already been explained. Mottos, though hereditary in the families which first took them, have been changed on particular occasions, and others appropriated in their stead. Instances of this are sometimes to be met with in the history of families.

10. *Of Supporters.*

Supporters are figures standing on the scroll, and placed at the side of the escutcheon; they are so called because they seem to support or hold up the shield. The rise of supporters is, by Menestrier, traced to ancient tournaments, in which the knights caused their shields to be carried by servants or pages under the disguise of lions, bears, griffons, blackamoors, and the like, who also held and guarded the escutcheons, which the knights were obliged to expose to public view for some time before the lists were opened. But Sir George Mackenzie dissents from this opinion, and contends (*Treatise on the Science of Heraldry*, chap. xxxi. p. 93), "That the first origin and use of them was from the custom which ever was, and is, of leading such as are invested with any great honour to the prince who confers it. Thus, when any man is created a duke, marquis, or knight of the garter, or any other order, he is supported by, and led to the prince, betwixt two of the quality, and so receives from him the symbols of that honour; and in remembrance of that solemnity, his arms are thereafter supported by any two creatures he chooses." Supporters were formerly taken from such animals or birds as were borne in the shields, and sometimes they have been chosen as bearing some allusion to the names of those whose arms they are made to support. The supporters of the arms of Great Britain, since the accession of James I. to the throne, are a lion rampant guardant crowned or, on the dexter side, and an unicorn argent, crowned, armed, unguled, maned, and gorged with an antique crown, to which a chain is affixed, all or, on the sinister.

This last figure represents the coat-of-arms of the king of Great Britain, or the royal achievement, as it has been marshalled since the accession of George I. in 1714, and is blazoned as follows, viz.

ARMS. Quarterly, in the first grand quarter gules, three lions rampant guardant in pale or, the imperial ensigns of England; impaled with or, a lion rampant, within a double tressure flowery and counter-flowery gules, the royal arms of Scotland. The second is azure, three fleurs-de-lis or, the arms of France. The third is azure, a harp or, stringed argent, the ensign of Ireland. The fourth grand quarter is gules, two lions passant guardant in pale or, for Brunswick; impaled with or semée of hearts proper, a lion rampant azure, for Lunenburg; with grafted in base gules a horse current argent, for ancient Saxony; and in a shield surtout gules, the crown of Charlemagne or, as arch-treasurer of the empire; the whole within a garter, inscribed with this motto, HONI SOIT QUI MAL Y PENSE, as sovereign of that noble order, given by the founder King Edward III.

CREST. On a helmet full faced, grated and surmounted by a crown, a lion guardant crowned or; the mantlings of the last, and lining, ermine.

SUPPORTERS. On the dexter side a lion rampant guards or, crowned as the crest. On the sinister side an unicorn argent, crowned, armed, maned, and unguled or, gorged with an antique crown; a chain affixed thereto, reflecting over the back, and passing over the hind legs of the last, both standing on a scroll inscribed with this motto, DIEU ET MON DROIT, from which issue the two royal badges of his majesty's chief dominions, viz. on the dexter side a rose party per pale argent and gules, stalked and leaved proper, for England; and on the sinister side a thistle proper, for Scotland, being so adorned by King James I. upon his succeeding to the crown of England. As king of Scotland, he bore two unicorns as his supporters; but upon the union of that crown with England, in 1603, he introduced one of the above supporters on the sinister side of the royal achievement, which continues to this day.

It is to be observed, that bearing coats-of-arms supported, is, according to the heraldic rules of England, the prerogative, first, of those called *nobiles majores*, viz. dukes, marquises, earls, viscounts, and barons; secondly, of all knights of the garter, though they should be under the degree of barons; thirdly, of knights of the bath, who, as well as the former, receive on their creation a grant of supporters; and, lastly, of such grants as the king chooses to bestow this honour upon. An instance of this occurred in the case of Sir Andrew Fountain, who was knighted by Philip, earl of Pembroke, when lord lieutenant of Ireland, Fountain being then his secretary; and on his return to England, King William granted him supporters to his arms, viz. two griffons gules and or. In Scotland all the chiefs of clans or names have the privilege of claiming supporters, and also the baronets. But by act of parliament, 10th September 1672, none are allowed to use either arms or supporters, under a penalty and confiscation of all moveables on which arms are put, without the authority of the lord lyon.

V.—OF THE RULES OR LAWS OF HERALDRY.

The several escutcheons, tinctures, charges, and ornaments of coats-of-arms, and their various properties, being now explained, it may not be improper to subjoin such rules for blazoning these as the ancient usage and laws of heraldry have established amongst us.

I. The *first* and most general rule is, to express one's self in proper terms, so as not to omit any thing which ought to be specified, and at the same time to be clear and concise without tautology.

II. We must begin with the tincture of the field, and then proceed to the principal charges which possess the most honourable place in the shield, such as fess, cheveron, &c. always naming that charge first which lies next and immediately upon the field.

III. After naming the tincture of the field, the honourable ordinaries, or other principal figures, their attributes, and afterwards their metal or colour, must be specified.

IV. When an honourable ordinary, or some one figure, is placed upon another, whether it be a fess, cheveron, cross, &c. it is always to be named after the ordinary or figure over which it is placed, with the expression *surtout*, or *over all.*

V. In blazoning such ordinaries as are plain, the bare mention of them is sufficient; but if an ordinary should be made of any of the crooked lines mentioned above, its form must be specified; that is, whether it be engrailed, wavy, &c.

VI. When a principal figure possesses the centre of the field, its position is not to be expressed; or, which amounts to the same thing, when a bearing is named, without specifying the point where it is placed, then it is understood to possess the middle of the shield.

VII. The number of the points of mullets or stars must be specified when more than five; and also if a mullet or any other charge be pierced, it must be mentioned as such, to distinguish it from what is plain.

VIII. When a ray of the sun, or other single figure, is borne in any other part of the escutcheon than the centre, the point it issues from must be named.

IX. The natural colour of trees, plants, fruits, birds, and the like, is no otherwise to be expressed in blazoning but by the word *proper;* but if discoloured, that is, if they differ from their natural colour, it must be particularized.

X. When three figures are in a field, and their position is not mentioned in the blazoning, they are always understood to be placed, two above, and one below.

XI. When there are many figures of the same species borne in a coat-of-arms, their number must be observed as they stand, and distinctly expressed.

But, for the better understanding of this last rule, we have inserted examples of the *different dispositions of figures,* in which they are properly represented. Thus, *two* may be ranged in pale, in fess, &c. *Three* may be 2 and 1, as also in bend, &c. *Four* are placed 2 and 2, or cantoned. *Five,* 1, 3, 1, in cross; or 2, 1, 2, in saltier. *Six,* 3, 2, 1, in pile; or 2, 2, 2, paleways. *Eight,* in orle, or on a bordure. *Nine,* 3, 3, 3, barways; or 3, 3, 2, 1, in pile. *Ten,* 4, 3, 2, 1, in pile; or else 4, 2, 4, barways. *Twelve* are placed 4, 4, 4, barways.

Marshalling Coats-of-Arms.
Plate CCLXXXII. fig. 4.

There are other positions called *irregular;* as, for example, when three figures are naturally placed, 2 and 1 are disposed 1 and 2, &c. It must also be observed, that when the field is strewed with the same figures, this is expressed by the word *semée;* but, according to the opinion of a French armorist, if the figures strewed on the field are whole ones, it must be denoted by the words *sans nombre;* whereas, if part of them be cut off at the extremities of the escutcheon, the word *semée* must then be used.

VI.—OF MARSHALLING COATS-OF-ARMS.

By marshalling coats-of-arms is to be understood the art of disposing them in one escutcheon, and of distributing their contingent ornaments in proper places.

Various causes may occasion arms to be thus conjoined, and these Guillim comprehends under two heads, viz. *manifest* and *obscure.* By *manifest causes* in the marshalling of coats-of-arms, are meant such as betoken marriages, or a sovereign's gift, granted either through the special favour of the prince, or for some eminent services. Concerning marriages it is to be observed, that when the coats-of-arms of a married couple, descended of distinct families, are to be put together in one escutcheon, the field of their respective arms is conjoined paleways, and blazoned *parted per pale, baron and femme, two coats, first, &c.;* in which case the baron's arms are always to be placed on the dexter side, and the femme's arms on the sinister side.

If a widower marry again, his late and present wife's arms are, according to Leigh, to be both placed on the sinister side, in the escutcheon with his own, and parted per pale. The first wife's coat should stand on the chief, and the second on the base; or he may set them both in pale with his own, the first wife's coat next to himself, and his second outermost. If he should marry a third wife, then the first two matches should stand on the chief, and the third should have the whole base. And if he take a fourth wife, she must participate one half of the base with the third wife, and so they will seem to be so many coats quartered. But it must be observed, that these forms of impaling are meant of hereditary coats, by which the husband stands in expectation of having the hereditary possessions of his wife united to his patrimony.

In the arms of femmes joined to the paternal coat of the baron, the proper differences by which they were borne by the fathers of such women must be inserted.

If a coat-of-arms which has a bordure be impaled with another, as by marriage, then the bordure must be wholly omitted in the side of the arms next the centre.

The person who marries an heiress, instead of impaling his arms with those of his wife, is to bear them in an escutcheon placed in the centre of his shield, after the same manner as the baronet's badge is marshalled, and which, on account of its showing forth his pretension to her estate, is called *an escutcheon of pretence,* and is blazoned *surtout,* or *over all,* as in the escutcheon borne in the fourth quarter of the royal achievement. But the children are to bear the hereditary coat-of-arms of their father and mother *quarterly,* which denotes a fixed inheritance, and so transmit them to posterity. The first and fourth quarters generally contain the father's arms, and the second and

Funeral Escutcheons.

third the mother's; unless the heirs should derive not only their estate, but also their title and dignity, from their mother.

If a maiden or a dowager lady of quality marry a commoner, or a nobleman inferior to her in rank, their coats-of-arms may be set beside one another in two separate escutcheons, upon one mantle or drapery, and the lady's arms may be ornamented according to her title.

Archbishops and bishops impale their arms differently from the before-mentioned coats, in giving the place of honour, that is, the dexter side, to the arms of their dignity. It may be observed of these prelates, that they thus bear their arms parted per pale, to denote that they are joined to their cathedral church in a sort of spiritual marriage.

With respect to such armorial ensigns as the sovereign thinks fit to augment a coat-of-arms withal, they may be marshalled in various ways, as may be seen by the arms of the Duke of Rutland, and others.

To those augmentations may be added, first, the baronet's mark of distinction, or the arms of the province of Ulster in Ireland, granted and made hereditary in the male line by King James I. who erected this dignity on the 22d of May 1611, in the ninth year of his reign, in order to propagate a plantation in that province. This mark is, Argent, a sinister hand couped at the wrist, and erected gules; which may be borne either in a canton, or in an escutcheon, as will best suit the figures of the arms. Secondly, the ancient and respectable badge of the order of the garter, instituted by King Edward III. in 1349, and which, ever since its institution, has been looked upon as a great honour bestowed on the noblest persons of this nation and other countries. This honourable augmentation is made to surround, as with a garter, the arms of such knights, and is inscribed with the motto, *Honi soit qui mal y pense.*

So far the causes for marshalling different arms in one shield, &c. are *manifest.* As to those which are called *obscure*, that is, when coats-of-arms are marshalled in such a manner that no probable reason can be given why they are so conjoined, they must be left to heralds to explain, as being the most proper persons to unfold these and other mysteries of the science.

VII.—OF FUNERAL ESCUTCHEONS.

After having treated of the essential parts of the coats-of-arms, of the various charges and ornaments usually borne therewith, of their attributes and dispositions, and of the rules for blazoning and marshalling them, we shall next describe the several funeral escutcheons, usually called *hatchments*, by which it may be known, after any person's decease, what rank either he or she held when living; and if it be a gentleman's hatchment, whether he was a bachelor, married man, or widower, with similar distinctions for gentlewomen.

Plate CCLXXXIII.

The hatchment represents such as are affixed to the fronts of houses when any of the nobility and gentry dies, the arms therein being those of a private gentleman and his wife parted per pale; the dexter side, which is gules, three bars or, for the husband, having the ground without the escutcheon black, denotes the man to be dead; and the ground on the sinister side being white, signifies that the wife is living, which is also demonstrated by a small hatchment, which is there depicted without mantling, helmet, and crest, for the sake of perspicuity alone.

When a married gentlewoman dies first, the hatchment is distinguished by a contrary colour to the former; that is, the arms on the sinister side have the ground without the escutcheon black, whereas those on the dexter side, for her surviving husband, are upon a white ground. The hatchment of a gentlewoman is, moreover, differenced by a cherub placed over the arms instead of a crest.

When a bachelor dies, his arms may be depicted single or quartered, with a crest over them, but never impaled as the two first are, and all the ground without the escutcheon is also black.

When a maid dies, her arms, which are placed in a lozenge, may be single or quartered, as those of a bachelor; but, instead of a crest, they have a cherub placed over them, and all the ground without the escutcheon is also black.

When a widower dies, his arms are represented impaled with those of his deceased wife, having a helmet, mantling, and crest over them, and all the ground without the escutcheon black.

When a widow dies, her arms are also represented impaled with those of her deceased husband, but enclosed in a lozenge, and, instead of a crest, a cherub is placed over them; all the ground without the escutcheon being also black.

If a widower or bachelor should happen to be the last of his family, the hatchment is depicted as in the case of a widower; and that of a maid or widow, whose family is extinct by her death, is depicted as in that of a widow, with this difference only, that a death's-head is generally annexed to each hatchment, to denote that death has conquered all, leaving nothing but the vain formalities of heraldry.

By these rules, which are sometimes neglected through the ignorance of illiterate people, may be known, upon the sight of any hatchment, what branch of the family is dead; and by the helmet or coronet, the title and degree of the person deceased.

The same rules are observed with respect to the escutcheon placed on the hearse and horses used in pompous funerals; excepting that they are not surmounted with any crest, as in the foregoing examples of hatchments, but are always plain. It is necessary, however, to ensign those of peers with coronets, and that of a maiden lady with a knot of ribands.

In Scotland, a funeral escutcheon not only shows forth the arms and condition of the defunct, but is also a proof of the gentility of his descent; and such persons for whom this species of escutcheon can be made out, are legally entitled to the character of gentlemen of blood, which is the highest species of gentility. The English hatchment above described exhibits no more than a right to a coat of arms which may be acquired by purchase, and is only the first step towards establishing gentility in a family.

The funeral escutcheon, as exhibited in Scotland, France, and Germany, is in the form of a lozenge, above six feet square of black cloth; in the centre of which is painted, in proper colours, the complete achievement of the defunct, with all its exterior ornaments and additional marks or badges of honour; and round the sides are placed the sixteen arms of the families from which he derives his descent, as far back as the grandfather's grandfather, as the proofs of his gentility. They exhibit the armorial bearings of his father and mother, his two grandmothers, his four great-grandmothers, and his eight great-grandmothers' mothers; and if all these families have acquired a legal right to bear arms, then the gentility of the person whose proof it is must be accounted complete, but not otherwise. On the four corners are placed mort-heads, and the initials of his name and titles or designation; and the black interstices are semée or powdered with tears.

On the morning of the interment, one of these is placed on the front of the house where the deceased lies; and another on the church where he is to be buried, and after the burial it is fixed above the grave. The pall, too, is generally adorned with these proofs of gentility, and the horses of the hearse with the defunct's arms.

HERALDUS, Desiderius, in French *Hérault*, a counsellor of the parliament of Paris, who in different works gave proofs of uncommon learning. His *Adversaria* appeared in the year 1599; but if the *Scaligerana* may be credited, he repented having published it. His notes on Tertullian's Apology, on Minutius Felix, and on Arnobius, are esteemed; and he also wrote notes on Martial's Epigrams. He disguised himself under the name of *David Leidhresserus*, to write a political dissertation on the independence of kings, some time after the death of Henry IV. He had a controversy with Salmasius, *De Jure Attico ac Romano;* but did not live to finish what he had written on the subject. What he had executed, however, was printed in 1650. He died in June 1649. Guy Patin says that he was looked upon as a very learned man, both in the civil law and in polite literature, and that he wrote with great facility on any subject he pitched on.

HERAULT, a department of France, formed out of a part of the ancient province of Lower Languedoc. On the southern side it is bounded by the Mediterranean Sea, and on the other sides by French departments. Its extent is 2926 square miles, or, according to the Royal Almanac, 630,935 hectares. It is divided into four arrondissements, and these into thirty-six cantons and 333 communes; and it contains 346,207 inhabitants, of whom about 50,000 are Protestants, and the rest adhere to the Church of Rome. They speak a patois, that is, a mixture of Celtic, Arabic, Latin, and French, of which three fifths of the words are Latin. Of late years, however, especially in the towns, the peculiar dialect has been giving way to pure French. The northern division of the department consists of mountains, with valleys between them, which gradually decline in height as they approach the coast, where they expand into a level and fertile plain. The soil on the higher parts is commonly stony, chalky, and barren; but on the plain on the coast, though marshy, extremely fruitful. The corn raised in the department is of less importance than those vegetable substances which are the produce of southern climates. The chief attention is paid to the vines, and the wines are highly esteemed, especially those called Muscatel, Frontignac, and Lunel; but a very large proportion of the grapes are distilled, and yield brandy and spirits of wine for the foreign trade. Many olive trees are planted, and the oil which they afford is said to be equal to that of Provence. Silk worms are extensively bred, but chiefly in the district of the Cevennes. The country abounds in mines, which were once extensively worked; but at present all are abandoned except some of coals, which yield annually about 90,000 tons, and serve as fuel where wood is beginning to become scarce. Some salt is made by natural evaporation on the sea-coast; but not more than 6000 tons, though it would be very easy to procure a much larger quantity. The fishing for sardinias gives employment to numerous persons on the sea-shore. There are manufactures of woollen and cotton goods, and some of silk; and there are establishments for preparing chemical articles, perfumery, and dyers' colours. The chief exports consist of wine, brandy, vinegar, spirits of wine, rosins, figs, almonds, capers, cork, oil, honey, wax, soap, and perfumery. The capital is the city of Montpellier, whose salubrity is much celebrated.

HERB, in *Botany*, a name by which Linnæus denominates that portion of every vegetable which arises from the root, and is terminated by the fructification. It comprehends, 1. the trunk, stalk, or stem; 2. the leaves; 3. those minute external parts called by the same author the *fulcra* or supports of plants; and, 4. the buds, or, as he also terms them, the *winter-quarters*, of the future vegetable.

HERBACEOUS Plants are those which have succulent stems or stalks that die down to the ground every year. Of herbaceous plants, those are annual which perish, stem, root, and all, every year; biennial, which subsist by the roots two years; perennial, which are perpetuated by their roots for a series of years, a new stem being produced every spring.

HERBAGE, in *Law*, signifies the pasture provided by nature for the food of cattle; also the liberty to feed cattle in the forest, or in another person's ground.

HERBAL signifies a book which treats of the classes, genera, species, and virtues of plants.

Herbal is also used to signify what is sometimes called *hortus siccus*, or a collection of dried plants.

HERBELOT, Barthelemi d', a celebrated French orientalist, eminent for his oriental learning, was born at Paris on the 24th of December 1625. He travelled several times into Italy, where he obtained the esteem of some of the most learned men of the age. Ferdinand II. grand duke of Tuscany, showed him many marks of favour. A library being exposed to sale at Florence, the duke desired him to examine the manuscripts in the oriental languages, to select the best of them, and to mark the price; and this being done, that generous prince purchased the whole, and made him a present of them. Colbert, informed of D'Herbelot's merit, recalled him to Paris, and obtained for him a pension of 1500 livres; and he afterwards became secretary and interpreter of the oriental languages, and royal professor of the Syriac tongue. He died at Paris in 1695. His principal work is the *Bibliothèque Orientale, ou Dictionaire Universel, contenant généralement tout ce qui regarde la Connaissance des Peuples de l'Orient*, Paris, 1697, in folio. The *Bibliothèque Orientale*, considered in its details, occupied the same rank in the seventeenth, as the *Histoire des Huns* did in the eighteenth century; but with this difference, that D'Herbelot cleared the road, and was often copied by De Guignes. Both these celebrated orientalists were men of prodigious erudition; and in fact we can hardly persuade ourselves that the most laborious life could be sufficient for collecting the treasures which are to be found in this collection. If we reflect on the number of Arabic, Turkish, and Persian chronicles of which the *Bibliothèque Orientale* contains extracts; attend to the immense extent of the biography of Hadgi Khalfa, of which it presents an abridged translation; and consider the amount of accessory knowledge necessary in such an undertaking, some idea may be formed of the erudition, perseverance, and activity of D'Herbelot. M. d'Herbelot's modesty was equal to his erudition; and his uncommon abilities were accompanied and adorned with probity, piety, and charity, which he practised throughout the whole course of his life.

HERBERT, Mary, Countess of Pembroke, was sister of Sir Philip Sidney, and wife of Henry, earl of Pembroke. She was not only a lover of the muses, but a great encourager of polite literature; a character which is not very common amongst titled ladies. Her brother dedicated to her his *Arcadia*. She translated a dramatic piece from the French, entitled *Antonius*, a tragedy, though it is said that in this she was assisted by her chaplain, Dr Babington, afterwards Bishop of Exeter. She also translated the Psalms of David into English metre; but it is doubtful whether these works were ever printed. This lady died in 1621; and an exalted character of her may be found in Osborne's *Memoirs of James I.*

Herbert, *Edward*, Lord Herbert of Cherbury in Shropshire, an eminent English writer, was born in 1581, and educated at Oxford, after which he travelled, and at his return was made a knight of the bath. James I. sent him as ambassador to Louis XIII. in behalf of the Protestants who were besieged in several cities of France; and he continued in this situation until he was recalled, on account of

Herbert.

a dispute between him and the constable de Luines. In 1625 he was advanced to the dignity of baron of the kingdom of Ireland, by the title of Lord Herbert of Castle Island; and in 1631 to that of Lord Herbert of Cherbury in Shropshire. After the breaking out of the civil wars, he adhered to the parliament; and in 1644 obtained a pension, on account of his having been plundered by the king's forces. He wrote a History of the Life and Reign of Henry VIII., a treatise *De Veritate*, of considerable celebrity, and several other works. Lord Herbert died at London in 1648. This nobleman, according to Granger, "stands in the first rank of the public ministers, historians, and philosophers of his age. It is hard to say whether his person, his understanding, or his courage, was the most extraordinary; as the fair, the learned, and the brave held him in equal admiration. But the same man was wise and capricious; redressed wrongs, and quarrelled for punctilios; hated bigotry in religion, and was himself a bigot to philosophy. He exposed himself to such dangers as other men of courage would have carefully declined; and called in question the fundamentals of a religion which none had the hardiness to dispute besides himself."

Herbert, *William*, Earl of Pembroke, was born at Wilton, in Wiltshire, 1580, and admitted to New College, Oxford, in 1592, where he continued about two years. In 1601 he succeeded to his father's honours and estate, and was made a knight of the garter in 1604, and governor of Portsmouth six years afterwards. In 1626 he was elected chancellor of the university of Oxford, and about the same time made lord steward of the king's household. He died suddenly at his house in London on the 10th of April 1630, if we may credit Wood, according to the calculation of his nativity made several years before by Mr Thomas Allen of Gloucester Hall. Concerning this calculation, Clarendon relates, that some considerable persons connected with Lord Pembroke having met at Maidenhead, one of them at supper drank a health to the lord steward; upon which another said, that he believed his lordship was at that time very merry, for he had now outlived the day which it had been prognosticated from his nativity that he would not survive. The next morning, however, they received the news of his death. Whether the noble historian really believed this and other accounts relating to astrology, apparitions, providential interpositions, and other marvels not dreamt of in philosophy, which he has inserted in his history, we do not presume to say; he narrates them, however, as if he did not actually disbelieve them. Lord Pembroke was not only a great favourer of learned men, but was himself learned, and endowed with a considerable share of poetical genius. All that are extant of his productions in this way were published under the title of *Poems written by William Earl of Pembroke.*

Herbert, *Sir Thomas*, a gentleman of the Pembroke family, was born at York, where his father was an alderman. William, earl of Pembroke, sent him abroad in 1626; and he spent four years in travelling through Asia and Africa. In 1634 he published, in folio, a Relation of some Years' Travel into Africa and the Great Asia, especially the Territories of the Persian Monarchy, and some parts of the Oriental Indies and Isles adjacent. On the breaking out of the civil war, he adhered to the parliament; and at Oldenby, on the removal of the king's servants, by the desire of the parliamentary commissioners, he and James Harrington were retained as grooms of the bedchamber, and attended the king even to the block. At the Restoration he was created a baronet by Charles II. for his faithful services to his father during the last two years of his life. In 1678 he wrote *Threnodia Carolina*, containing an account of the last two years of the life of Charles I.; and he assisted Sir William Dugdale in compiling the third volume of his *Monasticon Anglicanum.* He died at York in 1782, leaving several manuscripts to the public library at Oxford, and others to that of the cathedral at York.

HERBIVOROUS Animals, those which feed only on herbs or vegetables.

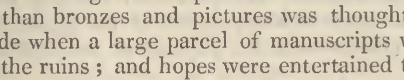
HERBIERS, a town of the arrondissement of Boubon-Vendee, in the department of Vendee, in France. It is situated on the river Maine, which passes through it, and contains 501 houses, with 2247 inhabitants. It is in a pleasant and fertile district, and produces very good wine.

HERBORN, a city of the duchy of Nassau, in Germany, on the river Dille, and the capital of a bailiwick of the same name. It contains a theological seminary, with four professors for Protestants, two churches, 430 houses, and 2350 inhabitants, who carry on a considerable trade in linen goods and hosiery, in breweries and paper-making.

HERCULANEUM, the name of an ancient city of Campania, in Italy, which was destroyed by an eruption of Vesuvius in the first year of the Emperor Titus, or the 79th of the Christian era; and which has been rendered interesting on account of the curious monuments of antiquity discovered and disinterred from its ruins. The epoch of the foundation of Herculaneum is unknown. Dionysius of Halicarnassus conjectures that it may be referred to a period about half a century anterior to the war of Troy, or about 1340 years before Christ; and therefore that it lasted about 1400 years.

The thickness of the heap of lava and ashes by which the city was overwhelmed has been much increased by successive streams vomited forth since that catastrophe, and now forms a mass twenty-four feet deep, of dark gray stone, which is easily broken in pieces. By its non-adhesion to foreign bodies, marbles and bronzes are preserved in it as in a case made to fit them; and exact moulds of the faces and limbs of statues are frequently found in this substance. The precise situation of this subterranean city was not known till the year 1713, when it was accidentally discovered by some labourers, who, in digging a well, struck upon a statue on the benches of the theatre. Many others were afterwards excavated and sent to France by the Prince of Elbœuf. But little progress was made in the excavations till the Infanta Charles of Spain ascended the throne of Naples, when, by unwearied efforts and great liberality, a considerable portion of Herculaneum was explored, and such treasures of antiquity thence extracted, as form the most curious museum in the world. To attempt removing the covering being found too arduous a task, the king contented himself with cutting galleries to the principal buildings, and causing one or two of them to be cleared out. Of these the theatre is the most considerable. On a balustrade which divided the orchestra from the stage was found a row of statues; and, on each side of the pulpitum, the equestrian figure of a person of the Nonia family. From the great rarity of equestrian statues in marble, these would have been very valuable objects had their workmanship been even less excellent than it is; and one of them in particular is a very fine piece of sculpture. After the king of Spain left Naples, the digging was continued, but with less spirit and expenditure; indeed, the collection of curiosities derived from Herculaneum and Pompeii had become so considerable, that a relaxation of zeal and activity ensued. These relics are arranged in a wing of the palace, and not only consist of statues, busts, altars, inscriptions, and other ornamental appendages of ancient opulence and luxury, but comprehend an entire assortment of the domestic, musical, and chirurgical instruments used by the ancients; tripods of elegant form and exquisite execution, lamps in endless variety; vases and basins of noble dimensions, chandeliers of the most beautiful shapes, pateræ and other appurtenances of sacrifice, looking-glasses of polished metal, coloured glass so hard, clear, and well stained, as to appear emeralds, sapphires, and other precious stones; a kitchen completely fitted up with copper-pans lined with silver, kettles, cisterns for heating water, and every utensil necessary for culinary purposes; specimens of various sorts of combustibles, retaining their form though burned to a cinder; corn, bread, fish, oil, wine, and flour; a lady's toilet, fully furnished with combs, thimbles, rings, paint, ear-rings, and so forth. Amongst the statues, which are numerous, the greatest share of merit is allowed to a Mercury and a sleeping faun; the busts occupy several apartments, but very few of the originals whom they were meant to represent are known. The floors are paved with ancient mosaic. A few rare medals have been found in these ruins; the most curious is a gold medallion of Augustus, struck in Sicily in the fifteenth year of his reign. The fresco paintings, which, for the sake of preservation, have been taken off the walls and framed and glazed, are to be seen in another part of the palace. The elegance of the attitudes, and the infinite variety of the subjects, stamp them as performances worthy of the attention of artists and antiquaries; but no pictures yet found are masterly enough to prove that the Greeks had carried the art of painting to as great perfection as they did that of statuary. But we cannot suppose those authors incapable of appreciating the merits of an Apelles or a Zeuxis, who with so much critical discernment have pointed out the beauties of the works of a Phidias, or a Praxiteles; nor can we imagine that they would have bestowed equal praise upon both kinds of performances if either of them had been much inferior to the other. We must therefore presume that the capital productions of the ancient painters being of more perishable materials than busts and statues, have been destroyed in the fatal disasters which have so often afflicted both Greece and Italy. Herculaneum and Pompeii were but towns of the second order, and not likely to possess the masterpieces of the great artists, which were usually destined to adorn the more celebrated temples, or the palaces of kings and emperors. A more valuable acquisition than bronzes and pictures was thought to have been made when a large parcel of manuscripts was found amongst the ruins; and hopes were entertained that many classical works, of which time has deprived us, were about to be restored to light, and that a new mine of science was on the point of being opened. But the difficulty of unrolling the parchment, of pasting the fragments on a flat surface, and of deciphering the obscure letters, has proved so great, that little progress has hitherto been made; and the value of the writings which have been unrolled has by no means corresponded to the public expectation.

But although the few successful results of the investigation, which have hitherto been laid before the public, are indeed of such a nature as not to have rewarded, by their importance, the great labour which has been bestowed on them, the zeal of the lovers and patrons of literature has not allowed their ardour to be subdued by the difficulties of the task. The progress of the discovery and examination of these singular remains of antiquity has been described, from time to time, in the *Philosophical Transactions*, and in many other publications. It was in October 1752 that the first of the carbonised rolls of papyrus were found; and Paderni's account of them is accompanied by an interesting specimen, which exhibits the genuine form of the characters used by the Romans in their manuscripts.



N·ALTERIVS·DVLC
DEM·CVRIS·CRVDE

The precise spot where the discovery was made was the Bosco di Sant' Agostino, a shrubbery belonging to the church of St Austin, close to Portici, towards Torre del Greco; it was covered with ashes, and a hard tufa or lava, to the depth of about a hundred and twenty English feet. In the course of a year or two about two hundred and fifty rolls had been found, some Greek and some Latin. The library appeared to be an apartment belonging to a considerable palace, which had not been further examined. The floor was of an elegant mosaic work; and the books were in presses, inlaid with different sorts of wood, disposed in rows, and ornamented with cornices. In 1754 Paderni spent twelve days in this room, and found in it three hundred and thirty-seven volumes, all apparently made brittle by the fire, and all in Greek; besides eighteen rolls of a larger size, lying in a separate bundle, which were in Latin, and more injured than the Greek. The former two hundred and fifty seem to have been in a separate room belonging to the same building. Some few of the rolls had an umbilicus or roller of wood in the centre. The Canon Mazzocchi began his labours about this time, and found that the subject of one of the manuscripts was music, and that of another the Epicurean Philosophy; a small bust of Epicurus having also been found in the same room.

In 1755 a further account of these operations was communicated to the Royal Society by Mr Locke. "Within two years last past," says his correspondent, "in a chamber of a house, or, more properly speaking, of an ancient villa (for by many marks it is certainly known that the place where they are now digging was never covered with buildings, but was in the middle of a garden), there has been found a large quantity of rolls, about half a palm long, and round, which appeared like roots of wood, all black, and seemed to be only of one piece. One of them falling on the ground, it broke in the middle, and many letters were observed, by which it was first known that the rolls were of papyrus. The number of these rolls, as I am told, were about a hundred and fifty, of different sizes. They were in wooden cases, which are so much burnt, as are all the things made of wood, that they cannot be recovered. The rolls, however, are hard, though each appears like one piece. Our king has caused infinite pains to be taken to unroll them and read them; but all attempts were in vain; only by slitting some of them a few words were observed. At length Signor Assemanni, having come a second time to Naples, proposed to the king to send for one Father Antonio [Piaggi], a writer at the Vatican, as the only man in the world who could undertake this difficult affair. It is incredible to imagine what this man contrived and executed. He made a machine, with which, by means of certain threads, which, being gummed, stick to the back part of the papyrus, where there was no writing, he begins by degrees to pull, whilst, with a sort of engraver's instrument, he loosens one leaf from the other, which is the most difficult part of all; and then makes a sort of lining to the back of the papyrus, with exceeding thin leaves of onion [goldbeaters' skin] if I mistake not; and with some spirituous liquor, with which he wets the papyrus, by little and little he unfolds it. All this labour cannot be well comprehended without seeing. With patience superior to what man can imagine, this good father has unrolled a pretty large piece of papyrus, the worst preserved, by way of trial. It is found to be the work of a Greek writer, and is a small philosophic tract, in Plutarch's manner, on Music; blaming it as pernicious to society, and productive of softness and effeminacy. It does not discourse of the art of music. The beginning is wanting. The papyrus is written 'across,' in so many columns, every one of about twenty lines, and every line is about four inches long. Between column and column is a void space of 'more than' an inch. The letters are distinguishable enough. Father Antonio, after he has unloosened a piece, takes it off where there are no letters, and places it between two [pieces of glass] for the better observation; and then, having an admirable talent in imitating characters, he copies it with all the lacunæ, which are very numerous in the scorched papyri, and gives this copy to the Canon Mazzocchi, who tries to supply the loss and explain it. The letters are capital ones, and almost without any abbreviation. The worst is, the work takes up so much time, that a small quantity of writing requires five or six days to unroll, so that a whole year is already consumed about half this roll. The lacunæ, for the most part, are of one or two words, that may be supplied by the context. As soon as this roll is finished, they will begin a Latin one. There are some so voluminous, and the papyrus so fine, that unrolled they would take up a hundred palms' space [or almost a hundred feet]. The curiosity of these papyri is, that there is no little shaft of wood on which they were rolled."

It may here be remarked, that the practice of rolling books on an umbilicus of wood was by no means universal where papyrus was employed. The Egyptian manuscripts, for instance, so frequently found in the catacombs, are without any umbilicus, the end of the sheet being left blank, for the purpose of being doubled up into a sort of core, which remained unopened, and served instead of a roller. A wooden pen without a slit was found in some of the subsequent excavations, together with other materials for writing. In 1755 the name of Philodemus had been discovered at the end of the first manuscript; and another work of the same author, on rhetoric, had been unrolled. Mazzocchi laboured in translating these, and two persons were constantly employed upon other volumes.

Some interesting particulars respecting the history of these operations may also be found in Barthélemi's *Voyage en Italie*, published at Paris in 1801. "It was a long time," says the author, "before any mode could be devised of unrolling them, and in this dilemma some of them were cut with a knife longitudinally, as we divide a cylinder in the direction of its axis. This mode of proceeding disclosed the writing to view, but completely destroyed the work. The different strata of the paper adhered so closely together, that in attempting to separate them they were reduced to ashes [or rather dust]; and all that could be obtained was a single column or page of a manuscript that consisted perhaps of a hundred."

"Under these circumstances, a patient and persevering monk suggested a mode of completely unrolling the paper. He made some attempts, which occupied a considerable portion of time, but in which by degrees he was successful. He goes on with his tedious labour, and in the same manner gradually and slowly succeeds. His plan is this. Having found the beginning of the manuscript, he fastens to the exterior edge some threads of silk, which he winds round so many pegs, inserted in a small frame. These pegs he turns with the utmost precaution, and the manuscript is imperceptibly unrolled. Little is to be expected from the first few layers of the paper, which in general are either torn or decayed. Before any pages of a work can be obtained, the manuscript must be unrolled to a certain depth, that is, till the part appears which had suffered no other injury than that of being calcined. When a few columns have been thus unrolled, they are cut off, and pasted on linen. For unfolding one of these manuscripts several months are requisite, and hitherto nothing has been obtained but the last thirty-eight columns of a Greek work against music. Two other columns or pages are also shown of two Greek manuscripts that were cut to pieces before the method of unrolling them was discovered. Each appears to have been part of a philosophical dissertation."

In some letters from the secretary of the French embassy at Naples, subjoined by M. de St Croix, and dated 1785, 1786, and 1787, it is asserted, that of about fifteen hundred or eighteen hundred manuscripts which had been discovered, two hundred or more had been destroyed by a charlatan who undertook to restore them with the assistance of some chemical application. It is also stated as highly probable that many thousands of similar manuscripts may still exist in different parts of the ruins; a conjecture so much the more interesting, as the greater number of the rolls hitherto found "have been so crushed that it will never be possible to open them, and several have been injured by the barbarous attempt to separate the leaves with a knife."

The work of Philodemus was published at Naples in 1793, as the first volume of the *Herculanensium Voluminum quæ supersunt.* The manuscript is faithfully delineated in copperplates, and the restored readings and translation are printed on the opposite page, followed by an elaborate commentary. The academicians of Portici are the professed editors. The title at the end stands thus, the work being the fourth book only of the essay.

ΦΙΛΟΔΗΜΟΥ

ΠЄΡΙΜΟΥϹΙΚΗ

Δ

A passage in the last column will serve as another specimen.

ΡΑΙΝΟΝ ΤΑϹ ΤΟϹΑΥΤΑΤΘΙ
ΝΥΝ ЄΙΡΗΚΩϹ ΠΡΟϹΑΤΙΝ·
ЄΓΚЄΧЄΙΡΗΚΑϹΙΔΙΑΤЄΙΝΑΙ
ΜΗΝΑΝΔЄΟΝΤΩϹΟ ΧΑΡΙΝ
ΜЄΝΠΙΘΑΝΟΤ ΤΟϹΑΥΤΩΝ

The subsequent volumes of the series are little known in this country. But a part of another manuscript was inserted in the *Herculanensia* of Sir W. Drummond and Mr R. Walpole, London, 1810, in 4to; together with a very favourable report of the progress of the operations, which had been continued at the expense of the British government.

"Many obstacles," say the authors in their dedication, "opposed themselves to the accomplishment of this noble design, which address and perseverance could alone remove. The difficulty of opening the rolls of papyrus, which had been reduced to perfect carbo, can scarcely be conceived by those who have not witnessed the process. Much time and many hands were required in carrying it on; and the expense incurred was proportionate to the labour. When the manuscripts were unrolled, it was necessary that persons competent to the task should decipher and transcribe them; distribute the (capital) letters into the words to which they belonged; and supply those deficiencies in the text which but too frequently occurred. At the head of the directors of this difficult undertaking were Rosini, the editor of Philodemus; an English gentleman (Mr Hayter) sent out for the purpose; and, we believe, a Neapolitan priest, supposed to be deeply conversant in ancient literature. It was not until large sums had been expended by your royal highness, and the success of the execution had justified the boldness of the plan, that pecuniary assistance was requested and obtained from parliament. Attentive as the people of this country are, and ought to be, to the expenditure of the public money, they must glory in having contributed towards a work which does honour to the English name."

Again, in the preface, "The first papyrus which was opened contained a treatise upon music by Philodemus the Epicurean. It was in vain that Mazzocchi and Rosini wrote their learned comments on this dull performance. The sedative was too strong; and the curiosity, which had been so hastily awakened, was as quickly lulled to repose. A few men of letters indeed lamented that no further search was made for some happier subject on which learned industry might be employed; but the time, the difficulty, and the expense, which such an enterprise required, and the uncertainty of producing any thing valuable, had apparently discouraged and disgusted the academicians of Portici.

"Things were in this state when the Prince of Wales proposed to the Neapolitan government to defray the expenses of unrolling, deciphering, and publishing the manuscripts. This offer was accepted by the court of Naples; and it was consequently judged necessary by his royal highness to select a proper person to superintend the undertaking. The reputation of Mr Hayter as a classical scholar justified his appointment to the place, which the munificence of the prince, and his taste for literature, had created. This gentleman arrived at Naples in the beginning of the year 1802, and was nominated one of the directors for the development of the manuscripts.

"During a period of several years the workmen continued to open a great number of the papyri. Many, indeed, of these frail substances were destroyed, and had crumbled into dust, under the slightest touch of the operator.

"When the French invaded the kingdom of Naples in the year 1806, Mr Hayter was compelled to retire to Sicily. It is certainly to be deeply regretted that all the papyri were left behind. The writer of this preface only knows, with certainty, that when he arrived at Palermo in 1806, on his second mission to his Sicilian majesty, he found that all the papyri had been left at Naples, and that the copies of those which had been unrolled were in the possession of the Sicilian government. How this happened it would be now fruitless to inquire. The English minister made several applications to the court of Palermo to have the copies restored, but without success, until the month of August 1807. It was pretended that, according to the original agreement, the manuscripts should be published in the place where his Sicilian majesty resided; that several Neapolitans had assisted in correcting, supplying, and translating them; that his Sicilian majesty had never resigned his right to the possession, either of the originals or of the copies; and that, as a proof of this right being fully recognised, the copies had been deposited by Mr Hayter himself in the Royal Museum at Palermo. It was, however, finally agreed that the manuscripts should be given up, *pro tempore*, to Mr Drummond, who immediately replaced them in the hands of Mr Hayter. In the space of about a year, during which period they remained in the possession of the latter, a fac simile of part of one of the copies was engraved, and some different forms of Greek characters, as found in these fragments, were printed under his direction.

"From some circumstances which took place in the summer of 1808, and to which we have no pleasure in alluding, a new arrangement became indispensable. Mr Drummond proposed to the Sicilian government that the copies should be sent to London, where they might be published with advantages which could not be obtained at Palermo. His proposal was acceded to, and they have been accordingly transmitted to England. The manner in which their publication will be conducted will, of course, depend upon the determination of his Royal Highness the Prince of Wales, in whose hands they have been deposited; but it may be presumed that the republic of letters will not have to lament that these interesting fragments are to be brought to light under the auspices of a prince, who has always shown himself to be the protector of learning and the arts. We venture not to assert, but we believe, that the manuscripts will be submitted to the inspection of a select number of learned men, and will be edited under their care, and with their annotations and translations."

Mr Walpole informs us in a subsequent article, dated at Palermo, 1807, that the whole of the manuscripts which were then in Sir W. Drummond's house, amounting to more than eighty, were Greek, with the exception of one fragment of a Latin poem, which is said to have been a description of the battle of Actium and its consequences, and which has been conjectured by some critics to be the work of the Varius well known by name as the friend of Horace. One of the eighty has appeared in the *Herculanensia;* but where are the seventy-nine? The whole of the manuscripts were reported to have been presented to the university of Oxford. Has a new volcano, throwing out darkness and ashes, overwhelmed them on the banks of the Isis? Or were they, notwithstanding all the labour and expense of obtaining them, found too imperfect to deserve publication? It seems, indeed, not improbable, that the persons employed to unroll them in the first instance, who were paid in proportion to the number of pages they obtained, were too strongly tempted to sacrifice such parts of the manuscript as would have required the most labour, for the more profitable object of proceeding with a portion which would allow them to earn the most pay with the least loss of time, and that some irreparable injuries have been done to the manuscripts from these interested motives. Some pages, however, of the copies were certainly very little impaired, and these must at least deserve to be preserved from further accidents, by printing and publishing them in the simplest form possible.

It was well known, that at the time of the first arrangement between the two courts respecting these operations, the king of Naples sent six of the rolls unopened, as a present to the Prince of Wales; nor were the antiquaries and philosophers of Great Britain inattentive to this latent treasure. Several experiments were made at Carlton House, in imitation of the processes which were said to have been successful in Italy; and at last two of the manuscripts were intrusted to the care of an individual, who is supposed to have given an account of his own further attempts, in the fifth number of the *Quarterly Review.*

"At first," he informs us, "as it often happens in such cases, he appeared to be very confident of ultimate success; but difficulties afterwards occurred, and he did not continue his experiments long enough to overcome them, or even very materially to lessen them; his professional engagements interfered, much of his time had already been sacrificed, and the intelligence that Sir W. Drummond had succeeded in obtaining possession of the whole collection of the works which had been unrolled, made his own attempts appear comparatively too insignificant to deserve immediate prosecution."

"One mode of treating the papyri occurred, however, to this gentleman, which appeared to him to promise a decided advantage to such as might hereafter proceed in the operation. This was the employment of the anatomical blowpipe, an instrument which he had many years before been in the habit of using for delicate purposes, in the place of a dissecting knife. The blowpipe served him . . for a knife and a forceps; for the gum, the goldbeater's skin, and the threads of the Italians. No instrument can be so soft in its pressure as the air, for holding a thin fragment by suction, without danger of injuring it; no edge nor point can be so sharp as to be capable of insinuating itself into all the crevices which the air freely enters. But the humidity of the breath he found to add much to the utility of the instrument. The slight degree of moisture communicated to the under or inner surface of a fold made it curl up and separate from the parts beneath, where the adhesion was not too strong; while dry air from a bladder was perfectly incapable of detaching it. But the process of separating every leaf in this manner was always tedious and laborious where there was much adhesion, and sometimes altogether impracticable. Chemical agents of all kinds he tried without the least advantage; and even maceration for six months in water was unable to weaken the adhesion. It is remarkable that the characters were not effaced by this operation; so that the gum which had fixed them on the paper must have wholly lost its solubility, and the rest of its original properties.

"It has indeed been supposed by some travellers that the manuscripts were in reality never charred, the ashes thrown out by the volcano having been probably incapable of communicating to them a sufficient degree of heat for producing this effect. In fact, it is said that some of the spices found in an embalmed body retained a considerable portion of their aromatic smell. But there is no doubt whatever that the papyri are now complete charcoal, such as is formed by heat only. A small fragment of their substance burns readily, like common charcoal, with a creeping combustion, *without flame*, and with a slight vegetable smell; fresh papyrus burns with a bright flame; and almost all mineral coal, which may possibly have been formed from vegetable substances, without the operation of heat, flames abundantly. *Bovey coal*, for example, which retains much of the appearance of wood, exhibits a *considerable flame*. It is highly probable that many of the adhesions have been formed by the oily and smoky vapours distilled off from the hottest parts, and irregularly condensed in the colder; and, so far as this conjecture may be true, it would perhaps be advisable to try the effects of a *longer maceration* in alcohol and in *ether* than has hitherto been employed. The 'spear of Achilles' might also be applied with very reasonable hopes of success. A repetition of the exposure to heat, kept up more equably and more powerfully, might very probably expel the adhesive substances, without injuring the texture of the charcoal; proper care being taken to preclude completely the access both of air and of water, which might be done first by means of the air pump, and then by the insertion of a little potassium, together with the roll, in a vessel hermetically sealed. But the adhesions appear sometimes to be of a mere mechanical nature, being derived from the irregular folds into which the manuscripts have been pressed, or from some roughness of the contiguous surfaces." (P. 18, 20.)

Mr Hayter thought it necessary to reply to some of the criticisms contained in this article, and published a pamphlet entitled *Observations upon a Review of the Herculanensia*, London, 1810, in 4to, strenuously maintaining that the quotation from the *comedy* of Timocles, already extant in Athenæus, ought to be a hexameter, and not an iambic; and seeming almost to believe that Pluto, and not Plato, is the author of the fanciful etymology of the name of Juno, though the passage quoted happens to be found in Plato's *Cratylus*. It is difficult to understand by what test the merits of such a scholar were appreciated, when he was appointed to superintend the operations at Portici.

The next era of our national exertions exhibits, however, a still more striking example of good nature and facility. Dr Sickler of Hildburghausen, who had been in Italy as a private tutor, succeeded in convincing a committee of the Royal Society of Göttingen that he had unrolled a fragment of papyrus, of which he exhibited a specimen. There was no evidence that the particular manuscript, on which the experiment was said to have been performed, had presented any considerable difficulty; and it was well known that some of the pages had been read before with comparative ease. It happened, however, that the page in question bore the intrinsic marks of a gross fraud. At first sight it read like perfectly good Greek; and it had all the genuine rust of antiquity about it; but upon examination it was found to contain a blunder which no Greek writer, nor any Greek librarian, could ever have committed; for the name of a serpent is made feminine, whilst in all ancient authors it is uniformly masculine; and the general air of authenticity was easily understood, when it was found that it was copied, with little variation, from detached passages of Diodorus Siculus, and principally from the fabulous account of the voyage of Jambulus to Ceylon and beyond it. In the mean time a negotiation with Dr Sickler had been commenced; an account of it was published, with the specimen in question, under the title of *Herculaneum Rolls*. (*Correspondence relative to a Proposition made by Dr Sickler*, London, 1817, in 4to.) The parties thought themselves too far engaged to retract; nor had they the patience to wait for the result of a preliminary experiment upon a portion of a roll, which had been weighed in London, and sent, carefully packed, to Hildburghausen, in order that the surface developed might be accurately compared with the weight; and Dr Sickler was brought to London with his family for the more effectual prosecution of his operations, which in a few months were so successful as to ruin twelve chosen specimens which had been sent over as a second present to the Prince of Wales, with the exception, however, of a few fragments, which were left sufficiently entire to be made the subject of some subsequent experiments of a chemical nature.

This mischievous farce was at last terminated by a Report of the Committee appointed to superintend the Experiments of Dr Sickler, ordered by the House of Commons to be printed, in March 1818; the committee stating, in conclusion, that Dr Sickler had totally failed in his endeavours to satisfy them that his method was practicable; and annexing an account of the expenditure, of something more than L.1100, in the purchase of this total failure.

But one advantage, and that not an unimportant one, was derived from this investigation. Sir Humphry Davy had been appointed one of the superintending committee; and his studies having recently been directed to the different states of carbonic substances, in the course of his patriotic and benevolent researches into the means of preventing explosions in coal mines, he was the more naturally led to consider by what agents these apparently carbonized substances might be capable of modification. The whole detail of the process which he invented has never been made public, in order that it might not be abused by any unprincipled projector; but there is reason to think that it bears considerable analogy to the maceration in ether, which had been tried unsuccessfully, but still recommended as deserving further examination, by a less fortunate operator. A very interesting report of Sir H. Davy on the state of the manuscripts was published in the *Journal of the Royal Institution* for April 1819.

"My experiments soon convinced me," says Sir Humphry, "that the nature of these manuscripts had been generally misunderstood; that they had not, as is usually supposed, been carbonized by the operation of fire, and that they were in a state analogous to peat or *Bovey coal*, the leaves being generally cemented into one mass by a peculiar substance, which had formed during the fermentation and chemical change of the vegetable matter comprising them, in a long course of ages. The nature of this substance being known, the destruction of it became a subject of obvious chemical investigation; and I was fortunate enough to find means of accomplishing this without injuring the characters or destroying the texture of the manuscripts.

"After the chemical operation, the leaves of most of the fragments perfectly separated from each other, and the Greek characters were in a high degree distinct; but two fragments were found in peculiar states; the leaves of one easily separated, but the characters were found wholly defaced on the exterior folds, and partially defaced on the interior. In the other the characters were legible on such leaves as separated, but an earthy matter, or a species of tufa, prevented the separation in some of the parts; and both these circumstances were clearly the results of agencies to which the manuscripts had been exposed, during or after the volcanic eruption by which they had been covered.

"It appeared probable from these facts that different manuscripts might be in other states, and that one process might not apply to all of them; but even a partial success was a step gained, and my results made me anxious to examine in detail the numerous specimens preserved in the museum at Naples. Having had the honour of showing some of my results to the Prince Regent, his royal highness was graciously pleased to express his desire that I should proceed in my undertaking; and I found, on my arrival at Naples, that a letter from his royal highness to the king, and a communication made from the right honourable the secretary of state for foreign affairs to the Neapolitan government, had prepared the way for my inquiries, and procured for me the necessary result of such patronage, every possible facility in the pursuit of my objects.

"An examination of the excavations that still remain open at Herculaneum immediately confirmed the opinion which I entertained, that the manuscripts had not been acted on by the fire. These excavations are on a loose tufa, composed of volcanic ashes, sand, and fragments of lava, imperfectly cemented by ferruginous and calcareous matter. The theatre, and the buildings in the neighbourhood, are encased in this tufa; and, from the manner in which it is deposited in the galleries of the houses, there can be little doubt that it was the result of torrents laden with sand and volcanic matter, and descending at the same time with showers of ashes and stones, still more copious than those that covered Pompeii. The excavation in the house, in which the manuscripts were found, as I was informed by Monsign. Rosini, has been filled up; but a building, which is said by the guides to be this house, and which, as is evident from the engraved plan, must have been close to it, and part of the same chain of buildings, offered me the most decided proofs that the parts nearest the surface, and, *a fortiori*, those more remote, had never been exposed to any considerable degree of heat. I found a small fragment of the ceiling of one of the rooms, containing lines of gold leaf and vermilion in an unaltered state, which could not have happened if they had been acted upon by any temperature sufficient to convert vegetable matter into charcoal.

"The state of the manuscripts exactly coincides with this view; they were probably on shelves of wood, which were broken down when the roofs of the houses yielded to the weight of the superincumbent mass; hence many of them were crushed and folded in a moist state, and the leaves of some pressed together in a perpendicular direction, and all of them mixed in two confused heaps; in these heaps the exterior manuscripts, and the exterior part of the manuscripts, must have been acted on by the water; and as the ancient ink was composed of finely divided charcoal suspended in a solution of glue or gum, wherever the water percolated continuously, the characters were more or less erased.

"Moisture, by its action upon vegetable matter, produces decomposition, which may be seen in peat bogs in all its different stages: when air and water are conjunctly on leaves or small vegetable fibres, they soon become brown, then black, and by long continued operation of air, even at common temperatures, the charcoal itself is destroyed, and nothing remains but the earths which entered into the construction of the vegetable substance. When vegetable matter is not exposed to moisture or air, its decay is much slower; but in the course of ages its elements gradually re-act on each other, the volatile principles separate, and the carbonaceous matter remains.

"Of the manuscripts, the greater number (those which probably were least exposed to moisture or air, for, till the tufa consolidated, air must have penetrated through it) are brown, and still contain some of their volatile substance, or extractive matter, which occasions the coherence of the leaves; others are almost entirely converted into charcoal, and in these, when the form is adapted to the purpose, the layers may be readily separated from each other by mechanical means. Of a few, particularly the superficial parts, and which probably were most exposed to air and water, little remains except the earthy basis; the charcoal of the characters, and some of that of the vegetable matter, being destroyed; and they are in a condition approaching to that of the manuscripts found at Pompeii, where the air, constantly penetrating through the loose ashes, there being no barrier against it as in the consolidated tufa of Herculaneum, has entirely destroyed all the carbonaceous parts of the papyrus, and left nothing but earthy matter. Four or five specimens that I examined were heavy and dense, like the fragment to which I referred in the introduction to this report, a considerable quantity of foreign earthy matter being found between the leaves, and amongst the pores of the carbonaceous substance of the manuscripts, evidently deposited during the operation of the cause which consolidated the tufa.

"The number of manuscripts and of fragments originally brought to the museum, as I was informed by M. Ant. Scotti, amounted to 1696; of these, eighty-eight have been unrolled, and found in a legible state; 319 more have been operated upon, and more or less unrolled, and found not to be legible; twenty-four have been presented to foreign potentates. Amongst the 1265 that remain, and which I have examined with attention, by far the greater number consists of small fragments, or of mutilated or crushed manuscripts, in which the folds are so irregular as to offer little hopes of separating them so as to form connected leaves; from eighty to a hundred and twenty are in a state which presents a great probability of success; and of these, the greater number are of the kind in which some volatile vegetable matter remains, and to which the chemical process referred to in the beginning of this report may be applied with the greatest hopes of useful results.

"The persons charged with the business of unrolling the manuscripts in the museum informed me that many chemical experiments had been performed upon the manuscripts at different times, which assisted the separation of the leaves, but always destroyed the characters. To prove that this was not the case with my method, I made two experiments before them; one on a brown fragment of a Greek manuscript, and the other on a similar fragment of a Latin manuscript, in which the leaves were closely adherent; in both instances the separation of the layers was complete, and the characters appeared to the persons who examined them more perfect than before.

"It cannot be doubted that the 407 papyri which have been more or less unrolled were selected as the best fitted for attempts, and were probably the most perfect; so that amongst the 100 or 120 which remain in a fit state for trials, even allowing a superiority of method, it is not reasonable to expect that a much larger proportion will be legible. Of the eighty-eight manuscripts containing characters, with the exception of a few fragments, in which some lines of Latin poetry have been found, the great body consists of works of Greek philosophers or sophists; nine are of Epicurus; thirty-two bear the name of Philodemus; three of Demetrius, and one of each of these authors, Colotes, Polystratus, Carneades, and Chrysippus; and the subjects of these works, and the works of which the names of the authors are unknown, are either *natural* or *moral philosophy*, *medicine*, *criticism*, and general observations on the *arts*, *life*, and *manners*."

The opinion of Sir Humphry Davy, and that of the anonymous operator, with respect to the state of the manuscripts, are so inconsistent with each other, that the decision between them seems almost reduced to the comparison of the credibility of opposite testimonies. According to the article in the *Quarterly Review*, "there is no doubt whatever that the papyri are now complete charcoal, such as is formed by heat only; a small fragment of their substance burns readily, like common charcoal, with a creeping combustion, without flame, and with a slight vegetable smell; Bovey coal exhibits a considerable flame." On the other hand, Sir Humphry's experiments convinced him that the manuscripts were "in a state analogous to a peat, or Bovey coal;" and he inferred, from his examination of the surrounding objects, that they could not have been acted upon "by any temperature sufficient to convert vegetable matter into charcoal." Now it seems natural to prefer, on such an occasion, the authority which stands the highest with respect to the department of science in question, especially when one of the parties is unknown. But in the present instance some additional evidence may not be thought superfluous; and in fact a portion of one of the rolls, which had been examined both by Sir Humphry and by the earlier experimenter, was submitted to a new analysis, by a chemist well known for the minute accuracy of his investigations, and the solidity of his conclusions. He exposed the carbonaceous matter to the process of destructive distillation, and he could obtain nothing whatever from it like asphaltum or any other product of mineral coal. It had scarcely enough of volatile matter to give any perceptible tinge of brown to the humidity absorbed by the substance, but enough to afford an animal smell, extremely like that of burnt bone, which he could only attribute to the glue or size of the ink not being completely decomposed by the same heat which had expelled all the volatile parts of vegetable origin; and upon exposing some glue, spread on paper, to the heat of boiling quicksilver, he obtained a partial carbonization, which he conceived to be perfectly analogous to that of the manuscripts; the substance thus formed affording, when exposed to a stronger heat, very copious vapours of an empyreumatic oil, though the products of the vegetable matter were probably expelled by the heat first applied. On the other hand, the heat of boiling quicksilver did not produce the animal smell from the papyrus. Hence he judged that the precise temperature of the overwhelming mass might be ascertained with tolerable accuracy; and he was persuaded that nothing but a heat approaching to 600° of Fahrenheit could have reduced the roll which he examined to the state in which he found it. At any rate, when we consider that a heat a little above 220° is capable of blackening, when applied for a long continuance, the wood that surrounds the boiler of a steam engine, it seems very difficult to agree with Sir Humphry Davy in thinking that the manuscript could not have been subjected to "any heat capable of converting vegetable matter into charcoal," unless by charcoal he understands pure carbon; and in this sense his observation will readily be admitted by all parties. It seems, indeed, to have been precisely with this conception of the state of the manuscripts, that it was suggested by the *Quarterly Reviewer* that some benefit might be expected from submitting the rolls to a heat more intense than that which they appeared to have undergone. The experiment, however, was subsequently performed with considerable care; but it failed completely of success. A fragment of a roll, consisting of several thicknesses, adhering together, was enclosed in a crucible, surrounded by charcoal powder, and kept for some time in a red heat; but no perceptible alteration took place in the state of the fragment, the adhesions were in no degree detached, nor was the legibility of the characters on the surface impaired.

After the failure of this experiment, in order to leave no mechanical means untried, a cutting machine was contrived, consisting of a very thin circular plate made into a fine saw, and put in rapid motion by wheel-work. This apparatus was found perfectly capable of dividing the substance of the roll without splintering it, as knives had been found to do; and it was hoped that, by cutting it across wherever there was a considerable fold, it would be possible to extricate many parts from each other, which were only retained in contact by this accidental complication of form; and that having the advantage of beginning from within, it would be easier to work down upon the successive surfaces bearing the letters, the writing being always found on the inside only; and no material difficulty was apprehended in reuniting the several parts, when they should once have been rendered legible. It was also recollected that the interior parts of the manuscript had in general been the least crushed and the least adherent; and it was hoped that a part at least of each manuscript might thus be rendered legible with ease, and at the same time without destroying the parts remaining unopened. But the interior parts of the roll which had been thus divided were found as adherent as the exterior, and the adhesions still remained everywhere invincible; so that all hopes of succeeding by mechanical means only were finally abandoned. The machine was afterwards sent to Naples, as it was thought likely to be of use in some of the operations that Sir Humphry Davy's process would require; but it is said not to have been found necessary for this purpose.

With regard to Sir Humphry's observation that vegetable matter not exposed to moisture or air undergoes a much slower decay, but that in the course of ages "its elements gradually re-act on each other, the volatile principles separate, and the carbonaceous matter remains," it may be remarked that the rolls of papyrus do not seem to undergo any change of this nature in the course of twenty or thirty centuries; for the Egyptian volumes, which are often found enclosed within the bandages of mummies, are generally so free from decay, that the paper has retained its primitive whiteness, without much alteration, except sometimes a slight tinge of brown; and its texture is so little impaired that it still bears ink well without running. When, however, a roll has been in any degree pervaded by moisture, the water is found to have dissolved the gum which unites the elementary leaves of the plant, and to have caused partial adhesions of the contiguous surfaces of the sheets to each other.

Whatever difference of opinion there may be respecting the reasoning upon which Sir Humphry Davy appears to have grounded his processes, there can be no doubt that they have actually been employed with considerable advantage. Mr Burton was encouraged by the British government to undertake the manipulation of the chemical operations which were required; and Mr Elmsley was requested to prolong his stay in Italy, and to become the superintendent of the literary department. Sir Humphry appears to have been well satisfied with his success, and a great variety of manuscripts have been rendered more or less legible; but their contents have proved of little more importance than might have been expected from the nature of the specimens before examined. Sir Humphry is of opinion, however, that an acquaintance with the contents of the remainder of the collection would afford much curious and useful information respecting the state of society, literature, science, and the arts, particularly in the Greek colonies of Magna Græcia and Sicily, which were at one time the rivals of the mother country in civilization and glory. It is highly probable, indeed, that many of the works in the collection at Herculaneum were composed by natives of Magna Græcia; in a collection made in that country such works would not be neglected; and in cities like Tarentum, Crotona, Pompeii, and others, the advanced state of civilization necessarily implied activity, both in literature and in science. The schools of Pythagoras and Archytas alone must have furnished numerous works, the recovery of some of which, nay even of fragments thereof, would unquestionably be an object of equal interest and importance.

With regard to the restoration of the mutilated manuscripts, if this delicate and difficult task had been intrusted to scholars like Mr Elmsley, it would have been executed in a much more satisfactory manner, and we should have met with none of those errors which have disgraced some of the former restorers of the Greek text; for, in fact, even the work of Philodemus on Music, which is commonly supposed to have been well edited, exhibits some singular instances of a want of familiarity with the idiom of the language, and of a critical knowledge of its rules. In the thirty-eighth and last column, which was cursorily examined, for the purpose of selecting a specimen of the characters only, a passage occurs which is thus read and translated by the academicians of Portici. Τοσαυτα τοινυν ἐιρηκως, προς ἁ τινες ἐγκεχειρηκασι, δια τ' ἐιναι μην ἀν δεοντως, ὁτι χαριν μεν πιθανοτητος ἀυτων ὀυδε πολλοστημοριον ὠφειλον εκτεινειν. *Tot igitur tantaque disserui adversus ea quæ aliqui tractarunt*, propterea quia opportunum fortasse erat. *Namque profecto propter ipsorum suadelam ne minima quidem parte debebam me extendere.* It is scarcely necessary to point out to any Greek scholar, that the true reading must be διατειναιμην ἀν δεοντως. "Having said thus much, *I may probably have been sufficiently diffuse* in replying to the arguments of some persons;" but "that, in proportion to the plausibility of these arguments, I ought not to have extended my discussion beyond a very small part of its actual magnitude."

Such mistakes, however, can do but little injury to the mutilated authors, provided that the original be preserved at the same time in its unaltered state. But that original, in its authentic though imperfect form, is the only object of comparative value; and to delay its publication for the sake of restorations of any kind, seems to be but a refined species of selfishness. "When we reflect," says the *Quarterly Reviewer*, "on the shortness of human life, and on our own grey hairs, we tremble to think how little chance there is of our being benefited by any great proportion of the EIGHTY manuscripts still unpublished." Many years have now elapsed since these reflections were printed, and not a line of the manuscripts in question has yet made its way to that public which had so equitable a claim to a full communication of their contents.

It must not, however, be denied, that to the great majority of readers it would be far more agreeable and convenient to have the works not only restored, but translated, if it could be done with tolerable accuracy, and without any very great loss of time. And even where a *probable* restoration is beyond our reach, it might be of some advantage to substitute a *possible* one. Thus the specimen which has been copied from the *Philosophical Transactions* for 1752 might suggest the three hexameters,

ALTER.IN.ALTERIUS.DULCI.AMPLEXU.
MORITURUS.
NON.EQUIDEM.CURIS.CRUDELIA.FATA.MOVERI.
POSSE.REOR.NEC.ME.VITAE.SPES.VANA.FEFELLIT.

Lines which are not indeed very harmonious or poetical, but which *might* have stood in the same work with

CONSILIIS.NOX.APTA.DUCUM.LUX.APTIOR.ARMIS,

and with Cleopatra's

TRAHITURQUE.LIBIDINE.MORTIS,

which are almost the only specimens that we possess of the poem attributed to Varius. If several independent attempts of this kind were made by different critics, the presumption in favour of those restorations, which were found to be common to all, would be raised from a mere possibility to a strong probability; but whether the same expense of labour and talents, directed into some other channel, might not create original works of still greater value, is a question not easy to be decided.

Signor Rosini, the president of the Bourbon Society of Antiquaries, published, in 1788, the first volume of those manuscripts which had been found at Herculaneum, under the title of *Herculanensium Voluminum quæ supersunt;* a volume which, as we have already mentioned, contains the first book of Philodemus on Music. The second volume was published in 1809, and, besides the preliminary dissertation, which had originally appeared in 1797, furnished only some small fragments of Epicurus. But soon after the return of Ferdinand to Sicily in 1815, there was founded the Royal Bourbon Society, which is divided into three academies, viz. the academy of archæology, that of the sciences, and that of the fine arts. Two academicians, Savaroni and Geterino, were intrusted with the labours relative to the manuscripts found in the excavations of Herculaneum; and, in the third volume of the *Herculanensia*, which appeared at Naples in 1827, they commented on two other productions of Philodemus, the publication of which had been confided to the care of Signor Rosini. The first of these is entitled Φιλοδημου περι κακιων και των αντικειμενων ἀρετων και των ἐν ὁις ἐισι και περι ἁ, *Philodemi de Vitiis et Virtutibus appositis et de rerum subjectis et objectis.* In this work the author treats of domestic economy, and shows how a good father of a family ought to govern his household, if he wishes to avoid faults, and to practise the virtues which are opposed to them. The second production is entitled Φιλοδημου περι κακιων, *Philodemi de Vitiis.* In this writing the author treats of particular defects, at the same time indicating the virtues which are opposed to them. Speaking of pride, for example, he characterises its different species, with the manifestations and inconveniences of each, and the antidotes to be applied; and of the proud he enumerates eight classes, viz. ὑπεροπται, ἀυθαδεις, ἀλαζονες, ἀυθεκαστοι, παντειδημονὲς, σεμνοκοποι ἠ βρενθυομενοι, ἐυτελισται, and ουδενωπαι; whilst Theophrastus, on the contrary, admits only three classes. This writing of Philodemus will enrich the Greek vocabularies. It is unfortunately full of *lacunæ;* but in the preface, the editor, Aloisio Catcrino, has indicated the probable import of the passages which are wanting. In 1824, the university of Oxford published two volumes entitled *Herculanensium Voluminum partes duæ*, containing four fragments lithographed from the papyri, without note, commentary, or any attempt to correct the text or supply *lacunæ*. Two of these fragments are the essays of Philodemus already mentioned; and the fourth is a fragment of a work on rhetoric by Demetrius; but, from the negligent manner in which they have been edited, the publication is of comparatively little value. The *Herculanensium Voluminum quæ supersunt tomus* iii. however, has been brought out with greater care, and in a much more creditable manner. "Chaque page est gravée sur cuivre; à côte se trouve l'impression en caractères ordinaires, et les complémens de lettres ou de mots en couleur rouge; vient ensuite la traduction Latine, qui est presque toujours littérale; à la fin il y a quatre tables contenant les mots Grecs peu usités, qui sont expliquées dans les notes, les auteurs et les personnes que Philodemus a cités; en fin, les objets qui présentent quelque importance." Prefixed to the Oxford work is a catalogue of papyri, ninety-five in number, presented to the university by his majesty; but we do not observe in it any thing which seems calculated to increase the regret of the learned at the difficulties met with in attempting to unfold these disinterred relics of ancient literature.

It now only remains to notice a very singular opinion expressed by Ignarra as to the epoch at which Herculaneum and Pompeii were buried under the ashes of Vesuvius. According to this savant, these cities existed long after the eruption of the year 79, nay even in the fifth century. The principal proof he produces in support of his assertion is, that their names are found in the map of Peuttinger, which, he thinks, could not have been constructed before the end of the fourth century, but that they are no longer observed in the itinerary of Antoninus, which could not have been composed previously to the year 471. Between these two epochs, therefore, must, according to Ignarra, be placed that of the destruction of these cities. But this surely is not valid reasoning. The map called Peuttinger's is probably a copy of one more ancient, made by some ignorant person, who either did not know that these cities no longer existed, or who did not venture to suppress any thing he found in the original which he copied. Besides, it is possible that the sites which Herculaneum and Pompeii occupied may have preserved the names of these cities long after their destruction. The name of Stabia still remains, although of the city not a single monument has been preserved. But whilst neither at Herculaneum nor at Pompeii has any monument, inscription, or medal been found of a date posterior to the reign of Titus, it may nevertheless be reasonably maintained that these cities were not entirely overwhelmed by the irruption which Pliny the younger has described with so much exactness and interest; and hence it is highly probable that, as Ignarra pretends, some remains of the city of Herculaneum were still to be seen in the fifth century. This is indeed placed beyond a doubt by the following verses of Sannazaro:

Rupe sub hac mecum sedit Galatea: videbam
Et Capreas, et quæ Sirenum nomina servant
Rura procul; *veteres* alia de parte *ruinas*
Herculis ambusta signabat ab arce Vesevus.

But what is it this teaches us? Nothing except that, several centuries after the calamity described by Pliny, some ruins of Herculaneum were still visible; perhaps some portico which, having been constructed upon a height in the town, had not yet been totally covered by the lava. It is no doubt from some such portico that the village of *Portici* originally derived its name. "Ce qu'il y a d'étonnant," says the editor of Count Orloff's *Mémoire sur le Royaume de Naples*, "c'est qu'ayant sous les yeux des ruines qui ne leur permettaient pas de douter que, sous le sol même, ils trouveraient Herculanum, les habitans de ce pays n'aient pas eu plus tôt le désir de fouiller; que cette ville ait été complétement oubliée, et qu'il ait fallu qu'un heureux hasard vint de nos jours seulement en révéler l'existence."

HERCULES, in fabulous history, a most renowned Grecian hero, who after his death was ranked amongst the gods, and received divine honours. According to the ancients, there were many persons of the same name. Diodorus mentions three, Cicero six, and some authors extend the number to more than forty. Of all these, one generally called the Theban Hercules is the most celebrated; and to him, as may easily be imagined, the actions of the others have been attributed. He is reported to have been the son of Jupiter by Alcmena, wife to Amphitryon, king of Argos, whom Jupiter enjoyed in the shape of her husband whilst he was absent; and, in order to add the greater strength to the child, made that amorous night as long as three. Amphitryon having soon afterwards accidentally killed his uncle and father-in-law Electryon, was obliged to fly to Thebes, where Hercules was born. The jealousy of Juno, on account of her husband's amour with Alcmena, prompted her to attempt destroying the infant. For this purpose she sent two serpents to kill him in the cradle, but the young Hercules strangled both of them. He was early instructed in the liberal arts, whilst Castor the son of Tyndarus taught him how to fight, Eurytus how to shoot with a bow and arrows, Autolycus to drive a chariot, Linus to play on the lyre, and Eumolpus to sing. Like the rest of his illustrious contemporaries, he soon afterwards became the pupil of Chiron the centaur, and under him rendered himself the most valiant and accomplished of the age. In the eighteenth year of his age he resolved to deliver the neighbourhood of Mount Cithæron from a huge lion which preyed on the flocks of Amphitryon his supposed father, and which laid waste the adjacent country. He went to the court of Thespius, king of Thespis, who, sharing in the general calamity, received him kindly, and entertained him during fifty days. The fifty daughters of the king became mothers by Hercules during his stay at Thespis, and some say that it was effected in one night. After he had destroyed the lion of Mount Cithæron, he delivered his country from the annual tribute of a hundred oxen which it paid to Erginus. Such public services became universally known; and Creon, who then sat on the throne of Thebes, rewarded the patriotic deeds of Hercules by giving him his daughter in marriage, and intrusting him with the government of his kingdom.

Eurystheus, the son of Amphitryon, having succeeded his father, soon became jealous of Hercules; and fearing lest he might be deprived of his crown, left no means untried in order to get rid of him. Of this Hercules was not insensible, because he was perpetually engaging him on some desperate expedition; and therefore went to consult the oracle. But being answered that it was the pleasure of the gods that he should serve Eurystheus twelve years, he fell into a deep melancholy, which at last ended in furious madness. Among other desperate actions which he perpetrated whilst afflicted with this disease, he put away his wife Megara, and murdered all the children he had by her. As an expiation of this crime, the king imposed upon him twelve labours surpassing the power of all other mortals to accomplish, but which nevertheless our hero performed with great ease. The favour of the gods had indeed completely armed him when he undertook his labours. He had received a coat of armour and helmet from Minerva, a sword from Mercury, a horse from Neptune, a shield from Jupiter, a bow and arrows from Apollo, and from Vulcan a golden cuirass and brazen buskin, with a celebrated club, of brass, according to the opinion of some writers.

The first labour imposed upon him was the killing a lion in Nemea, a wood of Achaia, the hide of which was proof against any weapon, so that he was forced to seize him by the throat and strangle him. He carried the dead beast on his shoulders to Mycenæ, and ever afterwards clothed himself with the skin. Eurystheus was so astonished at the sight of this beast, and at the courage of Hercules, that he ordered him never to enter the gates of the city when he returned from his expeditions, but to wait for his orders without the walls. He even made himself a brazen vessel, into which he retired whenever Hercules returned. The second labour was to destroy the Lernæan hydra, which had seven heads according to Apollodorus, fifty according to Simonides, and a hundred according to Diodorus. This celebrated monster he first attacked with his arrows; but soon afterwards he came to a close engagement, and by means of his heavy club he destroyed the heads of his enemy. This, however, was productive of no advantage; for as soon as one head was beaten to pieces by the club, two immediately sprang up; and the labour of Hercules would have remained unfinished, had he not commanded his friend Iolas to burn with a hot iron the root of the head which he had crushed to pieces. This succeeded; Hercules became victorious, and opening the belly of the monster, he dipped his arrows in the gall, to render the wounds which he inflicted incurable. He was ordered in his third labour to bring alive and unhurt into the presence of Eurystheus a stag, famous for its incredible swiftness, its golden horns, and its brazen feet. This celebrated animal frequented the neighbourhood of Œnoe; and Hercules was employed for a whole year in continually pursuing it; but at last he caught it in a trap, or when tired, or, according to others, by slightly wounding it and lessening its swiftness. The fourth labour was to bring alive to Eurystheus a wild boar which ravaged the neighbourhood of Erymanthus. In this expedition he destroyed the centaurs, and caught the boar by closely pursuing him through the deep snow. Eurystheus was so frightened at the sight of the boar, that, according to Diodorus, he hid himself for some days in his brazen vessel. In his fifth labour Hercules was ordered to clean the stables of Augeas, where three thousand oxen had been confined for many years. For his sixth labour he was enjoined to kill the carnivorous birds which ravaged the country near the lake Stymphalis in Arcadia. In his seventh labour he brought alive into Peloponnesus a prodigious wild bull, which laid waste the island of Crete. In his eighth labour he was employed in obtaining the mares of Diomedes, which fed upon human flesh. He killed Diomedes, and gave him to be eaten by his mares, which he brought to Eurystheus. They were sent to Mount Olympus by the king of Mycenæ, where they were devoured by the wild beasts; or, according to others, they were consecrated to Jupiter, and their breed still existed in the age of Alexander the Great. For his ninth labour he was commanded to obtain the girdle of the queen of the Amazons. In his tenth labour he killed the monster Geryon, king of Gades, and brought to Argos his numerous flocks, which fed upon human flesh. This was in Iberia or Spain, in the furthest parts of which he erected his two pillars, as the utmost limits of the then known world. These ten labours he achieved, as the fable says, in about eight years. In this last expedition he is likewise affirmed to have killed Antæus, a famous giant of a monstrous size, who, when weary with wrestling or labour, was immediately refreshed by touching the earth. Hercules overcame him in wrestling, and slew him; and afterwards, on his way through Egypt, the tyrant Busiris. This bloody man used to sacrifice all his guests and strangers upon his altars; and designing to have done the same by Hercules, was slain by him, together with all his attendants. His eleventh labour was the carrying away the Hesperian golden apples kept by a dragon. The last and most perilous of his labours was to bring upon earth the three-headed dog Cerberus. Descending into hell by a cave on Mount Tænarus, he was permitted by Pluto to carry away his friends Theseus and Pirithous, who were condemned to punishment in hell; and Cerberus also was granted to his prayers, provided he made use of no arms but force only to drag him away. Hercules, as some report, carried him back to hell after he had brought him before Eurystheus.

Many other exploits are said to have been performed by Hercules. In particular, he accompanied the Argonauts to Colchis before he delivered himself up to the king of Mycenæ. He assisted the gods in their wars against the giants; and it was through him alone that Jupiter obtained a victory. He conquered Laomedon, and pillaged Troy. When Iole, the daughter of Eurytus, king of Œchalia, of whom he was deeply enamoured, was refused to his entreaties, he became the victim of a second fit of insanity, and murdered Iphitus, the only one of the sons of Eurytus who favoured his addresses to Iole. He was some time afterwards purified of the murder, and his insanity ceased; but the gods persecuted him, and he was visited by a disorder which obliged him to apply to the oracle of Delphi for relief. The coldness with which the Pythia received him irritated him, and he resolved to plunder Apollo's temple and carry away the sacred tripod. Apollo opposed him, and a severe conflict began, which nothing but the interference of Jupiter with his thunderbolts could have prevented. He was upon this told by the oracle that he must be sold as a slave, and remain three years in the most abject servitude, to recover from his disorder. He complied; and Mercury, by order of Jupiter, conducted him to Omphale, queen of Lydia, to whom he was sold as a slave. Here he cleared all the country from robbers; and Omphale, who was astonished at the greatness of his exploits, married him. Hercules had Agelaus and Lamon by Omphale, from whom Crœsus king of Lydia was descended. He also became enamoured of one of Omphale's female servants, by whom he had Alceus. After he had completed the years of his slavery he returned to Peloponnesus, where he re-established on the throne of Sparta Tyndarus, who had been expelled by Hippocoon. He became one of Dejanira's suitors, and married her after he had overcome all his rivals. He was obliged to leave Calydon, his father-in-law's kingdom, because he had inadvertently killed a man with a blow of his fist; and it was on account of this expulsion that he was not present at the hunting of the Calydonian boar. From Calydon he retired to the court of Ceyx, king of Trachinia. The king received him and his wife with great marks of friendship, and purified him of the murder which he had committed at Calydon. Hercules was still mindful that he had once been refused the hand of Iole; he therefore made war against her father Eurytus, and killed him, with three of his sons. Iole fell into the hands of her father's murderer, and found that she was beloved by Hercules as much as before. She accompanied him to Mount Œta, where he was going to raise an altar and offer a solemn sacrifice to Jupiter. As he had not then the shirt and tunic in which he arrayed himself to offer a sacrifice, he sent Lichas to Trachin to his wife Dejanira, in order to provide himself a proper dress. Dejanira had some time before been attempted by the centaur Nessus, as he was ferrying her over the river Euenus; and Hercules beholding it from the shore, had given him a mortal wound with an arrow. The monster finding himself dying, advised her to mix some oil with the blood which flowed from his wound, and to anoint with it her husband's shirt, pretending that it would infallibly secure him from loving any other woman; and she, too well apprised of his inconstancy, had actually prepared the poisoned ointment accordingly. Lichas coming to her for the garments, unfortunately acquainted her with his having brought away Iole; upon which Dejanira, in a fit of jealousy, anointed his shirt with the fatal mixture. This had no sooner touched his body than he felt the poison diffuse itself through his veins; the violent pain of which caused him to disband his army, and to return to Trachin. His torment still increasing, he sent to consult the oracle for a cure; and was answered, that he should cause himself to be conveyed to Mount Œta, and there rear up a great pile of wood, and leave the rest to Jupiter. By the time he had obeyed the oracle, his pains having become intolerable, he dressed himself in his martial habit, flung himself upon the pile, and desired the bystanders to set fire to it. Others say that he left the charge of it to his son Philoctetes, who, having performed his father's command, had his bow and arrows given him as a reward for his obedience. At the same time Jupiter, to be as good as his word, sent a flash of lightning, which consumed both the pile and the hero; insomuch that Iolas, coming to take up his bones, found nothing but ashes; from which they concluded that he had passed from earth to heaven, and joined the gods. His friends showed their gratitude to his memory by raising an altar where the burning pile had stood. Menœtius the son of Actor offered him a sacrifice of a bull, a wild boar, and a goat, and enjoined the people of Opus yearly to observe the same religious ceremonies. His worship soon became as universal as his fame; and Juno, who had once persecuted him with the utmost fury, forgot her resentment, and gave him her daughter Hebe in marriage. Hercules has received many surnames and epithets, either from the place where his worship was established, or from the labours which he achieved. His temples were numerous and magnificent, and his divinity revered. No dogs or flies ever entered his temple at Rome; and that of Gades, according to Strabo, was always forbidden to women and pigs. The Phœnicians offered quails on his altars; and as it was supposed that he presided over dreams, the sick and infirm were sent to sleep in his temples, that they might receive in their dreams the agreeable presages of their approaching recovery. The white poplar was particularly dedicated to his service.

HERCULES, in *Astronomy*, one of the constellations of the northern hemisphere. The stars in the constellation Hercules in Ptolemy's catalogue are 29; in Tycho's 28; in the Britannic catalogue 113.

HERCULES's Pillars, in *Antiquity*, a name given to two lofty mountains, one situated on the most southern extremity of Spain, and the other on the opposite coast of Africa. They were called by the ancients *Abyla* and *Calpe*. They were reckoned the boundaries of the labours of Hercules; and, according to ancient tradition, they were joined together till they were severed by the arm of the hero, and a communication opened between the Mediterranean and the Atlantic.

HERCYNIA SILVA, in *Ancient Geography*, the largest of forests. Its breadth was a journey of nine days to the best traveller. Taking its rise at the limits of the Helvetii, Nemetes, and Rauraci, it extended along the Dauube to the borders of the Daci and Anartes, a length of sixty days' journey, according to Cæsar, who appears to have been well acquainted with its true breadth, seeing it occupied all Lower Germany. It may therefore be considered as covering the whole of Germany; and most of the other forests may be considered as parts of it, though distinguished by particular names; consequently the Hartz, in the duchy of Brunswick, which gave name to the whole, may be considered as one of its parts. The name *Hartz* denotes *resinous*, or *pine-trees*. By the Greeks it is called *Orcynius*, as a name common to all the forests in Germany; in the same manner as *Hercynius* was the name given by the Romans. Both are derived from the German *Hartz*.

HEREDITARY, an appellation given to whatever belongs to a family by right of succession from heir to heir.

HEREDITARY is also figuratively applied to good or ill qualities supposed to be transmitted from father to son. Thus we say virtue and piety are hereditary qualities in such a family.

HEREFORD, a city, the capital of the county of the same name, situated on the river Wye. It was built before 823, where the first church was erected, and afterwards, in 1015, converted into a cathedral. The present cathedral was begun by the second bishop, on the model of the church at Aix-la-Chapelle. The city is composed of six parishes, though there are only four churches now in existence. A part of the cathedral fell down in 1786, but has been since rebuilt. The streets are wide and clean, and the buildings generally handsome. In the market-place or square is the county hall, a good building, in which the assizes and sessions are held. As Herefordshire is the nearest English county to Wales, much legal business is brought to the city from that principality. The government of the city is in the hands of a corporate body, consisting of a mayor, six aldermen, a recorder, and a common council. Two members are returned to the House of Commons by the freemen and householders, about 1100 in number. The air of the vicinity is considered peculiarly salubrious. There are well-supplied markets on Wednesday and Saturday, at which provisions of all kinds are moderate. The inhabitants amounted in 1801 to 6828, in 1811 to 7306, in 1821 to 9090, and in 1831 to 10,280.

HEREFORDSHIRE, an inland English county, bounded on the north by Shropshire, on the east by Worcestershire, on the south by Gloucestershire and Monmouthshire, and on the west by the Welsh counties of Brecknock and Radnor. Its greatest length is thirty-eight, and its greatest breadth thirty-five miles. It is nearly of a circular form; but the dividing lines are broken by many indentations. Its circumference is 120 miles, and its square area 1221 miles, or 781,440 statute acres.

It is divided into eleven hundreds, containing one city, seven towns, and 221 parishes. The population amounted in 1801 to 89,191, in 1811 to 94,073, in 1821 to 103,243, and in 1831 to 110,300. By the comparative tables of mortality, it appears that the ratio of deaths to the whole population has been thus: From 1801 to 1811 one in fifty-seven, from 1811 to 1821 one in fifty-eight, and from 1821 to 1831 one in fifty-eight. Few manufactures exist in the county; about forty persons are employed in making hats at Leominster, and a few cloths and stockings are made in other parts. The occupations stand thus: Agriculturists employing labourers, 2505; agriculturists employing no labourers, 1679; labourers in agriculture, 12,213; employed in manufacture, 63; retail traders or handicraft, 7576; capitalists, bankers, &c. 911; labourers not agricultural, 2410; other males twenty years of age, 1521; male servants, 725; female servants, 5512.

The face of the country is very beautiful, when viewed from the western descent of the Malvern Hills. The whole country is rather thickly enclosed with high hedges; the divisions of the fields are generally small; and the abundance, both of forest and fruit trees, with which its surface is covered, gives it the appearance of an extensive wood. The roads are all narrow and bad, and even the turnpike ones are scarcely an exception.

In the eastern side of the county, a part of the Malvern Hills is rather barren, as are the Hatterel or Black Mountains, which divide it from Wales on the west. With the exception of these two portions, the whole of the land is highly fertile, and the fields are clothed with perpetual verdure. The soil is generally a mixture of marl and clay, but contains calcareous earth in various proportions in different parts. Towards the western part, the soil is tenacious, and retentive of water; the eastern side is principally a stiff clay, in some places of a red colour. In the south, some of the soil is a light sandy loam. The subsoil is almost universally limestone; in some parts a species of marble, beautifully variegated with red and white veins, and capable of receiving a high polish. Where the soil does not rest on limestone, as near the city of Hereford, it is sometimes a siliceous gravel, and occasionally fuller's earth and yellow ochres are found. The climate is rather more inclined to rain than the more eastern parts of England, and at times is much subject to damp fogs, which moisten the earth, and may be one cause of its great verdure.

The cultivation of grain is generally in a state behind most of the English counties, and the crops bear no proportion to the excellence of the soil. Wheat is generally sowed on a clover ley, with a dressing of lime, and then yields, on an average, twenty bushels to the acre. After this wheat is harvested, a winter and spring ploughing are followed by peas, which do not average more than fourteen bushels to the acre. The peas are followed by wheat again, when the produce is not usually more than fourteen bushels. In the succeeding spring it is sowed with barley and clover, neither of which crops yields a good increase. Oats are only sowed partially in the room of barley. Turnips are carelessly cultivated, and artificial grasses sowed to a very limited extent, though somewhat increased of late years. On the borders of some of the rivers there are most valuable meadows of natural grass, which are the most productive of any lands in the county.

One cause of the neglect manifested in the cultivation of corn may be the attention paid to the growth of hops and fruit. The cultivation of hops is considerable, and increasing on the borders of Worcestershire, and much more of the manure is applied to them than to the corn. The soils selected for hop gardens are those where a dry loam predominates, with but a small proportion of clay; and old pastures are deemed more fit for them than the land that has been recently under the plough. The time of planting them is usually the month of April. In July the gardens are hoed carefully, and the same operation is repeated five or six weeks after; and in September the earth is formed into hillocks around the roots of the young plants. The hops are picked from the plants in October, are then gently dried in a kiln, and packed for sale. The average produce of an acre of garden is about five hundredweight of hops. Each acre requires 1000 poles, around which the plants entwine themselves. The cost of poles, of manure, and of labour, makes the cultivation highly expensive, and in some years it far exceeds the amount of the produce, but in others the growers gain very large profits. The whole is a very speculative pursuit.

The rearing of fruit-trees, to the growth of which the soil and climate seem admirably adapted, engrosses the greatest share of the attention and skill of the Herefordshire cultivators. Although almost every soil and situation in the county is favourable to the growth of apples and pears, yet those spots are preferred which are exposed to the south-east and sheltered to the westward; as it is found that the winds from that quarter are ungenial to the fruit trees. Orchards, though planted in Kent as early as the reign of Henry VIII., did not extend to Herefordshire till they were introduced by Lord Scudamore and some other gentlemen in the reign of Charles I. when the circumstance of their adaptation to the soil being ascertained, they quickly spread over the whole county. It is a fact, that many varieties of apples and pears, which a few years ago were the most highly esteemed, have entirely disappeared; but new varieties have by care and attention been produced, which equal in value, if not in fame, the celebrated *redstreak* and *slime* apple, and the *squash* pear, the value of whose cider and perry was thirty years ago most highly prized. Some of the proprietors of orchards, who are most attentive to the selection of the fruit, and most skilful in the management of the juice when expressed, have produced such exquisitely flavoured cider and perry as to obtain for them a preference over any wines made from the grape. The prices at which the best of these liquors are sold by the growers far exceed those which are obtained for the best wines of any vineyards either in France or Germany. They are sometimes sold as high as L.20 the hogshead direct from the press. Some of the orchards are from thirty to forty acres in extent, and the trees being at considerable distance from each other, the intervals are kept in tillage. The produce of the orchards is very fluctuating, though less so in Herefordshire than in Somerset, Devon, or Gloucester; yet the growers seldom expect more than one year in three to be fully productive. In a good year an acre of orchard will produce from eighteen to twenty-four hogsheads of cider or perry. The quantity of apples or pears required to make a hogshead varies from twenty-four to thirty bushels. The greater part of the best descriptions of both liquors is purchased by merchants from Bristol, who find bottles, and export it to the East and West Indies, and to America.

Herefordshire.

Herefordshire has long been celebrated for one of the best races of cows. They are of the middle-horned kind, have a large and athletic frame, and, from the silky nature of their coats, have an unusually sleek appearance. The most prevailing colour is a reddish brown, and their faces are white and bald. The heifers fatten quickly at an early age, and the calves are highly esteemed. The rearing of oxen for the plough is a common pursuit, and the greater part of the animal labour of the county is performed by them. After being worked five or six years, they are usually sold to graziers from Buckinghamshire, and fattened in the Vale of Aylesbury for the consumption of the metropolis, where their flesh is highly prized.

The fame of the Herefordshire sheep equals that of its cows. They are best known by the name of the Rylands, a district in the southern part of the county, in which the superior varieties of them are fed. They are small, white-faced, and without horns. In symmetry of shape, and in the exquisite flavour of the meat, they surpass most other kinds; and, in addition, their wool is by far the finest produced from any of the native English races. The quantity of wool from them does not average more than two pounds each, but it is usually sold for three times the price of coarse wool. Many experiments have been made to improve this breed by crossing them with the Merinos; but it has been found that the flesh has deteriorated as much as the wool has improved by the mixture. The practice of keeping the sheep in houses in cold weather is general, and perhaps the wool may be in some degree indebted to that management for a portion of its fineness of fibre.

The excellence of the wool has not induced many manufactures, for most of it is sold to the clothiers of Gloucestershire and Somersetshire. Attempts have been made to establish manufactories of woollen goods in the city of Hereford, but they proved abortive. At Kington some few woollens are made, and likewise at Leominster, but to no great extent. The river Wye is navigable to Hereford, but either floods or droughts so often suspend the navigation, that the trade carried on by it is very inconsiderable.

The principal river, the Wye, is celebrated for its picturesque beauties, especially in the vicinity of Ross, and till it enters Monmouthshire. The other streams, the Lugg, receiving the waters of the Arrow and the Frome, the Munnow receiving those of the Dore, and the Leddon, are but inconsiderable, though they tend to fertilize the lands through which they flow.

Few counties are more rich in antiquities than Herefordshire, especially in the remains of those feudal castles, which were probably erected when it was the frontier towards the hostile Welsh. The most remarkable of these are Goodrich Castle, Dore Abbey, Wigmore Abbey, Vineyard Camp, and Bransil Castle.

The largest towns, and their population, are, Hereford, 10,280; Leominster, 5249; Ledbury, 3909; Ross, 3078; and Kington, 3111.

By the law of 1832 this county returns three members to parliament; and the polling places are Hereford, Leominster, Bromyard, Ledbury, Ross, and Kington. The borough of Weobly was disfranchised by the same law, and Hereford and Leominster return each two members.

The towns in Herefordshire are generally worse built than in any other English county, and more nearly approach to those of their adjoining Welsh neighbours. In the villages the buildings are still worse. The construction of most of the farm-houses and of the barns is rude and slight; they are usually built of stone, only cemented with mud or clay, about two feet high; and upon these imperfect walls the superstructure is raised, composed of timber frame-work, with laths intertwined, and plastered with mud or clay. They are usually covered with thick flag-stones, which increase the weight, and soon reduce them to a most ruinous state.

See Duncomb's *Herefordshire;* Marshall's *Rural Economy;* Lodge's *Sketches;* Clark's *General View;* and Brayley and Britton's *Beauties of England,* vol. vi. (G.)

HERESY, an offence against Christianity, consisting in a denial of some of its essential doctrines, publicly and obstinately avowed. It is defined *sententia rerum divinarum humano sensu excogitata, palam docta et pertinaciter defensa.* And here it must be acknowledged, that particular modes of belief or unbelief, not tending to overturn Christianity itself, or to undermine the foundations of morality, are by no means the object of coercion by the civil magistrate. What doctrines therefore should be adjudged heresy, was left by our old constitution to the determination of the ecclesiastical judge, who had therein a most arbitrary latitude allowed him. The general definition of an heretic, given by Lyndewode, extends to the smallest deviations from the doctrines of the holy church. *Hæreticus est qui dubitat de fide catholica, et qui negligit servare ea, quæ Romana ecclesia statuit, seu servare decreverat;* or, as the statute 2 Hen. IV. c. 15, expresses it in English, "teachers of erroneous opinions contrary to the faith and blessed determinations of the holy church." This was very contrary to the usage of the first general councils, which defined all heretical doctrines with the utmost precision and exactness. But what ought to have alleviated the punishment, namely, the uncertainty of the crime, seems to have enhanced it in those days of blind zeal and pious cruelty. It is true, that for the crime of heresy the sanctimonious hypocrisy of the canonists went at first no farther than enjoining penance, excommunication, and ecclesiastical deprivation; though afterwards they proceeded boldly to imprisonment by the ordinary, and confiscation of goods *in pios usus.* But in the mean time they had prevailed upon the weakness of bigoted princes to make the civil power subservient to their purposes, by making heresy not only a temporal, but even a capital offence; the ecclesiastics determining, without appeal, whatever they pleased to consider as heresy, and shifting to the secular arm the odium and drudgery of executions, with which they themselves were too tender and delicate to intermeddle. Nay, they pretended to intercede on behalf of the convicted heretic, *ut citra mortis periculum sententia circa eum moderetur;* well knowing that at the same time they were delivering the unhappy victim to certain death. Hence the capital punishments inflicted on the ancient Donatists and Manichæans by the emperors Theodosius and Justinian; and hence also the constitution of the emperor Frederic mentioned by Lyndewode, adjudging all persons without distinction to be burned with fire who were convicted of heresy by the ecclesiastical judge. The same emperor, in another constitution, ordained, that if any temporal lord, when admonished by the church, should neglect to clear his territories of heretics within a year, it should be lawful for good Catholics to seize and occupy the lands, and utterly to exterminate the heretical possessors. And upon this foundation was built that arbitrary power, so long claimed and so fatally exerted by the supreme pontiff, of disposing of the kingdoms of refractory princes to more dutiful sons of the church. The immediate consequence of this constitution was something singular, and may serve to illustrate at once the gratitude of the holy see, and the righteous punishment of the royal bigot; for, upon the authority of this very constitution, the pope afterwards expelled Frederic from his kingdom of Sicily, and gave it to Charles of Anjou.

Christianity being thus deformed by the demon of persecution upon the Continent, we cannot expect that our own island should have been entirely free from the same scourge; and accordingly we find amongst our ancient precedents a writ *de hæretico comburendo,* which is thought by some to be as ancient as the common law itself. From this writ it appears that the conviction of heresy by the common law was not in any petty ecclesiastical court, but before the archbishop himself in a provincial synod; and that the delinquent was delivered over to the king to be dealt with according to the royal pleasure. Thus the crown had a control over the spiritual power, and might pardon the convict by issuing no process against him; the writ *de hæretico comburendo* being not a writ of course, but issuing only by the special direction of the king in council.

But in the reign of King Henry IV., when the eyes of the Christian world began to be opened, and the seeds of the Protestant religion, though under the opprobrious name of *Lollardy,* took root in this kingdom, the clergy, taking advantage of the king's dubious title to demand an increase of their power, obtained an act of parliament, which sharpened the edge of persecution to its utmost keenness. By that statute, the diocesan alone, without the intervention of a synod, might convict of heretical tenets; and unless the convict abjured his opinions, or if after abjuration he relapsed, the sheriff was bound *ex officio,* if required by the bishop, to commit the unhappy victim to the flames, without waiting for the consent of the crown. By the statute 2 Henry V. c. 7, Lollardy was also made a temporal offence, and indictable in the king's courts; which thereby gained not an exclusive, but only a concurrent, jurisdiction with the bishop's consistory.

Afterwards, when the reformation of religion began to advance, the power of the ecclesiastics became somewhat moderated; for though it was not then precisely defined what heresy was, yet people were informed in some points what it was not. The statute 25 Henry VIII. c. 14, declared that offences against the see of Rome were not heresy; and the ordinary was thereby restrained from proceeding in any case upon mere suspicion; that is, unless the party delated were accused by two credible witnesses, or an indictment of heresy had been previously found in the king's courts of common law. And still the spirit of persecution was not yet abated, but only diverted into a lay channel. For in six years afterwards, by statute 31 Henry VIII. c. 14 the law of the six articles was made, which established the six most contested points of popery, namely, transubstantiation, communion in one kind, the celibacy of the clergy, monastic vows, the sacrifice of the mass, and auricular confession; points which were "determined and resolved by the most godly study, pain, and travail of his majesty, for which his most humble and obedient subjects, the lords *spiritual* and temporal and the commons, in parliament assembled, did not only render and give unto his highness their most high and hearty thanks," but did also enact and declare all oppugners of the first to be heretics, and to be burned with fire, and of the five others to be felons, and to suffer death. The same statute established a new and mixed jurisdiction of clergy and laity for the trial and conviction of heretics; the reigning prince being then equally intent on destroying the supremacy of the bishops of Rome, and at the same time establishing all their corruptions of the Christian religion.

Without perplexing this detail with the various repeals and revivals of these sanguinary laws in the two succeeding reigns, we proceed to the reign of Queen Elizabeth, when the reformation was finally established with temper and decency, unsullied with party-rancour or personal caprice and resentment. By statute 1 Eliz. c. 1, all former statutes relating to heresy were repealed, and the jurisdiction of heresy was left as it stood at common law, viz. as to the infliction of common censures in the ecclesiastical courts; and in case of burning the heretic, in the provincial synod only. Sir Matthew Hale is indeed of a different opinion, and holds that such power resided also in the diocesan; though he agrees that in either case the writ *de hæretico comburendo* was not demandable of common right, but grantable or otherwise merely at the king's discretion. But the principal point now gained was, that by this statute a boundary was for the first time set to what should be accounted heresy. For the future nothing was to be determined heretical but only such tenets as had been heretofore so declared, first, by the words of the Holy Scriptures; or, secondly, by the first four general councils, or such others as had only used the words of the Holy Scriptures; or, thirdly, which should thereafter be so declared by the parliament, with the assent of the clergy in convocation. Thus was heresy reduced to a greater certainty than before; though it might not have been amiss to have defined it in terms still more precise and particular, as even yet a man continued liable to be burned for what perhaps he did not understand to be heresy till the ecclesiastical judge had so interpreted the words of the canonical scriptures.

But the writ *de hæretico comburendo* remained still in force; and we have instances of its being put in execution against two Anabaptists in the seventeenth of Elizabeth, and two Arians in the ninth of James I. But it was totally abolished, and heresy again subjected only to ecclesiastical correction, *pro salute animæ*, by virtue of the statute 29 Car. II. c. 9; for, in one and the same reign, our lands were delivered from the slavery of military tenures, our bodies from arbitrary imprisonment by the *habeas corpus* act, and our minds from the tyranny of superstitious bigotry by removing this last badge of persecution from the system of English law.

HERETIC, a general name for all those persons of any religion, but especially the Christian, who profess or teach religious opinions contrary to the established faith, or to what is fixed as the standard of orthodoxy.

HERETOCHS, amongst our Saxon ancestors, signified the same with dukes or duces, denoting the commanders or leaders of their armies.

It appears, from the laws of Edward the Confessor, that the military force of this kingdom was in the hands of the dukes or heretochs, who were constituted through every province and county in the kingdom, being selected from the principal nobility, and such as were most remarkable for being *sapientes, fideles, et animosi.* Their duty was to regulate and command the English armies; and because of their great power, they were elected by the people in their full assembly, or folkmote, in the same manner as sheriffs were elected.

HERFORDEN, a city of Prussia, the capital of a circle of the same name, in the Minden division of the province of Westphalia. It stands at the junction of the rivers Aa and Werre, and its walls are converted into promenades. It contains 1396 houses and 6804 inhabitants, with four Lutheran and one Reformed church. There is a large house of correction, with 500 prisoners, who are employed in spinning cotton. There are several mills for spinning and weaving cotton goods, and manufactures of linen. Long. 8. 33. 49. E. Lat. 52. 7. 25. N.

HERGEST'S ISLANDS, a group of islands in the South Pacific Ocean, so called from Lieutenant Hergest, by whom they were discovered in 1792. They consist of Riou's, Trevenen's, Sir Henry Martin's, and Robert's Isles, and extend from longitude 219. 47. to 220. 21. E. and latitude 7. 53. to 9. 14. S.

HERIOT, in *Law*, a customary tribute of goods and chattels, payable to the lord of the fee on the decease of the owner of the land.

HERISAU, a town, the capital of the canton of Appenzell, in Switzerland. It stands in a beautiful district, is well built, and contains 750 houses and 7000 inhabitants. It is a place of extensive manufactures, especially of cotton goods for the fairs of Germany. Long. 9. 11. 5. E. Lat. 47. 23. 16. N.

HERISSON, in *Fortification*, a beam armed with a great number of iron spikes with their points turned outwards, and supported by a pivot on which it turns. Herissons serve as barriers to block up passages, and are frequently placed before the gates, and more especially the wicket-doors, of a town or fortress, to secure those passages which must of necessity be frequently opened and shut.

HERIURA, a town of Hindustan, in the south of India, and province of Mysore, situated on the east side of the river Vedawati. During the government of the Chittledroog rajahs it was a place of great consequence, and contained 2000 houses, with an outer and inner fort. It was twice sacked by the Mahrattas in the reign of Hyder; and has since fallen into great decay, owing partly to a dreadful famine which followed, and swept away most of the inhabitants. Under its present mild government the town is gradually reviving. Long. 76. 37. E. Lat. 13. 46. N.

HERMÆA, in *Antiquity*, ancient Greek festivals celebrated in honour of the god Hermes or Mercury. One of these was celebrated by the Pheneatæ in Arcadia; a second by the Cellenians in Elis; and a third by the Tanagræans, where Mercury was represented carrying a ram upon his shoulder, because he was said to have walked through the city in that manner in time of a plague, and to have cured the sick, in memory of which, it was customary at this festival for one of the most beautiful youths in the city to walk round the walls with a ram upon his shoulder. A fourth festival of the same name was observed in Crete, when it was usual for the servants to sit down at the table whilst their masters waited; a custom which was also observed at the Roman Saturnalia.

HERMOGENES, ST, an island in the North Pacific Ocean, about six leagues in circuit, discovered by Behring, and further explored by Cook, situated at the entrance of Cook's Inlet, and separated from the adjacent coast by a channel one league broad. Long. 152. W. Lat. 58. 20. N.

HERMANN, PAUL, a celebrated botanist, was born at Halle, in Saxony, and practised physic in the island of Ceylon, and the Cape of Good Hope, after which, in 1679, he was chosen professor of botany at Leyden, and superintendent of the botanical garden. In the science of plants he obtained the highest reputation, and died in the year 1695. His first publication, in 1687, was a catalogue of plants in the university garden, which he had much enriched with plants from the East and West Indies. His method of botanical classification is contained in his *Floræ Lugduno-Batavæ Flores*, published in 1690. His *Paradisus Batavus* was published after his decease by William Sherard, and contains many rare, with some entirely new species, delineated in a very elegant manner. The rest of Hermann's works are, *Musæi Indici Catalogus, continens varia exotica animalia, insecta, vegetabilia, mineralia*; and *Lapis Lydius Materiæ Medicæ*, in which last his new characters of plants are made use of to illustrate their medical properties. At his death he left behind him four hundred and fifty fine drawings, and a numerous collection of dried plants, which served as the basis of the *Flora Ceylanica* of Linnæus, and also a Catalogue of Plants of the Cape of Good Hope. Dr Hannes addressed to him a beautiful Latin ode, which is still preserved; but many of the treasures of his industrious life were strangely neglected, and allowed to be dispersed.

HERMANSTADT, a city of Hungary, in the province of Sieberbergen, the capital of a circle of the same name, which extends over 984 square miles, and contains about 60,000 inhabitants. The city is situated on the river Eidin, and is surrounded with double walls and extensive suburbs. It contains four Lutheran, three Catholic, one Reformed, and one Greek church, and is the seat of a Greek bishop, of a Lutheran lyceum with ten professors and a good library, of a Catholic orphan-house with 500 pupils, and a gymnasium or high school attached to it, and of the palaces of several of the nobles of the province. It has 2000 houses and 16,450 inhabitants. There are carried on within the city the trades of cloth and blanket-weaving, hat-making, and other manufactures. Long. 24. 3. 53. E. Lat. 45. 47. 4. N.

HERMAPHRODITE is generally understood to signify a human creature possessed of both sexes, or who has the parts of generation of both male and female. The term however is also applied to other animals, and even to plants. The word is formed from the Greek ‛Ερμαφροδιτος, a compound of ‛Ερμης, *Mercury*, and Αφροδιτη, *Venus*; a mixture of Mercury and Venus, or of male and female. Hermaphroditus was originally a proper name applied by the heathen mythologists to a fabulous deity, whom some represent as a son of *Hermes*, Mercury, and *Aphrodite*, Venus, and who, being desperately in love with the nymph Salamis, obtained permission of the god to have his body and hers united into one. But others say, that the god Hermaphroditus was conceived as a composition of Mercury and Venus; to exhibit the union between eloquence, or rather commerce, of which Mercury was god, with pleasure, of which Venus was the proper deity. Lastly, others think this junction intended to show that Venus or pleasure was of both sexes.

In a treatise by Mr Hunter, in the sixty-ninth volume of the *Philosophical Transactions*, hermaphrodites are divided into *natural*, and *unnatural* or monstrous. The first belongs to the more simple orders of animals, of which there are a much greater number than of the more perfect. The unnatural takes place in every tribe of animals having distinct sexes, but is more common in some than in others. The human species, our author imagines, has the fewest; but amongst horses, sheep, and black cattle, they are very frequent.

Hermaphrodite *Flowers*, in *Botany*. These are so called by the sexualists, on account of their containing both the antheræ and stigma, the supposed organs of generation, within the same calyx and petals. Of this kind are the flowers of all the classes in Linnæus's sexual method, except the classes *monœcia* and *diœcia*; in the former of which, male and female flowers are produced on the same root; in the latter, in distinct plants from the same seed. In the class *polygamia*, there are always hermaphrodite flowers mixed with male or female, or both, either on the same or distinct roots. In the plantain-tree the flowers are all hermaphrodite; in some, however, the antheræ or male organ, in others the stigma or female organ, proves abortive. The flowers in the former class are styled *female hermaphrodites*; in the latter, *male hermaphrodites*. Hermaphrodites are thus as frequent in the vegetable kingdom as they are rare and scarce in the animal one.

HERMAS, an ecclesiastical author of the first century, and, according to Origen, Eusebius, and Jerome, the same whom St Paul salutes in the end of his epistle to the Romans. He wrote a book in Greek some time before Domitian's persecution, which happened in the year 95. This work is entitled *The Pastor*, from his representing an angel speaking to him in it under the form of a shepherd. The Greek text is lost, but a very ancient Latin version is still extant. Some of the fathers have considered this book as canonical. The best edition of it is that of 1698, where it is to be found amongst the other apostolical fathers, illustrated with the notes and corrections of Cotelerius and Le Clerc. It was translated into English by Archbishop Wake.

HERMES, or Herma, amongst antiquaries, a sort of square or cubical figure of the god Mercury, usually made of marble, though sometimes of brass or other materials, without arms or legs, and planted by the Greeks or Romans in their cross-ways.

Servius, in his comment upon the eighth book of the Æneid, states the origin of this. Some shepherds, says he, having one day caught Mercury, called by the Greeks *Hermes*, asleep on a mountain, cut off his hands, whence he, as well as the mountain where the action occurred, was denominated Cyllenius, from κυλλος, *maimed*; and hence it is, according to Servius, that certain statues without arms are denominated *Hermæ*. But this etymology of the epithet of Cyllenius contradicts most of the other ancient authors, who derive it from this, that Mercury was born at Cyllene, a city of Elis, or even on the mountain Cyllene itself, which had been so called before his time.

Suidas gives a moral explication of the custom of making statues of Mercury without arms. The Hermeses, he informs us, were statues of stone placed at the vestibules or porches of the doors and temples at Athens; and as Mercury was the god of speech and truth, square and cubical statues were peculiarly proper, because they have this in common with truth, that on what side soever they are viewed, they always appear the same.

Athens abounded more in Hermeses than any other place; there were numbers of them in different parts of the city, and they were indeed one of its principal ornaments. They were also placed in the high-roads and cross-ways, because Mercury, who was the courier of the gods, presided over the high-ways; hence his surname of Trivius, from *trivium*, and that of Viacus, from *via*.

From Suidas's account, above cited, it appears that the *termini*, used amongst us in the door-cases, balconies, and other parts of our buildings, take their origin from these Athenian Hermeses, and that it was more proper to call them *hermetes* than *termini*, because, though the Roman termini were square stones, on which a hand was frequently placed, yet they were rather used as landmarks and mere stones than as ornaments of building.

HERMESIANAX, a poet of Colophon, in Asia Minor, of whose private history we know scarcely any thing. He seems to have flourished about B. C. 280, at the same time as Theocritus, and was the author of three books of elegies, which he addressed to his mistress Leontium, as Propertius did to Cynthia. Athenæus (xiii. 597) has preserved ninety-eight verses of a very beautiful elegy, which has been published separately by Weston in his *Conjecturæ in Athenæum*, Lond. 1784. Van Santen has translated it into Latin verse under the title of *Tentamen Hermesianacteum*, as also Rigler and Axti (Colon. 1828). The best edition is by Bach (Hale, 1829). See Leontium.

HERMETIC, or *Hermetical Art*, a name given to chemistry, on the supposition that Hermes Trismegistus was the inventor of that science, or that he excelled therein.

Hermetical *Philosophy* is that which undertakes to solve and explain all the phenomena of nature from the three chemical principles, salt, sulphur, and mercury.

Hermetical *Physic*, or *Medicine*, is that system or hypothesis in the art of healing, which explains the causes of diseases, and the operations of medicine, on the principles of the hermetical philosophy.

Hermetical *Seal*, a manner of stopping or closing glass vessels, for chemical operations, so very accurately, that nothing can exhale or escape, not even the most subtile spirits. It is performed by heating the neck of the vessel in the flame of a lamp till it be ready to melt, and then with a pair of pincers twisting it close together. This they call putting on *Hermes's seal.*

HERMHARPOCRATES, or Hermarpocrates, in *Antiquity*, a deity, or figure of a deity, composed of Mercury, and Harpocrates the god of silence.

HERMIANI, or Hermiatitæ, a sect of heretics in the second century, so called from their leader Hermias. They were also denominated *Seleuciani.* One of their distinguishing tenets was, that God is corporeal; and another, that Jesus Christ did not ascend into heaven with his body, but left it in the sun.

HERMIONE, in *Ancient Geography*, a considerable city of Argolis. Excepting a few temples, it was in ruins in the time of Pausanias, who says that the new city was situated at the distance of four stadia from the promontory on which stood the temple of Neptune. It gave name to the Sinus Hermionicus, a part of the Sinus Argolicus.

HERMIT, or Eremit, *Eremita*, a devout person retired into solitude, to be more at leisure for prayer and contemplation, and to disencumber himself of the affairs of this world. The word is formed from the Greek, ἐρημος, *desert* or *wilderness;* and hence, according to the etymology, it should rather be written *Eremit.* Paul surnamed the *Hermit* is usually reckoned the first hermit; though St Jerome, at the beginning of the life of that saint, says it is not known who was the first. Some go back to the time of John the Baptist, others to that of Elias; some make St Anthony the founder of the eremitical life, and others think that he only rekindled and heightened the fervour thereof, holding that the disciples of that saint owned St Paul of Thebes as the first who practised it. The persecutions of Decius and Valerian are supposed to have been the occasion of driving men to the wilderness.

There are also various orders and congregations of religious persons distinguished by the title of *hermits;* as hermits of St Augustin, of St John Baptist, of St Jerome, of St Paul, and so forth.

HERMITAGE properly signifies a little hut or habitation, in some desert place, where a hermit dwells.

Hermitage is also popularly attributed to any religious cell, built and endowed in a private and recluse place, and thus annexed to some large abbey, of which the superior was called *hermita.*

HERMOGENES, the first and most celebrated architect of antiquity, was, according to Vitruvius, born at Alanbada, a city in Caria. He built a temple of Diana at Magnesia, and another of Bacchus at Tros; and he was the inventor of several parts of architecture. He composed a book on the subject, which is lost.

Hermogenes *Tarsensis*, a rhetorician and orator, who was in every respect a prodigy. At the age of seventeen he published his system of rhetoric, and at twenty his philosophic ideas; but at twenty-five he forgot every thing he had known. It is said that his body being opened after his death, his heart was found of an extraordinary size, and all covered with hair. He died about 168 before Christ.

HERMOGENIANS, a sect of ancient heretics, so denominated from their leader Hermogenes, who lived towards the close of the second century. Hermogenes established matter as his first principle; and regarding it as the source of all evil, he maintained that the world, and every thing contained in it, as also the souls of men and other spirits, were formed by the Deity from an uncreated and eternal mass of corrupt matter. The opinions of Hermogenes, with regard to the origin of the world and the nature of the soul, were warmly opposed by Tertullian. The Hermogenians were divided into several branches under their respective chieftains; as Hermiani, Seleuciani, Materiani, and so on.

HERMON, or Aermon, in *Ancient Geography*, a mountain of the Amorites, called Sanior by the Phœnicians, and Sanir or Senir by the Amorites, on the east of Jordan. It is also called *Sion*, but must not be confounded with the Sion of Jerusalem.

HERMOPOLIS, in *Ancient Geography*, the name of several cities in Egypt, dedicated, as the name imports, to Hermes or Mercury. Near one of these cities, probably Hermopolis Magna, was situated a most magnificent temple, of which the portico only remains. It was visited by Denon, who accompanied the French army in their expedition to Egypt in 1799, and who describes it as a most beautiful monument of ancient architecture, a splendid relic of the highest antiquity. Amongst the hillocks within three hundred or four hundred yards of the portico, enormous blocks of stone are seen buried in sand, and regular architecture beneath, which appears part of an edifice containing columns of granite, just rising above the present level of the soil. Every part of this edifice is covered with hieroglyphics. Connected with the scattered fragments of the great temple, a mosque has been built, in which is a number of columns of cipoline marble. Near this is the village of Aschmuneïn, containing about 5000 inhabitants.

HERMUS, in *Ancient Geography*, a river of Ionia, which, rising near Dorylæum, a town of Phrygia, in a mountain sacred to Dindymene or Cybele, touched Mysia, and ran through the *Regio Combusta*, and then through the plains of Smyrna down to the sea, carrying along with it the Pactolus, Hyllus, and other less notable rivers. Its waters were said, by Virgil and other poets, to roll down gold.

HERNOSAND, a town of Sweden, the capital of the province of Norrlandslan. It is the seat of a bishop, and is built on the island formed by two arms of the river Angerman, which here empties itself into the Gulf of Bothnia. The harbour is one of the best in Northern Sweden. It contains 340 houses, and 1980 inhabitants, who are occupied in linen weaving, in ship-building, and in the fishery. Long. 17. 46. 7. E. Lat. 63. 38. N.

HERO, in Pagan mythology, a great and illustrious person, of a mortal nature, though supposed by the populace to have partaken of immortality, and after his death to have been placed amongst the number of the gods. The word is formed from the Latin *heros*, and that from the Greek ἡρως, *semi-deus* or demi-god. The Greeks erected columns and other monuments over the tombs of their heroes, and established a kind of worship in honour of the manes both of their heroes and heroines. The Romans also raised statues in honour of their heroes; but there were six of their heroes of a superior order, who were supposed to have been admitted into the community of the twelve great gods, namely, Hercules, Bacchus, Æsculapius, Romulus, Castor, and Pollux. Writers have distinguished between the worship which the ancients paid to their heroes and that offered to their gods. The latter, it is said, consisted of sacrifices and libations; the former was only a kind of funeral honour, in which they celebrated their exploits, concluding the rehearsal with feasts.

Hero is also used in a more extensive sense, for a great, illustrious, and extraordinary personage.

Hero, in fabulous history, a famous priestess of Venus, lived at Abydos, in a tower situated on the banks of the Hellespont. She was beloved by Leander, who lived at Sestos, on the other side of the strait, and every night swam across to visit her, being directed by a light fixed on the tower. But the light being put out on a stormy night, the youth missed his way and was drowned; upon which Hero threw herself into the sea, and perished.

Hero, the name of two celebrated Greek mathematicians; the one called the *older* and the other the *younger Hero*. The latter was a disciple of Ctesibius. They are known by two works translated into Latin by Barochius; *Spiralium liber*, by Hero the elder; and *Tractat. Artis et Machin. Militar.* by Hero the younger. They flourished about 130 and 100 B. C.

HEROD, surnamed the Great, was born about seventy-one years before the commencement of the Christian era. When about twenty-five years of age, his father Antipater made him governor of Galilee, where he distinguished himself by suppressing a band of robbers, and executing their ringleader. For this action, which was performed by his own authority, and without trial of the criminals, he was ordered to appear before the Sanhedrim; but, by the influence of his party, and the favour of the high priest, he escaped judgment. During the civil war between the republican and Julian parties, Herod joined Cassius, was made governor of Cœlosyria, caused Malichus to be assassinated for having poisoned his father, and ingratiated himself with Marc Antony. After wandering for some time as an exile in Egypt, he found means to arrive at Rome, where Antony received him with great kindness, and the senate made choice of him for the crown of Judæa, about forty years before the birth of Christ. It was at that time in the possession of Antigonus, and he had consequently to fight his way to it. But he was finally victorious, Antigonus was taken prisoner, and Herod succeeded to the regal dignity in the year thirty-seven before Christ. In filling his empty coffers he was guilty of many cruel extortions; yet it is but justice to add, that he performed many acts of clemency. He sent for the aged high priest Hyrcan, who had been deposed, treated him with the greatest kindness, and raised Aristobulus, the brother of his beloved Mariamne, to the pontifical dignity. But soon afterwards, in a fit of jealousy, he caused Aristobulus to be drowned in a bath. Being accused to Antony by his mother-in-law, he appointed his uncle Joseph to govern in his absence, charging him to put the queen to death if his trial should prove fatal to him, as he could not support the idea of her falling into the possession of another.

Herod received a visit from Cleopatra, who is reported to have had amorous inclinations towards him, which he prudently disappointed, from fear of the vengeance of Antony; but he satisfied her avarice with the most ample donations. When hostilities commenced between Antony and Octavius, he raised an army to join the former; but had first to contend with Malchus, king of part of Arabia, whom he defeated, and compelled to sue for peace. After the battle of Actium, he resolved to make terms with the victor, and with this view he put the aged Hyrcan to death, and embarked for Rhodes, where Augustus at that time was. He appeared before the emperor in all the insignia of royalty except his diadem, boldly relating all the services he had performed to his benefactor Antony, and observed that he was willing to transfer the same gratitude to a new patron, from whom he might hold his crown and kingdom.

Augustus was struck with the magnanimity of this defence, and replaced the diadem on his head. When Augustus passed through Syria in his way to Egypt, he was magnificently entertained by Herod, to whom he restored the whole of his dominions, which he even enlarged. Before his interview with Augustus, Herod had given a second order respecting the murder of Mariamne; and becoming jealous of Sohemus, her last guardian, he soon afterwards had her condemned and executed, in spite of the most solemn protestations of innocence. But the remorse occasioned by this barbarous murder was dreadful, and no scenes of riot or debauchery could banish her from his mind. He would frequently call aloud upon her name, and order his attendants to bring her into his presence, as if unwilling to forget that she was no more. He built an amphitheatre at Jerusalem, for the purpose of celebrating games in honour of Augustus; but this exasperated the Jews to such a degree, that a conspiracy was formed against him, which however was detected, and the principal contrivers punished with merciless severity.

He built several strong fortresses in different parts of Judæa for his own security, one of which, in honour of the emperor, was denominated Cæsarea. To supply in some measure the loss of Mariamne, he married another lady of the same name, the daughter of a priest, whom he raised to the supreme pontificate. He was in such favour with Augustus, that he was appointed imperial procurator of Syria, and obtained a tetrarchate for his brother. To conciliate the favour of the Jews, he undertook the vast work of rebuilding the temple of Jerusalem; and, by constantly employing a whole army of workmen for a year and a half, this magnificent edifice was completed. In the course of another visit to the emperor, Herod obtained new favours, particularly a grant of half the produce of the mines of Cyprus, and the inspectorship of the rest. After this he dedicated his new city of Cæsarea, when he exhibited so much profuse magnificence, that Augustus declared his soul was too large for his kingdom. He procured the condemnation and death of his two sons by the first Mariamne, for which he has been bitterly accused; but when we recollect that he took the greatest care of the two sons whom each left behind him, we must conclude that there may have been more reason for their punishment than some are willing to allow. The charge brought against them was an unnatural conspiracy against his life and crown, and it seems to have been fairly substantiated. His brother Pheroras, and his favoured son Antipater, conspired against him; but soon after the discovery of the plot the former died, and the latter went to Rome.

The birth of Christ happened in the thirty-third year of his reign, and is said to have been soon followed by that act of barbarous cruelty, the massacre of the children of Bethlehem, instigated by jealousy of this king of the Jews in a spiritual sense, of whose birth he had obtained information from the magi. It is to be observed that the account of this deed is to be met with nowhere but in St Matthew's gospel; for whilst Josephus seems to dwell with studied minuteness on the cruelties of Herod, he drops not a single hint respecting this massacre. As Antipater was returning from Rome, he was arrested by his father's orders, tried and condemned for treasonable practices. These calamities, joined to a shattered constitution, threw Herod into a loathsome distemper, accompanied with remarkable symptoms, which has sometimes been considered as a judgment from heaven. He ordered the sentence against Antipater to be put in execution, and appointed his son Archelaus to succeed him on the throne. According to Josephus, he collected together at Jericho the chief persons amongst the Jews, whom he ordered to be shut up in the circus, giving strict orders to his sister Salome to have them all massacred as soon as he had breathed his last. This order was never executed, and we very much doubt whether it was ever given.

His remains were interred with great pomp and magnificence; and although his memory has been consigned to detestation and abhorrence, his great talents and the glories of his reign conspire to secure him a distinguished place in the list of able but unscrupulous sovereigns.

HERODIANS, a sect amongst the Jews at the time of our Saviour. The critics and commentators are very much divided with regard to the Herodians. St Jerome, in his dialogue against the Luciferians, takes the name to have been given to those who owned Herod as the Messiah; and Tertullian and Epiphanius are of the same opinion. But the same Jerome, in his Commentary on St Matthew, treats his opinion as ridiculous, and maintains that the Pharisees gave this appellation by way of ridicule to Herod's soldiers, who paid tribute to the Romans; and accordingly the Syrian interpreters render the word by *the domestics of Herod*, that is, his courtiers. Simon, in his notes on the twenty-second chapter of St Matthew, advances a more probable opinion. The name *Herodian* he imagines to have been given to such as adhered to Herod's party and interest, and were for preserving the government in his family, about which were great divisions amongst the Jews. Hardouin represents the Herodians and Sadducees as the same. Dr Prideaux is of opinion that they derived their name from Herod the Great, and that they were distinguished from the other Jews by their concurrence with Herod's scheme of subjecting himself and his dominions to the Romans, and likewise by complying with many of their heathen usages and customs. This symbolizing with idolatry upon views of interest and worldly policy was probably that leaven of Herod against which our Saviour cautioned his disciples. It is further probable that they were chiefly of the sect of Sadducees, because the leaven of Herod is also denominated the leaven of the Sadducees.

HERODIANUS, a Greek historian of considerable celebrity, respecting whose birthplace we are ignorant, but he seems to have spent much time at Rome. Of his private history we know nothing, except that he flourished in the reign of the younger Gordian (A. D 238). His work, which has been preserved, contains, in eight books, the lives of the later Roman emperors, from the death of M. Aurelius Antoninus (A. D. 180) to the succession of the younger Gordian (A. D. 238), a period of fifty-eight years. It thus contains an account of the transactions during the reigns of Commodus, Pertinax, Julianus, Niger and Albinus, Severus, Caracalla and Geta, Macrinus, Heliogabalus, Alexander Severus, Maximinus, the two Gordians, Balbinus, and Gordian the younger. The style of his history is simple and natural, free from that affected Attic purity which was the fault of the writers of his age. Still in many passages there are evident marks of his having imitated Thucydides, and sometimes Demosthenes and Polybius. The period which he undertook to describe was one full of spirit-stirring events; frequent changes of emperors, constant wars both foreign and domestic, numerous earthquakes, plague and pestilence, were all crowded into the page of half a century. Whilst occupied with these wars and wonderful phenomena, he forgets to make us acquainted with the internal changes that were taking place in the constitution of the Roman empire; and whilst he gives us a minute account of the contests for empire, of court intrigues, and long, often unmeaning, speeches, he omits to notice the movements of those barbarous hordes which had already begun to threaten, and shortly after succeeded in subverting, the Roman empire. All however of which he gives us an account bears on it the stamp of truth, though perhaps he sometimes praises beyond what they deserve, hazards blame with too lenient a hand, and approves of characters which are only distinguished for their follies and their vices. Herodian is the last of the Greek historians of importance. The first edition is by Aldus, Venice, 1503; another by Stephens, Paris, 1581. There is a large edition in five volumes by Irmiseh, Leipsig, 1789, 1805. The best is by Becker, Berlin, 1826. See also Wolf. *Narratio de Herodiano et libro ejus*, in his edition of Herodian, Hal. Sax. 1792. There are several German translations, of which the best are by Gunradi Frankfort, 1784, and by Osiander, Stuttgardt, 1830.

HERODIANUS, a grammarian of Alexandria in Egypt, was son of the grammarian Apollonius Dyscolus. He seems to have resided at Rome in the reign of M. Aurelius, A. D. 163, to whom we find him dedicating a work on Prosody (Πϱοσῳδια Καθολικη), in twenty books. He is praised by the ancients as an acute philologist, and possessed an intimate knowledge of grammar, which is proved to be correct by the numerous fragments of his works. (See Fabricii *Biblioth. Græc.* ed. Harles, v. vi. p. 278; also *Essai Historique sur l'Ecole d'Alexandrie*, par Matter, Par. 1820.)

HERODOTUS, a celebrated historian, the son of Lyxas and Dryo, was a native of Halicarnassus, a city of Asia Minor. He was born 484 A. C. being descended of a family not less distinguished for its love of literature than for its wealth and political influence. His uncle Panyasis was highly esteemed as an epic poet, his writings being regarded by his contemporaries as only second to those of Homer. We are therefore justified in believing that the youthful mind of Herodotus was cultivated with an assiduity which contributed in no small degree to the eminence of his maturer years. (Suidas, Ἡϱοδοτος and Πανυασις, Schol. Aristoph. Nab. 331.) The period of history which he selected had nothing of novelty to recommend it; many writers of great celebrity had preceded him, but their high name and reputation, far from discouraging him, served only to excite his emulation and to develope his talents. Xanthus of Lydia, Hecatæus of Miletus, Pherecydes, Acesilaus, Hellanicus of Lesbos, Charon of Lampsacus, had each treated different parts of his subject with a masterly hand, and it required no small confidence in his own powers to venture on a period of history which had been so nearly exhausted. To enable him to do justice to his subject, he determined to visit those countries the transactions of which he was about to narrate. It is impossible to trace the exact route which he pursued with any degree of precision, or to say with certainty whether he visited Greece and the adjoining isles before he proceeded to the more remote parts of the East. But be this as it may, Egypt was one of the first and most constant objects of his attention and research. This country, which had long been inaccessible to strangers, from the defensive policy of its sovereigns and the inhospitable nature of its inhabitants, had been recently thrown open to the Greeks. Thither Herodotus proceeded; and it is curious to remark, that though many since that period have visited the country, and published the results of their inquiries, no one has given a more exact description, either of the physical appearance of Egypt, or of the manners of its inhabitants, than the father of history. It was not merely to the geography of the country that he directed his attention, but to its productions, its peculiar customs, its strange superstitions, and the history of the princes who reigned immediately before its conquest by the Persians. In his second book we have the fruits of his voyage to Egypt; and it may be still referred to as the purest source for acquiring a minute knowledge of its ancient history and institutions. (Herodotus, ii.)

From Egypt he must have passed into Libya, for we cannot believe that his accurately detailed account of the whole coast, from the frontiers of Egypt to the remote districts beyond Gibraltar, even as far as the promontory of Solocis, could have been acquired otherwise than by personal examination. It is too minute, and too conformable with what we know of these countries at the present time, to have been collected from the hearsay statements of travellers. (ii. 181; iv. 168, 195, 196.)

His visit to Tyre, the splendid city of the Phœnicians, is attested by himself (ii. 44); and he must at the same time have examined the coasts of Palestine, as he mentions having seen the pillar, and the disgraceful emblem engraved on it, intended by Sesostris to commemorate his victory, about 1350 A. C., over a weak and demoralized people. (ii. 106.)

Some have ventured to deny that he ever journeyed so far to the east as Babylon, and the rich plains of Assyria: yet if he had not been on the spot, he could scarcely have delineated with such minuteness the topography of that mighty city. Besides, in recording the existence of the temple of Jupiter Belus, he adds that he did not see the celebrated golden statue which had adorned its shrine, because Xerxes had carried it elsewhere (i. 181). We may add, that his frequent intercourse with the Chaldæans, and the conversations he held with them, could scarcely have taken place in any part of the world beyond the confines of Assyria.

Colchis, as the theatre of an adventure depicted in all the glowing colours with which the creative genius of the poets could adorn it, was a natural object of curiosity. He traversed its rugged coast; and finding himself in the vicinity of the wandering Scythians, he penetrated into their wild and desolate solitude as far as the commercial speculations of the Greeks had reached (iv. 81). The country of the Getæ, Thrace, Macedon, and Epirus, were each in their turn examined; but Greece was the chief object of his labours; and though we are unable to specify the time when he first visited it, he no doubt did so before his work was begun.

On his return to his native city, he found its government usurped by the tyrant Lygdamis: his uncle Panyasis was soon afterwards put to death: and he himself becoming an object of suspicion, retired to the island of Samos. Here probably he composed his history, in the soft Ionic dialect, preferring it to the harsher sounds of his native Doric. Yet, amidst the pursuits of literature, he did not forget the claims of the city which gave him birth. He organized a conspiracy by which Lygdamis was expelled; but the tyranny of the aristocracy which succeeded proved even more hateful to the citizens than that from which they had been delivered. They probably ascribed to Herodotus the crimes of his associates, which he had no power to avert; and, disgusted with the ingratitude of his fellow-citizens, the historian left for ever the shores of Caria, and proceeded to Greece. (Lucian *in Herod.* iv. p. 116.)

He arrived at the beginning of the eighty-first Olympiad (456 A. C.), and found a vast concourse of people assembled to celebrate the games at Olympia. He was unknown to all; but, ambitious of fame, he invited an audience to come and hear him recite a portion of his history; and as he no doubt selected the parts most likely to flatter the pride and to excite the enthusiasm of his compatriots, his success was complete, the acclamations with which he was received were overwhelming, and from that moment he was considered one of the first men of his age. It is supposed that it was at this recitation that Thucydides, then in his fifteenth year, shed tears of emulation when he saw the honours showered on the head of the historian. Herodotus foretold to the father the future fame of his son, and the sanction of posterity has verified the prediction. (Suid.; Marcellii *Vit. Thucyd.* p. 32.) Of the next twelve years, we can only conjecture that he spent them in Greece, and that he employed them in travelling leisurely over the country, examining with attention the archives of different people, verifying on original monuments the genealogies of the most illustrious families, and collecting the local traditions of great events at their source. It is said he was in the habit of reading to the different states the portions of history which more particularly referred to them, and was thus able to correct any error into which he might have fallen. At Athens, at the festival of Panathenæa, 446 A. C., he again recited a portion of his history, and received from the hands of that discerning people a donation of ten talents. (Eusb. *Chron.* p. 104.) In 444 A. C. Athens was preparing to send a colony to Thurium, and Herodotus determined to accompany it as a volunteer. Here he must have spent the remainder of his life in dignified repose, employing his time in retouching his history, and rendering the style still more harmonious. The period of his death is uncertain; but from a fact which he records, and which we know to have happened 408 A. C. he must have been employed in his history till that time. (Herodot. i. 130; iii. 15.)

The work is contained in nine books, each dedicated to one of the muses; but whether this was done by himself or by posterity we are unable to decide. To it we are indebted for our knowledge of the origin and progress of the Persian monarchy; of that of the Medes and Assyrians which preceded it; the origin of the kingdom of Lydia, its destruction by Cyrus the elder, and the numerous expeditions of that monarch; the conquest of Egypt by Cambyses, with a minute description of that country; the various wars in which the successors of Cyrus were engaged, and particularly the expedition of Darius against the Scythians, where he takes an opportunity of introducing an account of that people in the north of Europe and Asia. Then follows his narrative of the Persian expedition against the Greeks, and their noble struggle against the overwhelming power of that monarchy. This narrative breaks off at the siege of Sestos, 478 A. C.; and though he alludes to events that happened seventy years later, he does not seem to have continued his history further. (Diodor. xi. 37.) Some have ascribed to him a life of Homer, which is generally bound up with his work; but there are strong reasons for believing that it is the composition of a later age. He seems also to allude to a work on Assyria (*Assyriaca*), i. 184; but as no notice is taken of it by subsequent writers, it was probably never executed.

For an able disquisition on the style of Herodotus, and his character as an historian, see *Edinburgh Review*, vol. xlvii. p. 331.

HEROIC, something belonging to a hero or heroine.

Heroic Age is that age or period of the world in which the heroes, or those called by the poets the children of the gods, are supposed to have lived. The heroic age coincides with the fabulous age.

Heroic Poem is that which undertakes to describe some extraordinary action or enterprise. Homer, Virgil, Statius, Lucan, Tasso, Camoens, Milton, Wilkie, Glover, Voltaire, and others, have composed heroic poems. In this sense, *heroic* coincides with *epic poem.*

Heroic Verse is that in which heroic poems are usually composed, or it is that which is proper for such poems. In the Greek and Latin, hexameter verses are peculiarly denominated heroic verses, as being alone used by epic poets. Alexandrine verses, of twelve syllables, were formerly called *heroic verses,* as being supposed the only verse proper for heroic poetry; but later writers use verses of ten syllables.

HEROINE, Heroina, or *Herois,* a woman who has the qualities and virtues of a hero, or who has done some heroic action.

HERON. See Ornithology.

HERRENBERG, a city of Wurtemberg, of the circle of the Black Forest, and the capital of a bailiwick of the same name extending over ninety-two square miles, and containing 22,910 inhabitants. The city is situated on the river Auer. It is built around a mountain fortress of great antiquity. It contains 330 houses, and 2100 inhabitants, who produce good wine, and make some woollen goods. Near to it are quarries of marble and alabaster, in which many curious petrifactions are found.

HERRERA Tordesillas, Antonio de, a Spanish historian, the son of Roderigo de Tordesillas and Agnes de Herrera, it being the custom of that country to bear the mother's name, was born in 1565. He was at first secretary to Vespasian de Gonzaga, viceroy of Naples, but was afterwards appointed historiographer of the Indies by

Philip II. who granted him a liberal pension. Whilst he held this office, he wrote his General History of the Indies from 1492 to 1554, in four volumes folio. Of all the Spanish authors, Herrera is the one who has given the most exact and circumstantial recital of the conquest of Mexico, and the other events in America. Hence, to use the words of Dr Robertson, his work "furnishes the fullest and most accurate information concerning the conquest of Mexico, as well as every other transaction of America. The industry and attention with which he consulted, not only the books, but the original and public records, were so great, and he usually judges of the evidence before him with so much impartiality and candour, that his decades may be ranked among the most judicious and useful historical collections." His death, which happened at Madrid on the 29th of March 1625, prevented him from occupying the office of secretary of state, to which Philip IV. had just raised him. Besides the work above mentioned, Herrera wrote in Spanish, 1. Description of the West Indies, Madrid, 1601, in folio; 2. History of what passed in England and in Scotland during the forty-four years of the life of Mary Stuart, queen of Scotland, Lisbon, 1590, in 12mo; 3. Five Books of the History of Portugal, and the conquest of the Açores in the years 1581 and 1583, Madrid, 1591, in 4to; 4. History of the affairs of France from the year 1585 until the end of the year 1594, Madrid, 1598, in 4to; 5. History of the world under the reign of Philip II. from the year 1584 until the year 1598, Valladolid, 1606, in three vols. folio; 6. Historical Treatise, Relation, and Discourse, of the Movements which took place in Aragon in the years 1591 and 1592, in 4to; 7. Commentary on the Proceedings of the Spaniards, the French, and the Venetians, in Italy, from the year 1285 until the year 1559, Madrid, 1624, in folio.

Herrera, *Ferdinand de*, a Spanish poet of the sixteenth century, was born at Seville about the year 1516. He was thoroughly conversant with the Greek, Latin, Italian, and French languages, and also passed for a profound theologian; but he applied himself, in preference, to poetry, and was the first of the four Spanish poets who obtained the surname of divine. Although he had taken holy orders at the age of thirty, all his verses are addressed to a distinguished lady of Andalusia, whom he celebrates under various names; but his love was as pure and platonic as that of Petrarch, whom he endeavoured to imitate, in following the footsteps of Boscan and Garcilaso. Herrera died in his native place about the year 1595. The collection of his poetry, entitled *Obras de Herrera*, Seville, 1619, contains sonnets, songs, lyrics, and elegies, full of spirit, grace, and expression; but his style is at times deficient in correctness. Herrera was also the author of, 1. Relacion de la Guerra de Cypre y batalla de Lepanto, Seville, 1572; 2. Vida y Muerte de Thomas Moro, ibid. 1592, translated from the Latin of Stapleton; 3. An edition of the Poems of Garcilaso de la Vega, with interesting notes, Seville, 1580, in 8vo. (A.)

HERRING, in *Ichthyology*, a species of Clupea. The name *herring* is derived from the German word signifying an *army*, to express their number, when they enter our seas. See Fisheries.

Herring, *Thomas*, archbishop of Canterbury, memorable for his attachment to civil and religious liberty, was the son of a clergyman, and born in the year 1693. He received his grammar-school education at Wisbech, in the isle of Ely; and at the age of seventeen was sent to Jesus College, Cambridge, at which place he was made bachelor of arts in 1714, and had the degree of master of arts conferred upon him about three years afterwards. In the year 1722, he was appointed chaplain to Dr Fleetwood, bishop of Ely, who gave him two rectories; and in 1726 he was nominated preacher to the honourable society of Lincoln's Inn. He was chosen chaplain in ordinary to his majesty about the same period, and obtained from Cambridge the degree of doctor of divinity in the year 1728. Bishop Fleetwood, his patron, declared to his friends that he never heard a sermon from Dr Herring which he would not have been proud to be the author of himself. In 1731, he was chosen rector of Blechingley in Surrey; the same year he was appointed dean of Rochester; and in the year 1737 the king promoted him to the see of Bangor. In 1743 he was elevated to the archiepiscopal see of York; and it was peculiarly fortunate for the country at such a critical juncture, that a man of his principles and public spirit was raised to so exalted a rank. The rebellion in Scotland had been so artfully concealed by its friends in England, that it was scarcely believed the Highlanders were in arms until the royalists were defeated at the battle of Gladsmuir. Amidst the universal consternation which this event occasioned, Archbishop Herring roused the people to a sense of their danger, contributed to assuage the panic, and encouraged them to unite with firmness and vigour in the defence of their country.

A meeting of the nobility, gentry, and clergy, was held at York, where the archbishop addressed them in a very able and animated speech, requesting them to unite as one man in averting the present danger, to preserve their happy constitution, and to contribute by a subscription to raise troops for the defence of the country. The whole assembly entered warmly into his views, and immediately subscribed about L.40,000 for the important purpose recommended by his grace. On the death of Archbishop Potter, which happened in 1747, Dr Herring was translated to the see of Canterbury. In 1753 he was seized with a violent fever, which brought him to the verge of the grave; and although he so far recovered that he languished a few years, yet his strength and spirits were much exhausted, and he expired in 1756, in the sixty-third year of his age. He was buried, according to his own desire, without any pomp or parade, and no monument was erected to his memory.

HERRNHUTH, a town of the kingdom of Saxony, in the circle of Voightland, at the foot of the mountain Hutsberg, but 1054 feet above the level of the sea. It is the place from which the religious sect known in England as Moravians has received the name of Herrnhutters, by which they are commonly distinguished on the Continent. It was built by Count Zinzendorf in 1722, for the reception of the refugees of the sect driven by persecution from Moravia. It contains 100 houses, and about 1400 inhabitants, who are occupied in various manufactures upon a small scale. It is considered as the point of union for the scattered members of the sect in Europe and America.

HERSCHEL, Sir William, an illustrious astronomer, and inventor of the telescope which bears his name, was born at Hanover on the 15th of November 1738. He was the second of four sons, all of whom were brought up to their father's profession, which was that of musician. As he evinced a peculiar taste for intellectual pursuits, his father provided him with a French tutor, who instructed him in the rudiments of logic, ethics, and metaphysics, and under whom he made considerable progress. But, owing to the untoward circumstances of his family, his studies were soon interrupted, and, at the age of fourteen, he was placed in the band of the Hanoverian regiment of guards, a detachment of which he accompanied to England in 1757, or, as some say, in 1759. His father came with him to England, but after the lapse of a few months he returned home, leaving the young musician to push his fortune, as he best could, in London. After struggling with many difficulties, he attracted the notice of the Earl of Darlington, who engaged him to superintend and instruct a military band then forming for the Durham militia. Having ful-

Herschel.

filled this engagement, he passed several years in the west riding of Yorkshire, giving lessons to pupils in the principal towns, officiating as leader in oratorios and public concerts, and employing his leisure hours in improving his knowledge of English, acquiring the Italian language, which he considered as necessary to the exercise of his profession, and instructing himself in Latin, as well as learning a little Greek. About the close of the year 1765, he was appointed to the situation of organist at Halifax, which he obtained through the good offices of Mr Joah Bates, and there continued to give instructions in music, though with what success does not appear. Anxious to make himself master of the theory of harmony, he studied Dr Smith's treatise on that subject; in connection with this science he also cultivated the mathematics, and thus, perhaps unconsciously, prepared himself for those sublime investigations which were destined to open a new field of discovery, and to confer immortality on his name. In the year 1766 he and his elder brother repaired to Bath, where they were both engaged by Mr Linley for the Pump-room band; but the principal object which attracted him to that place was the advantageous situation of organist to the Octagon Chapel, which opened to him a profitable range of engagements at the concerts, the rooms, the theatre, and the oratorios, besides affording him an opportunity of obtaining many private pupils. This accession of employment, however, was so far from abating his propensity to study, that frequently, after the fatigue of twelve or fourteen hours occupied in professional avocations, he sought relaxation (for to him it was really such) in extending his knowledge of the pure and the mixed mathematics.

Some discoveries then recently made having awakened his curiosity, he next applied himself to the study of astronomy, and to that of the auxiliary science of optics, in which he laboured with indefatigable perseverance during every interval of leisure. Anxious to observe with his own eyes the wonders of which he had read, he borrowed from a neighbour in Bath a two-feet Gregorian telescope, which delighted him so much that he commissioned a friend in London to purchase for him one of larger dimensions. The price demanded, however, exceeded both his calculation and his means; but, far from being discouraged, he resolved to attempt with his own hands the construction of that complicated instrument which he had found himself unable to purchase; and in this, after successive disappointments, which served only to stimulate his exertions, he at length succeeded. In the year 1774, he had the inexpressible gratification of beholding the planet Saturn through a five-feet Newtonian reflector constructed by himself, and, with the prophetic instinct of genius, already discerned the path of discovery opening before him. Encouraged by this success, he extended his operations; constructed telescopes of seven, ten, and even twenty feet in length; and worked with such indefatigable perseverance that, in perfecting the parabolic figure of a seven-feet reflector, he finished two hundred specula before producing one which answered his purpose in a satisfactory manner. Becoming more and more attached to astronomy, he now limited his professional engagements, restricted the number of his pupils, and, about the end of the year 1779, commenced a regular survey of the heavens by means of a seven-feet reflector. In the course of his observations, which were continued during eighteen months, he remarked that a star, which had been recorded by Bode as fixed, was progressively changing its position; and prolonged attention to it enabled him to ascertain, beyond all doubt, that it was an hitherto undiscovered planet. Having determined the mean and periodic motions, and the orbit of this body, he communicated the particulars to the Royal Society, who, in return, awarded him their annual gold medal, and unanimously elected him a fellow. This important discovery he made on the 13th of March 1781, and, in compliment to the king of England, bestowed on the planet the name of *Georgium Sidus;* but the Continental astronomers chose to honour the discoverer by calling it *Herschel,* an appellation subsequently changed to that of *Uranus,* which was considered as more consistent with the received astronomical nomenclature.

This discovery at once established the fame of Herschel as an astronomical observer; and the king having bestowed on him a handsome salary, he was enabled to relinquish his profession as musician, and to devote the remainder of his life exclusively to astronomy. Accordingly he quitted Bath; and having fixed his residence first at Datchet and afterwards at Slough, he resumed the career of discovery on which he had so auspiciously entered. His first undertaking was to construct a telescope forty feet in length, which he completed in 1787; but this huge instrument disappointed the expectations he had formed from it; and it was by instruments of a more manageable size that he perused the great volume of the heavens, and derived from it new contributions to enrich the records of science. In these researches, and in the laborious calculations to which they led, he was assisted by his sister Miss Caroline Herschel, whose indefatigable assiduity and devotion in the performance of a task usually considered as incompatible with female habits excited equal surprise and admiration. The discoveries of Herschel were communicated, as they occurred, to the Royal Society, and constitute an important part of the printed transactions of that body during a period extending from 1782 to 1818. In 1783 he announced the discovery of a volcanic mountain in the moon; and four years afterwards he communicated an account of two other volcanoes in the same orb, which appeared to be in a state of eruption. In prosecuting his observations on the planet discovered by himself, he ascertained that Uranus was surrounded with rings, and had six satellites. Although the results obtained by means of the forty-feet telescope were not such as to realize the expectations he had formed, yet they were too considerable to justify the somewhat contemptuous allusion made to them by Lalande in his History of Astronomy. By means of this instrument he discovered the sixth and seventh satellites of Saturn; and in observing the quintuple belt of Saturn, he was enabled to demonstrate the length of its day, and to determine its diurnal rotation. Amongst the papers communicated by this great astronomer, was a memoir on the power of telescopes to penetrate into space, or to render sensible distant and faint objects, which would be imperceptible without the aid of such instruments; and his opinion was, that the greatest amplification cannot exceed that produced by a telescope of from twenty to twenty-five feet. In 1802, he presented to the Royal Society a catalogue of five thousand new nebulæ, nebulous stars, planetary nebulæ, and clusters of stars; preceded by a view of the sideral bodies composing the universe, in which he enumerated twelve species of stars that enter into the composition of the heavenly host.

By these and other scientific labours he established his claim to rank amongst the most eminent astronomers of the age, and amply merited the distinctions which were conferred on him. Oxford had previously done itself honour by bestowing on him the honorary degree of doctor of laws; and in 1816, George IV. then prince regent, invested him with the Hanoverian and Guelphic order of knighthood. Sir William Herschel did not relinquish his astronomical observations until within a few years of his death, which took place on the 23d of August 1822, at the advanced age of eighty-three. He expired full of years and honours, leaving behind him a considerable fortune, and, what is of far greater importance, a son who inherited his father's genius, under more favourable auspices for its early development, and who unquestionably ranks in the first class of the scientific men of his day. (A.)

Herschel, the name by which the French, and most other European nations, call the planet discovered by Dr Herschel in the year 1781. The Italians call it Uranus, and the British Georgium Sidus.

HERSE, in *Fortification*, a lattice, or portcullis, in the form of a harrow, beset with iron spikes. The word *herse* is French, and literally signifies *harrow;* being formed of the Latin *herpex* or *irpex*, which denotes the same thing. It is usually suspended by a rope fastened to a moulinet, to be cut, in case of surprise, or when the first gate is broken with a petard, that the herse may fall, and stop up the passage of the gate or other entrance of a fortress.

HERSFELD, a province of the principality of Hesse Cassel, in Germany, extending over 156 square miles, on an elevated plain, but watered by the river Fulda. It contains one city, one market-town, and sixty-two villages or hamlets, with 2885 houses, and about 19,000 inhabitants. The chief city, of the same name, is situated on the river Fulda, and is an open town, which was burnt by the French on their retreat from Leipsic, but has been since rebuilt. It contains 433 houses, and 5220 inhabitants, chiefly linen weavers and bleachers.

HERSILLON, in the military art, a sort of plank or beam, ten or twelve feet in length, two sides of which are driven full of spikes or nails, to incommode the march of the infantry or cavalry. The word is a diminutive of *herse;* the hersillon doing the office of a little herse.

HERSTAT, a town of the Netherlands, in the province of Liège, on the left bank of the Meuse. It is a place in which there are very large iron works, and near to it is abundance of coals. It contains 4710 inhabitants, chiefly employed in making ironmongery.

HERTFORD, a town, the capital of the county of the same name, twenty-one miles from London, on the river Lea. It is supposed to have been a town as early as the time of the Britons. The Saxon kings held their court at this place; and Alfred, to check the irruptions of the Danes, constructed a castle, the remains of which are still to be seen. It is a corporate town, governed by a mayor or high steward, a recorder, and nine aldermen, and two members are returned to parliament. Christ Hospital in London has here a branch of its establishment, in which 400 boys and sixty girls are educated. There are two parish churches, and several places of worship for the different dissenters from the establishment. The assizes and sessions being held here, brings some trade to the town; and there is a good market on Saturday, at which much corn, especially barley, is sold. The chief trade consists in converting barley into malt for the great breweries in the metropolis. The inhabitants amounted in 1801 to 3360, in 1811 to 3900, in 1821 to 4265, and in 1831 to 5247.

Hertford College. The design of this institution is to train up and qualify a race of youths, for filling in succession the various and important offices of government in our Indian empire. "To dispense justice to millions of people of various languages, manners, usages, and religions; to administer a vast and complicated system of revenue, through districts equal in extent to some of the most considerable kingdoms in Europe; to maintain civil order in one of the most populous and litigious regions in the world; these," says Marquis Wellesley, "are now the duties of the larger portion of the civil servants of the Company. The *senior merchants*, composing the courts of circuit and appeal under the presidency of Bengal, exercise in each of these courts a jurisdiction of greater local extent, applicable to a larger population, and occupied in the determination of causes infinitely more intricate and numerous, than that of any regularly constituted courts of justice in Europe. The senior or junior merchants employed in the several magistracies and courts, the writers or factors filling the stations of registrars, and assistants to the several courts and magistrates, exercise, in different degrees, functions of a nature purely judicial, or intimately connected with the administration of the police, and with the maintenance of the peace and good order of their respective districts." The marquis points out, in the same strong manner, the arduous duties of the several departments which the Europeans are required to perform in India; and sums up by saying, "that the civil servants of the East India Company can no longer be considered as the agents of a *commercial concern;* they are in fact the ministers and officers of a *powerful* sovereign; they must be viewed in that capacity with a reference, not to their nominal, but to their real occupations. They are required to discharge the functions of magistrates, judges, ambassadors, and governors of provinces, in all the complicated and extensive relations of those sacred trusts and exalted stations, and under peculiar circumstances, which greatly enhance the solemnity of every public obligation, and the difficulty of every public charge. Their duties are those of statesmen in every other part of the world; with no other characteristic differences than the obstacles opposed by an unfavourable climate, a foreign language, the peculiar usages and laws of India, and the manners of its inhabitants."

The system of education adopted holds a due medium between the strictness of our public schools and the laxity of the English universities. Upon being appointed, each youth must undergo an examination in Greek and Latin, and arithmetic, before the principal professors. This previous examination at once prevents persons from offering themselves who have not received the usual school education of the higher classes of society; and those who offer themselves, and are found deficient, are remanded till another period of admission. The lectures of the different professors in the college are given in a manner to make previous preparation necessary, and to encourage most effectually habits of industry and application. In their substance they embrace the important subjects of Classical Literature, the Oriental Languages, the elements of Mathematics and Natural Philosophy, the Laws of England, General History, and Political Economy.

On all the important subjects above enumerated, examinations take place twice in the year. These examinations are conducted upon the plan of the great public and collegiate examinations in the universities, particularly of Cambridge, with such improvements as experience has suggested. The questions given are framed with a view to ascertain the degree of progress and actual proficiency in each particular department on the subjects studied during the preceding term; and the answers, in all cases which admit of it, are given in writing, in the presence of the professors, and without the possibility of a reference to books. After the examination in any particular department is concluded, the professor in that department reviews, at his leisure, all the papers that he has received, and places, as nearly as he can, each individual in the numerical order of his relative merit, and in certain divisions implying his degree of positive merit. These arrangements are all subject to the control of the whole collegiate body. They require considerable time and attention, and they are executed with scrupulous care and strict impartiality.

The course of study continues two years, and commences at such an age that the students may be qualified to proceed to India by the time they are eighteen or nineteen years old; and having begun the study of the oriental languages, they are prepared to prosecute them in Calcutta, so as to proceed to their official appointments by the time they have attained the age of twenty or twenty-one.

Hertfordshire.

HERTFORDSHIRE, an inland English county, of great riches, derived principally from its vicinity to the metropolis of the British empire. It is bounded by Essex on the east, by Bedfordshire and Cambridgeshire on the north, by Buckinghamshire on the west, and by Middlesex on the south. Its extreme length is thirty-eight miles, and its greatest breadth twenty-eight miles. Its area is about six hundred and twenty square miles. It is divided into eight hundreds, and contained seventeen towns, 134 parishes, and 20,781 houses, at the time of the last survey.

The population, at the four decennial censuses, has been found to amount in 1801 to 97,577, in 1811 to 111,654, in 1821 to 129,714, and in 1831 to 143,300. Of these, the occupiers of land employing labourers were 1518, the occupiers of land not employing labourers 1679, labourers employed in agriculture 1470, those employed in manufactures 290, capitalists, bankers, &c. 1429, labourers not agricultural 2410, other males twenty years of age 1521, male servants 725, female servants 5512.

It is generally a level district, with gentle undulations, no part rising to the height of mountains, though Kingsworth Hill, the most elevated spot, is nine hundred feet above the level of the sea. Though beautifully diversified with ornamented woods, there are no extensive tracts of forest land. The intermixture of pasture and arable fields with the great number of gentlemen's seats, the pleasing rivulets and the shady hedges, give it a peculiar character of beauty. Notwithstanding the deficiency of forests, the abundance of trees, especially oaks of ancient growth, which the hedge-rows and parks display, gives a richness to the scenery which is not surpassed by that of any county in England.

The rivers of Hertfordshire are, *first*, the Lea, which rises in Bedfordshire, enters this county at Hide-mill, and passes by Ware to Hertford, where it becomes navigable. Near Hoddesdon it forms a junction with the Stort, and at length falls into the Thames a little below London. The Stort is navigable to Bishops Stortford, at the extremity of the county. In its course it receives the waters of the smaller streams of the Rib, the Quin, the Beane, the Maran, and the Kime. *Secondly*, the Colne, which rises on the borders of Middlesex, passes through the western part of the county, and falls into the Thames at Brentford. It receives in its course the Gade, the Bulborne, and the Ver or Meuse. This river, in some parts of its course, forms a part of the Grand Junction Canal for several miles, and, afterwards separating from it, continues its course in a parallel direction till it reaches its mouth. *Thirdly*, the Ivel, a river composed of the inferior streams of the Oughton, the Iliz, and the Pirral. These, when united, pass into Bedfordshire, and at length reach the German Ocean. The river formed by artificial means to supply the metropolis with fresh water, and called the New River, has its sources in various springs in the vicinity of Ware, and is rendered more copious by borrowing water from the river Lea, whose course is parallel to it for many miles. The New River enters Middlesex before it reaches the reservoir, from which by means of pipes it is distributed to the different houses of the metropolis. That extraordinary work, the Grand Junction Canai, passes through a great part of this county in its progress from its union with the other canals to its termination in London.

In almost every part of this county the subsoil is calcareous, consisting of two species, one a pure chalk, the other of a softer kind, mixed with portions of whitish clay, and provincially called marine. The superior soil does not contain any great varieties of species. It is generally a clayey loam, in some parts highly tenacious, and retentive of moisture; on the higher grounds it is frequently mixed with many surface stones. There are some sandy loams intermixed with gravel, and others with clay. Some of the parts on the side of Essex are very wet, and require expensive draining, as well as copious quantities of manure, to render them fruitful. In the neighbourhood of North Mims and Hatfield the soil is very sterile, mixed with many springs of a sulphureous or ferruginous nature, and only rendered productive by expensive improvements. Near Baldock, Hitchen, and King's Walden, the upper soil is of a chalky nature, occasionally mingled with other earths, but generally rather poor.

The greater part of Hertfordshire is a corn-bearing country. The proportion of meadow land, or good pasture, is very small, if those parts are excepted which are contiguous to the numerous gentlemen's seats with which the county abounds. There are indeed some very rich pastures on the banks of the river Stort, which extend from Hertford to Hockeril, on the borders of the river Lea, and near Rickmansworth, where they are watered by the Colne. The whole of the meadow land is susceptible of great improvement by irrigation; but the vicinity to the metropolis makes the streams of water so valuable to turn mills, that little of their contents can be afforded to assist agriculture. The rotation of crops on the arable lands is very various, as may be supposed where the soil is so different. The most common course is turnips, barley, clover, wheat, and oats. In the districts where the soil is of a more tenacious consistence, fallows are very generally used for a whole year, and followed by barley, clover, wheat, and peas or beans. The average quantity of wheat sown is two bushels and a half to the acre; of barley, from three and a half to four bushels; and of oats, from four to five bushels. The average produce is, wheat from twenty-three to twenty-five bushels, barley thirty-two, and oats from thirty-eight to forty.

The drill husbandry is very partially introduced, and, from the nature of the soil, does not appear very likely to make any very rapid or extensive progress. It is found beneficial for pulse crops; but its superiority for barley, wheat, and oats, does not appear to be generally recognised. The ploughs now commonly used are small, and have almost superseded the use of the great Hertfordshire ploughs, which required four strong horses to use them with effect. In a great part of the country oxen are used in the plough, and frequently in the waggons; in the latter case they are shod with light iron shoes.

The principal cause of the productiveness of this county arises from its vicinity to the metropolis, and the facility with which abundance of the substances adapted to improve the soil can be furnished, by means of the water carriage, which is extensive. On the land, below the surface, chalk is everywhere found; and this, laid on at the rate of a hundred cart-loads to the acre, improves the heavy lands in a wonderful degree; but the manures brought as back carriage by the barges from London are diffused and applied in a very liberal manner. Soot is spread at the rate of thirty or forty bushels to the acre, ashes from fifty to one hundred bushels to the acre, and ground bones from four to five chaldrons, on the same extent of land. For the pastures, burnt bones are deemed preferable, but for arable land they are merely boiled and crushed. Oil-cake, peat-ashes, hair, woollen rags, and other substances, are much employed. In addition to these, the use of the sheep-fold, and the application of farm-yard dung, are as universal as in any part of the island.

In the south-west part of the county there are many orchards of apples and of cherries; the former the most considerable and the most profitable to the growers, from being less expensive to gather, and bearing carriage to London better than cherries. The cherry trees are in full bearing after being planted ten years, and on an average yield about six hundred pounds of cherries annually.

They are usually inferior to those of Kent, and sell for much less in the markets. Each cherry tree is usually allowed nine square perches of ground. The size of the orchards, whether for apples or cherries, is usually four or five acres.

As this is a corn country, less attention is paid to the breeds of cattle than in some others. The cows are either of the Welsh, Devon, Suffolk, or Herefordshire races; the Suffolk breed is generally preferred. The sheep are mostly breeding ewes of the South Down or Wiltshire kind; the former are deemed the most profitable. Of late a species of sheep, from crosses between those of Leicestershire and those of the Cotswold Hills, has been extensively and beneficially propagated. Oil-cake is very extensively used for feeding sheep. The horses commonly employed for agricultural purposes are of the Suffolk kind; for their sustenance, as well as for that of sheep and cows, great tracts of land are cultivated with both kinds of tares, and with clover.

The landed property in Hertfordshire is so much divided that there are few great proprietors, and none so large as in many other counties; few rentals of individuals exceed L.3000 per annum. A large portion of the county is copyhold tenure, with fines in some instances fixed, and in others, such as the lords of the manors and the copyholders can agree upon. The farming buildings are generally neat, convenient, and substantial.

Though principally an agricultural county, yet Hertfordshire has several manufactures which give employment to the poor. In the western and northern part of the county the making of thread-lace gives occupation to the females. On the side towards Bedfordshire the plaiting of straw to make hats employs considerable numbers both of women and children. There are silk mills at St Albans, and mills for spinning cotton at Rickmansworth. Some of the finest writing paper is made at Two-waters by mills on the Colne and the Bulborne. Great quantities of malt are made at Ware, Hertford, Bishops Stortford, and other parts of the country; and the makers of it, as well as the numerous millers, have the advantage of water conveyance to the metropolis. As little wood is used for firing, the barges that convey malt and flour to London bring back coals, or, when they are not wanted, are loaded with manure. These articles form the principal trade of the county.

A portion of the children of Christ Hospital, in London, are sent to Hertford at an early period of their entrance on that foundation. The building appropriated for this purpose forms three sides of a triangle, at the east end of the town, and contains apartments for 500 children, their master, and attendants.

This county abounds with many antiquities. The most striking is the Abbey of St Albans, a most beautiful Gothic pile, said to have been founded in honour of the first British martyr, in the year 303, upon the site of the ancient Verulam. The vicinity of this abbey was the theatre of many bloody battles during the wars of the rival houses of York and Lancaster. Lord Bacon was buried, not in the abbey, but in St Michael's Church, near it, where his monument is still in good preservation. The ruins of Sopwell Nunnery, near St Albans; the remains of Gorhambury Abbey; the Roman Camp at Ravensborough; the Cross at Waltham; the church at Kings Langley; and the castles of Anstey, of Bennington, of Hertford, and Bishops Stortford, all invite and gratify the attention of the antiquary.

By the law of 1832 this county returns three members to the House of Commons; the number of voters is about 4200; and the polling places are Hertford, Stevenage, Buntingford, Bishops Stortford, Hoddesdon, Hatfield, and Hemel Hempstead. The two boroughs Hertford and St Albans return, as before, two members each.

The principal towns and their population are, Hertford, 5247; St Albans, 4772; Hitchen, 5211; Ware, 4214; Hemel Hempstead, 4759; Rickmansworth, 4574; Bishops Stortford, 3958; Watford, 2960; Berkhampsted, 2819; Standon, 2272; Tring, 3488.

HERTHA, or Herthus, in *Mythology*, a deity worshipped by the ancient Germans, and mentioned by Tacitus, in his book *De Moribus Germanorum* (c. 40). Vossius conjectures, that this goddess was Cybele; but she was more probably Terra, or the Earth, because the Germans still use the word *hert* for the earth, whence also the English word *earth*.

HERVEY, James, a divine of the church of England in the eighteenth century, and a writer of great popularity amongst a certain class of persons, was born at Hardingstone in the year 1714. He was educated at the free grammar school of Northampton, where he acquired a competent knowledge of the Greek and Latin languages; and in 1731 he was sent to the university of Oxford. The first two or three years of his residence at that seminary were spent, we are told, without serious application to study, and therefore without making much improvement; but afterwards becoming acquainted with those who zealously studied what they called primitive Christianity, and who were afterwards termed *Methodists*, he became strongly attached both to piety and to learning. Independently of his other studies, he learned anatomy from Dr Keil, and natural philosophy from Dr Derham's Physico and Astro-theology; and by the perusal of Mr Spence's essay on Pope's Odyssey, he improved his style. He attempted the Hebrew without a teacher, but afterwards relinquished the study in despair; he resumed his labours, however, and in time became a tolerable proficient in that language. In the year 1740 he was appointed curate of Biddeford in Devonshire, where he had only L.60 a year, including a stated collection made by his friends. Upon the death of the rector he was dismissed by the new incumbent, contrary to the earnest expostulation of the parishioners, who offered to maintain him independently of the rector. In 1743 he became curate to his father, who held the living of Weston Favell in Northamptonshire, and continued in that station till 1750, when his health was rapidly declining. Having been induced to repair to London for change of air, he continued about two years in the metropolis, when he was recalled to Weston Favell to succeed his father. He obtained the livings of Weston and Collingtree in the same neighbourhood, and in 1752 took his degree of master of arts. He attended to the duties of both parishes alternately with a curate, in the discharge of which he was fervent and indefatigable. So great were his exertions, indeed, that he brought on a decline, accompanied with incessant cough and acute pains, all which he supported, not only with fortitude, but without a single expression of peevishness, and died without a groan on the 25th of December 1758, at the age of about forty-four. His piety was ardent and sincere, although in the estimation of some judges he was rather enthusiastic. He was a man of unblemished moral deportment; his temper was disinterested, and he was humble without the affectation of humility. To society he was just and punctual, and candid to people of every description. The L.700 which he received for his *Meditations* were applied to the relief of the indigent and distressed. He was so rigid a Calvinist, that whenever he spoke of imputed righteousness, he became almost an Antinomian. His erudition was respectable, but not such as to place him amongst scholars of the first rank, although he seems to have been well acquainted with the classics. Many persons have admired the style of his writings; but competent judges must pronounce it as by far too flowery and diffuse to be termed elegant, and regard it as equally destitute of vigour and simplicity. The writings of Hervey are, 1. Meditations and Contemplations, 1746, 8vo; 2. Contemplations on the Night and Starry

Heavens, 1747, in 8vo; 3. Remarks on Lord Bolingbroke's Letters on the Study of History, so far as they relate to the History of the Old Testament, 1753, in 8vo; 4. Theron and Aspasio, or a series of Dialogues on the most important Subjects, 1755, in three vols. 8vo; 5. Sermons, 1759; 6. An Edition of Jeuk's *Meditations;* 7. A Preface to Burnham's *Pious Memorials*, 1753, in 8vo; 8. Eleven Letters to Wesley; 9. Letters to Lady Francis Shirley, 1782, in 8vo. All these are included in the edition of his works in six vols. 8vo, published by the Rivingtons; but, in 1811, there appeared, for the first time, what may be considered as a seventh volume, consisting of Letters, illustrative of the author's amiable character, and of many circumstances in his early history.

HERZBERG, a town of the kingdom of Hanover, the capital of a bailiwick of the same name, in the province of Grubenhagen, on the river Sieben. It stands at the foot of the Hartz Mountains, and contains 321 houses, with 2720 inhabitants, employed in cotton and linen weaving, and in making paper.

HESBIN, a city of France, in the arrondissement of Montreuil, and department of Calais. It stands at the junction of the river Canche with the Ternaise, in a marshy situation, and is strongly fortified. It contains 938 houses, and 4160 inhabitants, who produce hosiery and cotton goods, and have some twist mills. Long. 2. 3. E. Lat. 50. 22. N.

HESIODUS *of Ascra*, a celebrated poet, the son of Dius and Pycimede, of whose life and character history has left us very few particulars on which dependence can be placed. His father was a native of Cumæ, in Æolis, where he seems to have lived in the greatest indigence. Anxious to improve his circumstances, he emigrated with his son Perses to Ascra, a small village of Bœotia, at the foot of Mount Helicon, and there it would appear that Hesiod was born. The early years of the poet were spent in the mountains of Bœotia, in the humble capacity of a shepherd; and how he acquired the learning which he displays in his poetry, we have no means of discovering. On the death of his father, he engaged in a law-suit with his brother respecting the property left by his father; and he speaks with great contempt and bitterness of the dishonest conduct pursued by the judges of Ascra. They gave judgment against him, and in consequence of this he left his native city. He probably retired to the country of the Locri Ozolæ, where, at last, he met with a tragical end. It so happened that Demodes of Miletus, a friend of Hesiod, ill treated Climene, the daughter of the Locrian with whom Hesiod was residing; and as her brothers Amphiphanes and Ganyctor believed the poet to be accessory to, if not an active partner in, the disgraceful transaction, they put him to death on the spot where they overtook him. Hesiod had been ordered by an oracle to avoid Nemea, as likely to prove fatal to him, which the poet naturally imagined to allude to the city of that name in the Peloponnesus; but the true meaning of the oracle was discovered by his being slain in the portico of the temple of the Nemean Jupiter, near Œneon, within the territory of Naupactus. His body had been thrown into the sea, but being recovered in an extraordinary manner, was buried within the precincts of the temple. It was afterwards transferred to Orchomenos by order of an oracle, to avert a plague which afflicted the inhabitants of that city.

The period during which he flourished was a point disputed by the ancients, and we have no facts of a later date which can enable us to come to a correct conclusion. He is described by Herodotus as contemporary with Homer; and this must have been the tradition followed by the author of the contest between Hesiod and Homer, in which the former is supposed to gain the victory. Velleius Paterculus represents him as having lived more than a century after Homer, whilst others have endeavoured to prove that he preceded that poet.

Of the numerous works attributed to Hesiod only three have been preserved, and these not in the most perfect state. The Works and Days is considered as the most valuable, not so much from its own intrinsic merit, as from having suggested to Virgil the idea of the Georgics; and to it also we are indebted for the description of the five ages, and the fable of Pandora. It contains at the beginning a collection of moral maxims and wise saws, and then proceeds to give some superficial hints on agriculture, on the proper season for each work, and on the construction of vessels; it closes with many puerile observations, and with an account of some superstitious practices. This was the only work of Hesiod which the Bœotians allowed to be authentic, and it was regarded with such veneration that they had it engraved on a leaden tablet, which they showed to Pausanias. The *Theogonia* is a didactic poem on the generation of the gods, and is curious as being the most ancient account of the Greek mythology. To it we probably owe the Metamorphoses of Ovid. The *Aspes* of Hercules contains an account of a battle between that hero and Cycnus, and derives its title from the shield having been made by Vulcan. It is ascribed to Hesiod by Athenæus, though probably without any sufficient reason. There are many other works quoted by the ancients, but not even a fragment of them has been preserved. Many editions of the works of Hesiod have been published, but the best are those of Gaisford, Oxford, 1814–1820; Dindorf, Leipsic, 1825; and Gottlingius, Gotha, 1831.

HESIONE, a daughter of Laomedon, king of Troy, who was exposed to a sea monster which had been sent by Neptune to ravage the coast of Troy, as a punishment to the king for having defrauded the god of his stipulated reward. Hercules, who was then accompanying the Argonauts, delivered the princess, slew the monster, and received as a reward six beautiful horses. Besides, Hesione from gratitude agreed to follow him. He left the princess and the horses with Laomedon till he should return from the expedition. When Hercules sent his friend Telamon to reclaim his property, Laomedon refused to give them up. Incensed at this treachery, the hero laid siege to Troy, killed the perjured king, carried off Hesione, and gave her in marriage to Telamon.

HESPER, HESPERUS, in *Astronomy*, the evening star; an appellation given to Venus when she follows or sets after the sun. The word is formed from the Greek 'Εσπερος, and is supposed to have been originally the proper name of a man, brother of Atlas, and father of the Hesperides.

HESPERIDES, nymphs who possessed a garden, in which grew the golden apples given by Jupiter to Juno on the day of her marriage. They were Ægle, Erythia, Vesta, and Arethusa. The garden was guarded by a dragon called Ladon, and is generally placed near Mount Atlas in Africa. It was one of the labours of Hercules to procure some of these apples. He persuaded Atlas to go in search of them, whilst he sustained the burden of the heavens on his shoulders. On his return with the apples, Hercules expressed a wish to ease his head by placing something on it, and when Atlas assisted him to remove this inconvenience, Hercules artfully left the burden, and seized the apples. According to others, Hercules slew the dragon and gathered the apples himself, without the assistance of Atlas. According to Diodorus, they were the same as the Atlantides, being called Hesperides from their mother Hesperis, the wife of Atlas; and they were the keepers of flocks of sheep, the Greek word μηλον signifying either a *sheep* or an *apple*.

HESPERIDUM INSULÆ, in *Ancient Geography*, islands near the *Hesperi Cornu*; but the accounts of them are so much involved in fable, that nothing certain can be affirmed respecting them.

HESPERUS, in fabulous history, son of Cephalus by Aurora, was changed into a star, called *Lucifer* in the morning, and *Hesperus* in the evening.

HESSE, a principality in Germany, commonly distinguished by the name of Hesse-Cassel. It was formerly a landgraviate, but, by the extinction of the Germanic empire, it lost that title, and the sovereign is now only called the prince or crown prince (*Kurfurst*). It is comprehended between long. 8. 26. and 9. 26. east, and lat. 49. 56. and 52. 26. north. The boundaries are, on the north-west the Prussian province of Westphalia; on the north-east the kingdom of Hanover; on the east the Prussian province of Saxony, the duchy of Saxe-Weimar, and the kingdom of Bavaria; on the south-east Bavaria; on the west Hesse-Darmstadt and the territory of Frankfort; and on the south-west Darmstadt and Waldeck. It extends over 4556 square miles, and has been recently divided into four provinces.

Provinces.	Extent in Square Miles.	Population.
Lower Hesse......	2156	296,410
Upper Hesse......	902	106,942
Fulda..............	904	121,957
Hanau..............	594	104,600
	4556	629,909

It contains 95 cities and towns, 1112 villages, and 95,666 houses. The largest cities and their populations are as follows:—

Cassel....................	26,342
Hanau.....................	13,792
Fulda.....................	9,266
Marburg..................	7,640
Hersfeld.................	6,144

The reigning family profess the Reformed or Calvinistic religion, and the greater part of the inhabitants adhere to that sect. In 1812 they were found to be 330,000 Reformed, 140,000 Lutherans, 90,000 Catholic, and the remainder Jews, Menonites, and Herrnhutters.

The institutions for education are inferior to those of any other state in Germany. There is a university at Marburg with no less than thirty-four professors, and only 200 students, and a lyceum at Cassel. There are grammar schools in some of the other cities, and a seminary for educating Catholic priests at Fulda. The whole of the territory is rather hilly, and towards the south may almost be described as mountainous; but it is watered by abundant streams, which flow in plains, the descent to which, from the hills, is very gradual, and thus forms extensive and moderately fruitful valleys. The several smaller rivers contribute their portion of waters to form the greater rivers; the Weser, which runs to the sea by Bremen; and the Maine and the Lahn, which fall into the Rhine.

The agriculture of the territory is far inferior to that of the adjoining provinces of Hanover, Brunswick, and Prussian Saxony. The number of cattle, and the consequent supply of manure, are in a low state, and recourse is had to fallows every third year. Though almost the whole population are occupied in cultivation, scarcely sufficient corn, though aided by potatoes, is grown for the inhabitants. Some wine is made in the province of Hanau, and in Isenburg. Hemp is raised in Hanau, and flax in a greater or less degree in each of the provinces. These two articles, with the wood from the forests, form the chief articles of export, which also in part consist of honey and wax. There are some mines of copper, in which silver is found; some productive mines of cobalt and iron are also worked, and, by means of coal, which is likewise at hand, supply the necessary demand for utensils. The manufactures are very inconsiderable, except for domestic uses. Coarse linens, called Hessens, were formerly sent to England for packing cloths, but of late years that trade has ceased. In Cassel and Hanau there are workmen in gold, silver, and jewellery; in cutlery, paper, snuff, glass, pottery, and other branches of industry, but solely for internal consumption.

The prince is the sole executive governor, and promulgates the laws without the aid or assent of the states, who meet rather for form than for business. The annual revenues of Hesse-Cassel amount to L.450,000 sterling, of which about L.65,000 arises from the patrimonial estates of the sovereign. The expenditure is not accurately known, but it is estimated, including the interest of the debt, to be somewhat beyond the income. The amount of the national debt is about L.200,000, but the several provinces have also their respective debts. There is a sinking fund for the gradual discharge of the debts.

The standing army, formerly of 30,000 men, is reduced to the following state: 7000 infantry, 1315 cavalry, 670 artillery, 200 invalids in garrisons. The contingent of the state to the confederation is 5679 men. The accessions to this state, since the peace of Luneville in 1801, have amounted, after the cessions made in exchange, to 720 square miles; and it is now of nearly double the extent which it contained when the house of Hesse was divided into the two branches of Cassel and Darmstadt in 1567.

HESSE-DARMSTADT, a grand duchy of Germany. This dominion is not compact, but consists of two portions of nearly equal extent, and of several smaller detached parts, and is on both sides the river Rhine. The southern portion is bounded on the north-west by Nassau, on the north by Frankfort and Hesse-Cassel, on the north-east and east by Bavaria, on the south by Baden, on the south-west by Bavaria, and on the west by Prussia. The northern portion, some parts of which are separate from the others, is enclosed in the territory of Waldeck and of Nassau, and some are surrounded by Prussia, whilst others are in contact with Frankfort and with Hamburg. The whole extent is 4070 square miles, and it is divided into the following provinces, viz.

Provinces.	Extent in Square Miles.	Population.	Capitals.
Starkenburg....	1430	247,152	Darmstadt.
Rhenish Hesse.	550	177,721	Mayence.
Upper Hesse...	2090	273,028	Giessen.
	4070	697,901	

According to the returns of 1826, the duchy contained 97 cities, 56 market-towns, and 2136 villages, with 99,203 houses. The religious denominations in 1822 were: Lutherans 391,185, Catholics 157,792, Calvinists 108,255, Jews 14,982, and Menonites 986. Although the population has greatly increased since that date, the proportion of the several sects to each other is not supposed to have been altered, the numbers of the clergy continuing the same, viz. 686 Lutherans, 166 Catholics, and 126 Calvinists. This is one of those states the territory of which has been augmented by the events of the revolutionary wars, having increased between the peace of Luneville in 1801 and the year 1816, to more than double its former extent.

Hesse-Darmstadt.

The whole of the territory is rather mountainous. None of the elevations, however, exceeds 2000 feet; but in the southern division, where the majestic Rhine breaks through the land, there are on both its sides extensive plains, rich and fertile, and in the northern part, near the Maine, some moderately large valleys. It is generally a well-watered country. Its streams empty themselves into the sea by the Rhine and the Weser. The first of these rivers receives the waters of the Pfrim, the Selze, the Nahe, the Neckar, the Maine, and the Lahn; the latter only the streams of the Altfell, the Schwalm, and the Eber. Few districts of the same extent have a greater variety of climate. In the neighbourhood of the Rhine and the Maine it is mild and agreeable, the winter is short, the summer warm, and the air generally dry. The hay harvest begins early in June, the corn harvest in the middle of July, and the vintage in the latter part of September. On the Odenwald, on the other hand, the climate is raw and cold, the spring begins later, and the fruits ripen several weeks later.

Considering that the ancient rotation of a fallow succeeded by two corn crops is commonly adhered to, the land is productive of corn; but rye is the greatest crop in extent, though some good wheat is grown. Fruit is very abundant, but in general little selection is made of the best kinds of each. Apples, pears, plums, almonds, and chestnuts abound. Wine is, next to corn, the most important production, and the annual value of what is raised is estimated to amount to about half as much as that of the grain. The breeds of cattle present nothing remarkable; the cows are tolerable, the sheep not numerous, and the horses rather few; no pains being taken to improve the races. Wood is an important article, because it can be easily conveyed from the forests by the Maine and the Rhine to the great market for that commodity in Holland.

The mineral wealth consists of the produce of some iron and copper mines, in the latter of which cobalt is found; but the quantity of these articles is insufficient for the consumption. The manufactures of Hesse-Darmstadt consist chiefly in working up the raw materials of wool, flax, and iron, into articles for internal consumption; and, besides these, there are small establishments for making paper, glass, copper, and iron; whilst the people in the more barren parts are industrious and ingenious in making a variety of toys and wood utensils.

The chief articles of export are winter and summer barley, wine, tobacco, rape oil, dried fruits, madder, clover-seed, wood, honey, wax, and feathers. These are given in exchange for colonial goods, generally conveyed from the ports of Holland, and in articles of dress and furniture, brought from France or from the Netherlands.

Education is well attended to. In the university of Giessen there are 480 students; there is a medical school at Mayence, and a gymnasium in Darmstadt, Mayence, and Worms, and village schools in all parts, excepting on the west bank of the Rhine, which was so long possessed by the French.

The government is hereditary: the grand duke is addressed as his Royal Highness, and till 1820 was an unlimited sovereign. In that year a representation was introduced, divided into two chambers, who concur with the sovereign in the formation of new laws.

The revenues of the state amount to L.587,600 sterling, of which domains and royalties of the prince yield L.150,000, and the remainder is derived from direct and indirect taxes. The expenses, including interest on the public debt, are nearly equal to the income. The debt is about L.1,430,000, and the interest on it is L.68,190. The army consists of 1380 cavalry, 5880 infantry, 650 artillery, and 660 gens-d'armes, in all 8421. The contingent which Hesse-Darmstadt is bound to furnish to the Germanic confederation is 6195 men.

Hesse-Homburg, a small independent principality in Germany, under the government of a prince of the family of Hesse-Darmstadt. Towards the west it is bounded by the territory of Nassau, but on all the other sides by that of Hesse. It has, however, a part of its possessions to the west of the Rhine, surrounded by the provinces of Prussia, of Bavaria, and of Lichtenburg. The whole extent of both divisions is 170 square miles. It contains three cities or towns, thirty villages, twenty-seven hamlets, with 3250 houses, and 20,400 inhabitants, of whom 12,700 are Calvinists, 5500 Lutherans, 2050 Catholics, and a few Jews. It is divided into two provinces, viz. Homburg on the east, and Meisenheim to the west of the Rhine. The latter is the largest division. They are both well cultivated, and yield a surplus of corn, wool, flax, and wood; and Meisenheim grows some good wine, and has coal-pits, by which it is enabled to carry on some manufactures of glass and of ironmongery goods. The revenues of the state amount to about L.18,000 sterling, besides some estates of the sovereign, of L.3500, arising from private estates in the Prussian province of Saxony. The debt of the state is about L.45,000, which is gradually lessening. Homburg furnishes a contingent of two hundred men to the general confederation. Homburg, the capital, and the residence of the prince, is situated on the river Eschbach, and is overlooked by the palace, from whence is a most extensive prospect. It contains a church for each of the religious sects, and a synagogue for Jews, with 388 houses, and 2964 inhabitants, who find occupation in making flannels, linen goods, and hosiery, and in supplying fruit to the market of Frankfort.

HESTON, a parish in the hundred of Islesworth, of the county of Middlesex, ten miles from London, the chief part of which consists of the town of Hounslow, through which the great roads to the western counties pass. The inhabitants amounted in 1801 to 1782, in 1811 to 2251, in 1821 to 2810, and in 1831 to 3407.

HESYCHIUS, the most celebrated of all the ancient Greek grammarians whose works are now extant, was a Christian; and, according to some, the same with Hesychius, patriarch of Jerusalem, who died in the year 609. He wrote a Greek lexicon, which, in the opinion of Casaubon, is the most learned and useful work of that kind produced by the ancients. Schrevelius published a good edition of it in 1668, in 4to, with notes; but the best is that of John Alberti, printed at Leyden in 1746, in two vols. folio.

HETERIARCH, Hetæriarcha, in *Antiquity*, an officer in the Greek empire. There were two kinds of heteriarchs; the one simply so called, and the other denominated *great heteriarch*, who had the direction of the former. The principal function of these officers was to command the troops of the allies.

HETEROCLITE, in *Grammar*, an irregular or anomalous word, which, either in declension, conjugation, or regimen, deviates from the ordinary rules of grammar. The word is Greek, ἑτεροκλιτον, formed from ἑτερος, *alter*, another, different, and κλινω, I decline. Heteroclite is more peculiarly applied to nouns which vary or are irregular in point of declension.

HETERODOX, in *Polemical Theology*, something which is contrary to the faith or doctrine established in the true church. The word stands in opposition to *orthodox*.

HETEROGENEITY, in *Physics*, the quality or disposition which renders a thing *heterogeneous*. The word is also used for the heterogeneous parts themselves; in which sense the heterogeneities of a body are the same thing with its impurities.

HETEROGENEOUS, or Heterogeneal, literally imports something of a different nature, or which consists of parts of different or dissimilar kinds; in opposition to *homogeneous*.

HETEROGENEOUS *Light* was defined by Sir Isaac Newton to be that which consists of rays of different degrees of refrangibility. Thus the common light of the sun or clouds is heterogeneous, being a mixture of all sorts of rays.

HETEROGENEOUS *Nouns*, one of the three variations in irregular nouns, or such as are of one gender in the singular number, and of another in the plural. Heterogeneous nouns, under which are comprehended mixed nouns, are sixfold: 1. Those which are of the masculine gender in the singular number, and neuter in the plural; as, *hic Tartarus, hæc Tartara:* 2. Those which are masculine in the singular number, but masculine and neuter in the plural; as, *hic locus, hi loci et hæc loca:* 3. Such as are feminine in the singular number, but neuter in the plural; as, *hæc carbasus, et hæc carbasa:* 4. Such nouns as are neuter in the singular number, but masculine in the plural; as, *hoc cœlum, hi cœli:* 5. Such as are neuter in the singular, but neuter and masculine in the plural; as, *hoc rastrum, hi rastri, et hæc rastra:* And, 6. Such as are neuter in the singular, but feminine in the plural number; as, *hoc epulum, hæ epulæ*.

HETEROGENEOUS *Quantities* are those which are of such different kind that one of them, taken any number of times, never equals or exceeds the other.

HETEROGENEOUS *Surds* are such as have different radical signs: as $\sqrt{aa}$, and $\sqrt[3]{bb}$; $\sqrt[5]{9}$, and $\sqrt[7]{19}$.

HETEROSCII, in *Geography*, a term of relation, denoting such inhabitants of the earth as have their shadows falling but one way.

HETRURIA. See ETRURIA, and ETRUSCANS.

HETTOWRA, a town of Hindustan, in the Napaul territories, and the centre of all commerce carried on between the Napaul dominions and those of Oude and the Company. It is situated on the Rapti river, and is a miserable village, consisting only of about sixty houses. Long. 85. 22. E. Lat. 27. 14. N.

HEUSDEN, a city of the Netherlands, in the province of North Brabant. It is strongly fortified, commands the navigation of the river Maas, and contains 280 houses, with (in 1830) 1834 inhabitants.

HEVELIUS, or HEVELKE, JOHN, an eminent astronomer, was born at Dantzig on the 28th of January 1611. He studied in Germany, England, and France, and everywhere obtained the esteem of the learned. He was the first who discovered a kind of libration of the moon, and made several important observations on the other planets. He also discovered several fixed stars, which he denominated the *Firmament of Sobieski*, in honour of John III. king of Poland. His wife was also skilled in astronomy, and made part of the observations published by her husband. In 1673 he published a description of the instruments with which he made his observations, under the title of *Machina Cœlestis*, and in 1679 he published the second part of this work; but in September the same year, whilst he was at a seat in the country, he had the misfortune to have his house at Dantzig burnt down. By this calamity he is said to have sustained a loss of several thousand pounds; for not only were his observatory and all his valuable instruments and apparatus destroyed, but also a great number of copies of his *Machina Cœlestis;* an accident which has rendered the second part very scarce, and consequently very dear. Hevelius died on the 28th of January 1687, his birth-day, at the age of seventy-six. He was a man greatly esteemed by his countrymen, not only on account of his skill and reputation in astronomy, but as an excellent and worthy magistrate. He was appointed a burgomaster of Dantzig; an office which he executed with the utmost integrity and approbation. He was also highly esteemed by foreigners, not only by those who were skilled in astronomy and the sciences, but by foreign princes and potentates; as appears from a collection of their letters to him, which was printed at Dantzig in the year 1683. The printed works of Hevelius are, 1. Selenographia, Dantzig, in folio; 2. Letters to Eichstadt on an Eclipse of the Moon, to Gassendi and to Boulliau on an Eclipse of the Sun, 1649, and to Riccioli on the Libration of the Moon; 3. Letter to Nucerius on Eclipses, 1654; 4. De Nativa Saturni Facie, 1656; 5. Mercurius in Sole visus, 1662; 6. Historia miræ Stellæ in collo Ceti, 1662; 7. Prodromus Cometicus, Descriptio Cometæ, Mantissa Prodromi Cometici, 1665 and 1666, in folio; 8. Cometographia, 1668, in folio; 9. Machina Cœlestis, pars prior, 1673; 10. Epistola de Cometa anni 1672, Id. anni 1677, in 4to; 11. Machina Cœlestis, pars posterior, 1679; 12. Annus Climactericus sive Observationum quadragesimus nonus, 1685. The posthumous works of Hevelius are, 1. Prodromus Astronomiæ, 1690; 2. Uranographia seu Firmamentum Sobescianum, 1690; together with Excerpta ex Litteris illustrium et clariss. Virorum ad Jo. Hevelium perscriptis, judicia de rebus astronomicis ejusdemque scriptis exhibentia, Dantzig, 1684, in 4to.

HEWSON, WILLIAM, a very ingenious anatomist, was born in 1739. He became assistant to Dr Hunter, and afterwards entered into partnership with him; but on their disagreement, he read anatomical lectures at his own house, in which he was seconded by Mr Falconer. He wrote Inquiries into the Properties of the Blood, and the Lymphatic System, 2 vols.; and disputed with Dr Monro the discovery of the lymphatic system of vessels in oviparous animals. Hewson died in 1774.

HEXACHORD, in ancient music, a concord called by the moderns a sixth.

HEXAGON, in *Geometry*, a figure of six sides and angles; and if these sides and angles be respectively equal, it is called a regular hexagon.

HEXAHEDRON, in *Geometry*, one of the five platonic bodies, or regular solids, being the same with a cube.

HEXAMETER, in ancient poetry, a kind of verse consisting of six feet, the first four of which may be indifferently either spondees or dactyles; while the fifth is generally a dactyle, and the sixth always a spondee.

HEXAPLA (formed from ἑξ, *six*, and ἁπλοω, *I open, I unfold*), in *Ecclesiastical History*, a bible disposed in six columns, containing the text, and different versions thereof, compiled and published by Origen, with a view to secure the sacred text from future corruptions, and to correct those which had been already introduced.

Eusebius relates that Origen, after his return from Rome under Caracalla, applied himself to learn Hebrew, and began to collect the several versions which had been made of the Sacred Writings, and from these to compose his Tetrapla and Hexapla; others, however, are of opinion that he did not begin till the time of Alexander, after he had retired into Palestine, about the year 231.

To understand what this Hexapla was, it must be observed that, besides the translation of the Sacred Writings, called the Septuagint, made under Ptolemy Philadelphus, about 280 years before Christ, the Scriptures were translated into Greek by other interpreters. The first of these versions, or, reckoning the Septuagint, the second, was that of Aquila, a proselyte Jew, the first edition of which he published in the twelfth year of the emperor Hadrian, or about the year of Christ 128; the third was that of Symmachus, published under Marcus Aurelius, or, at least, under Septimius Severus, about the year 200; the fourth was that of Theodotion, prior to the version of Symmachus, which appeared under Commodus, or about the year 175. These Greek versions, says Dr Kennicott, were made by the Jews from their corrupted copies of the Hebrew, and were designed to stand in stead of that by the Seventy, against which they were prejudiced, because it seemed to favour the Christians. The fifth was found at Jericho, in the reign of Caracalla, about the year 217; the sixth was discovered at Nicopolis, in the reign of Alexander Severus; and Origen himself recovered part of a seventh, containing only the Psalms.

Now Origen, who had held frequent disputations with the Jews, both in Egypt and in Palestine, having observed that they always objected against those passages of Scripture quoted against them, and appealed to the Hebrew text; in order the better to vindicate those passages, and to confound the Jews by showing that the Seventy had given the sense of the Hebrew, or rather to show by a number of different versions what the real sense of the Hebrew was, he undertook to reduce all these several versions into a body along with the Hebrew text, so that they might easily be confronted, and thus afford a mutual illustration.

He made the Hebrew text his standard; and allowing that corruptions might have taken place, and that the old Hebrew copies might and did read differently, he contented himself with marking such words or sentences as were not in the Hebrew text, nor in the later Greek versions, and adding such words or sentences as were omitted in the Seventy, prefixing an asterisk to the additions, and an obelisk to the others.

With this view he made choice of eight columns, in the first of which he gave the Hebrew text in Hebrew characters; in the second the same text in Greek characters; whilst the rest were filled with the several versions above mentioned, all the columns answering verse for verse, and phrase for phrase; and in the Psalms there was a ninth column for the seventh version.

This work of Origen was called 'Εξαπλα, *Hexapla*, or work of six columns, as regarding only the first six Greek versions. But Epiphanius, taking into account the two columns of the text, calls the work *Octapla*.

This celebrated work, which, Montfaucon imagines, consisted of fifty large volumes, perished long ago, probably with the library at Cæsarea, where it was preserved in the year 653; though several of the ancient writers have preserved fragments of it, particularly St Chrysostom on the Psalms, and Philoponus in his Hexameron. Some modern writers have earnestly endeavoured to collect fragments of the Hexapla, particularly Flaminius Nobilius, Drusius, and Montfaucon.

HEXASTYLE, in *Architecture*, a building with six columns in front.

HEXHAM, a market-town of the county of Northumberland, in the ward of Tindal, 286 miles from London. It stands at the head of a beautiful valley, at the junction of the North with the South Tyne. The church, formerly a cathedral, is ancient and spacious, and the interior highly ornamented; and adjoining to it are some venerable appendages. The streets are narrow, but clean. It is not a place of much trade. The chief occupations are tanning leather, and making shoes and gloves. It has well-attended markets on Tuesday and Saturday. The population amounted in 1801 to 4565, in 1811 to 4846, in 1821 to 5436, and in 1831 to 6042.

HEYDON, John, sometimes called *Eugenius Theodidactus*, was a great pretender to skill in the Rosicrucian philosophy and the celestial signs, in the reign of King Charles I., and wrote a number of chemical and astrological works. This empiric was much consulted by the Duke of Buckingham, who believed in judicial astrology. He employed Heydon to calculate the king's and his own nativity, and was assured that his stars had promised him great things. The duke also employed Heydon in some treasonable and seditious practices, for which he was sent to the Tower. The astrologer lost much of his reputation by telling Richard Cromwell and Thurloe, who went to him disguised like cavaliers, that Oliver would infallibly be hanged by a certain time. This period, however, he outlived several years.

HEYLIN, Dr Peter, an English divine, was born at Burford, Oxfordshire, on the 29th of November 1600. He studied at Oxford, where he took his degrees in arts and divinity, and became a geographer and an historian. He was appointed one of the chaplains in ordinary to King Charles I., was presented to the rectory of Hemingford in Huntingdonshire, made a prebendary of Westminster, and presented with several other livings; but of these he was deprived by the parliament, who also sequestrated his estate, by which means he and his family were reduced to want. On the restoration, however, he recovered his spiritualities; but never rose higher than subdean of Westminster. He died in 1662, and was interred in St Peter's Church in Westminster. His principal writings are, 1. *Microcosmus*, or a Description of the World, 1621; 2. *Cosmographia;* 3. The history of St George of Cappadocia, 1631; 4. *Ecclesia Vindicata*, or the Church of England Justified; 5. Historical and Miscellaneous Pieces.

HEYNE, Christian Gottlob, an illustrious classical scholar and archæologist, was born on the 25th of September 1729, in a suburb of the city of Chemnitz, in Saxony, where his father, having been compelled by some religious persecutions to abandon his native country of Silesia, had settled, supporting his family in great poverty by exercising the trade of a weaver. It was only by the liberality of his godfathers that Heyne was enabled to obtain his primary instruction in the elementary school of Chemnitz, and afterwards to prosecute his classical studies in the gymnasium of that city. In 1745 he entered the University of Leipsic. There he was so scantily supported by those on whose assistance he relied, that he was frequently in want even of the common necessaries of life, and was sometimes indebted for food to the generosity of a maid-servant in the house where he lodged. In this situation, without even the hope of future distinction, he continued to struggle against every difficulty and disappointment in the acquisition of knowledge. For six months he is said to have allowed only two nights in the week to sleep, and was at the same time forced to endure the reproaches which his godfather thought himself entitled to inflict on him for negligence in the prosecution of his studies. His distress had almost amounted to despair, when he procured the situation of preceptor in the family of a French merchant resident in Leipsic. He was thus enabled to continue his studies, though with much interruption; the emoluments of his appointment being sufficient to support him in what was at least comparative comfort. Under Ernesti, he was initiated into the criticism of the classical authors; from the prelections of the celebrated Bach he acquired a competent knowledge of the Roman jurisprudence; and through the instructions of Christius, who lectured on archæology, and with whom he was intimately acquainted, his attention was strongly directed to the works of ancient art. Having finished his studies at the university, he was exposed for many years to all the accumulated distresses of poverty and neglect. The first situation he was able to procure was that of copyist in the library of Count de Bruhl, with a salary of only an hundred dollars, which he obtained in the year 1753. From the necessity of adding something to this scanty pittance, he was forced to employ himself in the drudgery of translation; and, besides some French novels, he translated into German the Greek romance of Chariton. He published his first edition of Tibullus in 1755, and in 1756 his Epictetus. In 1756, his emoluments as copyist were doubled, and the education of Prince Maurice de Bruhl was intrusted to him, but without any additional salary. The invasion of Saxony by the Prussians deprived him of his appointment, and even destroyed the library on which it depended. The period of the seven years' war was that in which he was chiefly exposed to the storms of fortune; and his marriage with Theresa Weisse, a young woman of distinguished genius, but equally poor with himself, increased his misery. Having been obliged to retire into Lausatia, he lived for some years as steward in the family of the Baron de Leoben. He was enabled, however, to return to Dresden in 1762, where he was intrusted, by Lippert, with the care of writing the Latin text of the third volume of his *Dactyliotheca*.

At length, in the commencement of the year 1763, his merit met with its reward, and a new and illustrious career was opened to him. On the death of John Matthew Gesner, in 1761, it became necessary for the curators of the university of Göttingen to look around for a successor capable of sustaining the reputation which the institution had acquired by the learning and talents of that distinguished scholar. The appointment was offered to Ernesti, who, whilst he declined leaving the university of Leipsic, proposed Ruhnkenius of Leyden or Saxius of Utrecht for the situation. Ruhnken likewise refused the appointment, but having been strongly impressed by the taste and learning displayed by the editor of Tibullus and Epictetus, he advised Munckhausen, the Hanoverian minister and principal curator of the university of Göttingen, to bestow the professorship on Heyne, whose merit, though known to few, he ventured to promise would do honour to the choice. The minister had the good sense to acquiesce in the recommendation of this great scholar, and Heyne, after some delay, became professor of eloquence in Göttingen. Though his appointments were at first few, and his emoluments inconsiderable, these were gradually augmented in proportion as his usefulness was approved, and as his growing celebrity rendered it an object with the other governments of Germany to secure for their literary institutions the services of so distinguished a scholar. He refused the most advantageous and honourable overtures from Cassel, Berlin, and Dresden. In his different capacities of professor, principal librarian, member of the Royal Society, and chief editor of the Literary Gazette, and still more by his publications, he mainly contributed to raise the university of Göttingen to the distinguished rank it holds among the academies of Europe. After a long and useful career, graced with all the distinctions which in Germany are conferred on literary eminence, he died, full of years and honour, on the 14th of July 1814.

In Greek literature he has given us editions of Homer's *Iliad*, Pindar, Diodorus Siculus, Apollodorus, and Epictetus; and, in Latin, editions of Virgil and Tibullus; all illustrated with copious commentaries. His *Opuscula Academica*, in five volumes, contain a series of 116 academical dissertations, of which the most valuable are those respecting the antiquities of Etruscan art and history, and the researches regarding the colonies of Greece. He has left us also a great number of papers on almost every subject of erudition, more especially on ancient mythology, amongst the *Commentationes Societatis Regiæ Gottingensis*. His *Antiquarische Aufsätze*, in two volumes, comprise a valuable collection of essays on different subjects connected with the history of ancient art. In the earlier part of his life he translated, or rather wrote anew, a great part of the *Universal History*.

After this notice of the chief events of his life, and of his literary productions, it may be proper to say somewhat in regard to the distinctive merit which has raised Heyne to so eminent a place amongst the promoters of classical literature. And here it is chiefly as an interpreter of the ancient poets, and as an original investigator of the ancient mythology, that he must rest his claims to the celebrity he has acquired. As a critic of the works of art, his desert is great, but he has no pretentions to original or peculiar discoveries.

The example of the great philologists of Holland, and the more immediate influence of Ernesti and Gesner on the taste and pursuits of their countrymen, had, before the middle of the last century, awakened in Germany a new zeal for the study of the ancient authors, and had advanced the criticism of classical literature to a rapid and vigorous maturity. The great writers of antiquity ought not, however, to be read with a regard limited merely to their language; they more especially deserve a close and enthusiastic study, for the admirable means which they afford of improving the understanding and of cultivating the taste. From the year 1760, about which period the Germans had begun to devote themselves, with an enthusiasm as zealous as it was tardy, to the cultivation of their native language and literature, several intelligent philologers displayed a more refined and philosophical method in their treatment of the different branches of classical learning, and, without neglecting either the grammatical investigation of the language, or the critical constitution of the text, no longer regarded a Greek or Roman writer as a subject for the mere grammarian and critic, but, considering the study of the ancients as a school for thought, for feeling, and for taste, they initiated us into the great mystery of reading every thing in the same spirit in which it had originally been written. They demonstrated, both by doctrine and example, in what manner it was necessary for us to enter into the thoughts of the writer, to pitch ourselves in unison with his peculiar tone of conception and expression, whether erroneous or correct, and in every instance accurately to investigate the circumstances by which the mind of the poet or philosopher was affected, the motives by which he was animated, and the influences which co-operated in giving the intensity and character to his feelings. It was shown how generally the conception of the reader was merely a veil thrown over the thought of the original. It was no longer allowed to combine modern with ancient ideas, to convert the derivative with the original thought, or to translate it by a new and factitious signification. At the head of this school stands Heyne, both as its founder and principal ornament; and, however some of his disciples may have exposed themselves to ridicule in their application of the principles on which this system of interpretation rests, yet it cannot be denied that nothing has contributed so decisively to maintain and promote the study of classical literature, as the combination which Heyne has effected of philosophy with erudition, both in his commentaries on the ancient authors, and in those works in which he has illustrated various points of antiquity, or discussed the habit of thinking and spirit of the ancient world.

The poverty of Germany in manuscripts has compelled her scholars to rest satisfied in general with the critical apparatus which the philosophers of other nations have collected. What they necessarily wanted in the originality of subsidiary stores, they have, however, endeavoured to supply, by a sound and rational employment of those already compiled; and the praise of useful diligence cannot certainly, with justice, be denied to their labours in this department. Originality, however, was possible in the higher criticism, which does not rest on the collection of readings or the authority of manuscripts, and in the mode of the illustration applied to the ancient writers: in

Heyne.

these respects the later philologers of Germany have earned a glory peculiar to themselves, and which must be remembered as long as learning and ingenuity are respected. How cogently have they reasoned on the authenticity or spuriousness of particular writings, and how skilfully have they applied the test to the interpolations of later times; to what new conclusions are we now brought in regard to Orpheus, Homer, Anacreon, Longinus, &c. by the critical investigations of Schneider, Wolf, Fischer, Hermann, Weiske, and others; how differently has the controversy in regard to the authenticity of certain orations of Cicero been recently concluded by Wolf, compared with the result of Markland's and Gesner's investigations. In this department Heyne does not, however, hold the same pre-eminence which he has attained as an enlightened and popular interpreter; for though his discussions in the higher criticism are both numerous and valuable, he is as much surpassed in boldness and originality by Wolf, as he is inferior to Hermann in the minuteness and ingenuity of his reasoning.

There is, however, another department in which the labours of Heyne are more original, and in which he merits all the honour to which a discoverer is entitled. Until the middle of the eighteenth century, mythology was nothing else than the nomenclature of divinities, a collection of the manifold and discordant legends of their several relations, actions, and destinies, and the delineation of their forms from the works of the poets and artists, illustrated, perhaps, by a mystical and allegorical commentary. About this period some more profound thinkers began to regard the mythical traditions in a higher view, as sources of human history; but, from too confined an acquaintance with the circumstances and condition of the ancient world, they took too high a standard for their explanations, and, through a mystical and allegorical interpretation, thinking they had discovered, under the veil of mythological narration, ideas of the deepest wisdom, they confidently framed thereon hypotheses for the history of mankind, for the arts, for philosophy, and the other sciences, which threatened altogether to extinguish the glimmering light that was still afforded us for the periods of remote antiquity.

Heyne opened a less ambitious but more certain path. Following the observations which travellers had collected in regard to new and uncivilized nations, he applied these to the condition of the Greeks, who, as history informs us, from a rude and sensual barbarism, gradually advanced to a state of civilization and intellectual refinement. He thus arrived at the simple conclusion, that the mythical tales of antiquity contain the first attempts at reasoning, the most ancient history, philosophy, and theology embodied in a poor, unformed, and consequently figurative language; and, therefore, that mythology is a system comprehending partly the original form of representation through objects of sense peculiar to a rude age, expressed in fables, ceremonies, and monuments, transplanted into later times; partly a kind of poetical apparatus derived and formed from this original mythology, and intended only by its authors for the purposes of poetical effect. He hence justly concluded that it is impossible to attain any real insight into the nature of mythical narration, unless the *mythi* of the most ancient poets are carefully distinguished from the abusive applications made of them in the poetry of after times, and unless mythology be kept separate from the philosophy conversant about mythology. In conformity with these fundamental rules, Heyne has illustrated Apollodorus; and in the same spirit he has conducted those researches into the nature and tendency of the different mythi of Greece, which he has published in the *Transactions of the Royal Society of Göttingen.* His views have been almost universally admitted to be correct in principle, and his applications to have been conducted with the most profound learning and almost unequalled ingenuity. A great number of followers have pursued the path he opened; and his theory has now attained the form and stability of a system, through the labours of his disciples. Amongst these, the names of Martin Hermann (not the philologer), of Voss, and of Manso, are especially to be distinguished. The theologians of Germany have likewise applied the same theory to the interpretation of the Sacred Books; and the researches of Eichhorn, Bauer, Ilgen, Hartmann, Vater, De Wette, and a host of other philosophical divines, into the pretended biblical mythi, have been pursued with a learning and acuteness equalled only by the impious audacity of their conclusions. (v. v.)

HEYTESBURY, a borough-town in the hundred of that name, in the county of Wilts, ninety-three miles from London. It stands on the river Whiley, and has on it some mills for the cloth manufacture, which is extensively carried on. It is an ancient burgage tenure borough, and returned two members to the House of Commons, till disfranchised in 1832. The inhabitants amounted in 1801 to 1072, in 1811 to 1023, in 1821 to 1329, and in 1831 to 1412.

HEYWOOD, John, an English dramatic poet, was born at North Mims, near St Albans, in Hertfordshire, and educated at Oxford. But the sprightliness of his disposition not being well adapted to the sedentary and plodding life of an academician, he retired to the place of his nativity, where he had the good fortune to become acquainted with Sir Thomas More. This patron of genius introduced our poet to the Princess Mary, and afterwards to her father Henry, who was much delighted with his wit and skill in music. When Mary came to the crown, Heywood became a favourite at court, and continued often to entertain her majesty, exercising his fancy before her, even till the time when she lay languishing on her deathbed. On the accession of Elizabeth, Heywood, being a zealous Catholic, thought fit to decamp, with other favourites of her deceased majesty, and settled at Mechlin in Flanders, where he died in the year 1565. Heywood was a man of no great learning, nor were his poetical abilities by any means extraordinary; but he possessed talents of more importance in the times in which he lived, namely, the talents of a jester. He wrote several plays, five hundred epigrams, *A Dialogue in Verse concerning English Proverbs*, and *The Spider and Fly, a Parable.* He left two sons, Ellis Heywood, who continued some time at Florence under the patronage of Cardinal Polo, became so good a master of the Italian tongue as to write a treatise in that language, entitled *Il Moro*, and died at Louvain about the year 1572; and Jasper Heywood, who was obliged to resign a fellowship at Oxford on account of his immoralities. The latter translated three tragedies of Seneca, wrote various poems and devices, and died at Naples in 1597.

HIATUS properly signifies an opening, chasm, or gap; but it is particularly applied to those verses where one word ends with a vowel, and the following word begins with one, thereby occasioning a disagreeable opening of the mouth, and harshness of sound. The term *hiatus* is also used in speaking of manuscripts, to denote their defects, or the parts which have been lost or effaced.

HICETAS *of Syracuse*, an ancient philosopher and astronomer, who taught that the sun and stars were motionless, and that the earth revolved round them. This is mentioned by Cicero, and probably afforded Copernicus the first hint of the true system of the world. He flourished 344 B. C.

HICKES, George, an English divine of extraordinary parts and learning, was born at Newsham in Yorkshire on the 20th of June 1642. In 1681 he was made king's chaplain, and two years afterwards dean of Worcester.

But the death of Charles II. stopped his preferment; for though his church principles were very high, he manifested too much zeal against popery to be a favourite with James II. At the Revolution, he, with many others, was deprived for refusing to take the oaths to King William and Queen Mary; and soon afterwards, Archbishop Sancroft and his colleagues considering how to maintain episcopal succession amongst those who adhered to them, Dr Hickes carried over a list of the deprived clergy to King James, and, with his sanction, a private consecration was performed, at which, it is said, Lord Clarendon was present. On this occasion Dr Hickes was consecrated suffragan Bishop of Thetford, and died on the 15th of December 1715. The principal works of Dr Hickes, who was a man of almost universal learning, are the following, viz. 1. Institutiones Grammaticæ Anglo-Saxonicæ et Mœso-Gothicæ; Grammatica Islandica Runolphi Jonæ; Catalogus librorum Septentrionalium; accedit Eduardi Bernardi *Etymologicum Britannicum*, Oxon. 1689, in 4to, inscribed to Archbishop Sancroft: 2. Antiquæ Literaturæ Septentrionalis libri duo; quorum primus G. Hickesii, S. T. P. Linguarum veterum Septentrionalium Thesaurum Grammatico-Criticum et Archæologicum, ejusdem de antiquæ Literaturæ Septentrionalis utilitate dissertationem Epistolarum, et Andreæ Fountaine equitis aurati Numismata Saxonica et Dano-Saxonica, complectitur; alter continet Humfredi Wanleii librorum veterum Septentrionalium, qui in Angliæ bibliothecis extant, catalogum historico-criticum, necnon multorum veterum codicum Septentrionalium alibi extantium notitiam, cum totius operis sex Indicibus, Oxon. 1705, in three vols. folio: 3. Sermons, 1713, in 8vo: 4. Letter from beyond Seas to the Ministers of the Nonconforming Party, 1674, reprinted in 1684: 5. Ravaillac Redivivus, being a narrative of the trial of James Mitchell, for an attempt on the person of Sharpe, Archbishop of St Andrews: 6. The Spirit of Popery, 1679: 7. Jovian, or an Answer to Julian the Apostate, 1683, in 8vo: 8. Infant Baptism, 1685, in 4to: 9. *Speculum beatæ Virginis*, a discourse of the due praise and honour of the Virgin, 1686: with many other tracts and pieces of a miscellaneous character.

HIDAGE (*Hidagium*) was an extraordinary tax payable to the kings of England for every hide of land. This tax was levied not only in money, but in provision, armour, and other articles; and when the Danes landed in Sandwich in 994, King Ethelred taxed all his lands by hides, so that every three hundred and ten hides found one ship furnished, and every eight hides furnished one jack and one saddle, to arm for the defence of the kingdom. Sometimes the word *hidage* was used to signify being quit of that tax, which was also called *hidegild*, and interpreted, from the Saxon, a price or ransom paid to save one's skin or hide from beating.

HIDALGO, in modern history, a title given in Spain to all who are of a noble family. See Spain.

HIDES, in a general sense, are the skins of beasts; but the term more particularly denotes those of large cattle, such as bullocks, horses, buffaloes, and the like. Hides are called raw when in the state in which they were taken from the carcass; and green when dressed with some of the neutral salts, such as alum, to prevent them from putrefying. When, by a process called tanning, they are impregnated with a vegetable principle, such as that in oak bark, they are said to be cured or tanned. The reputation of South American hides stands very high, and immense quantities of them are annually imported into this country. Great numbers of hides are also yearly brought to Great Britain from the United States, from the Continent, and from various parts of Africa. In 1832 there was imported into this country 186,982 cwt. 3 qrs. 3 lbs. weight of hides, of which quantity South America alone yielded 89,320 cwt. The duty levied upon the whole was L.25,412. 15s. 11d.

HIDJELLEE, a town and district of Hindustan, in the province of Bengal, situated upon the west bank of the Hooghly river. It is the first town which is seen after entering the river. Here ships formerly used to anchor, but they now run up to Kedjeree or Diamond Harbour. There is here an extensive salt manufactory belonging to government. This place is very unhealthy. It was to Hidjellee that the English retreated in 1687, after escaping from the Hooghly. They fortified the island, and held possession of it for three months, against all the efforts of Aurungzebe, till peace was concluded. The vicinity abounds with tigers, and the creeks with sharks and alligators. Long. 88. 10. E. Lat. 21. 50. N. The district is bounded on the east by the Hooghly, and on the south by the sea. Some of the land is good, and produces a great quantity of rice, cocoa-nuts, the betel nut, and other things. It is principally valuable on account of the lands which are overflowed by the spring tides, and on which salt is made. Its chief towns are Hidjellee and Contai.

HIERACITES, in *Ecclesiastical History*, Christian heretics in the third century, so called from their leader Hierax, a philosopher of Egypt, who taught that Melchizedek was the Holy Ghost, denied the resurrection, and condemned marriage.

HIERAPOLIS, in *Ancient Geography*, a town of Phrygia, abounding in hot springs, and so called from the number of its temples. There are coins extant exhibiting figures of various gods who had temples here. Of this place Epictetus the Stoic philosopher was a native. It is now called *Pambouk;* and is situated near the Scamander, on a portion of Mount Mesogis, distant six miles from Laodicea.

HIERARCHY, amongst divines, denotes the subordination of angels. Some of the Rabbin reckon four, others ten, orders or ranks of angels, and give them different names, according to their different degrees of power and knowledge.

Hierarchy likewise denotes the subordination of the clergy, ecclesiastical polity, or the constitution and government of the Christian church considered as a society.

HIERO I. and II. kings of Syracuse. See Syracuse.

HIEROCLES, a violent promoter of the persecution of the Christians under Diocletian, flourished in the year 302. He wrote against the Christian religion some books, in which he pretends to expose inconsistencies in the Holy Scriptures, and compares the miracles of Apollonius Tyanæus with those of Jesus Christ. He was refuted by Lactantius and Eusebius. The remains of his works were collected into one volume octavo by Bishop Pearson, and published in 1654, with a learned dissertation prefixed to the work.

Hierocles, a Platonic philosopher of the fifth century, who taught at Alexandria, and was admired for his eloquence. He wrote seven books upon Providence and Fate, and dedicated them to Olympiodorus, who by his embassies did the Romans good service under the emperors Honorius and Theodosius the younger. But these books are now lost, and we only know them by the extracts in Photius. He wrote also a Commentary, which is still extant, upon the golden verses of Pythagoras.

HIEROGLYPHICS.

Definition.

THE term HIEROGLYPHICS (Ἱεϱογλυφικα, from ἱεϱος, *sacred*, and γλυφω, *to carve* or *engrave*) literally denotes *sacred sculptures*, or characters, and appears to have been applied by the Greeks to that particular species of writing which they found inscribed or engraven on the palaces, temples, sepulchres, and other public monuments of Egypt.

The epithet *sacred* (ἱεϱος), which enters into the composition of this term, is, however, apt to mislead those who have not attended particularly to the subject. The *hieroglyphics* were not so denominated as being *exclusively* appropriated or confined to compositions connected with religion; they, in fact, constituted a real written language, applicable to history and common life, as well as to subjects of a religious or mythological kind. This opinion, which the sagacity of Warburton enabled him to form, long before the true nature of these characters had been divined, is established as incontrovertible by the Greek inscription on the stone of Rosetta, which speaks of the three divisions or compartments of the pillar as containing different versions of the same decree, one in the sacred characters, another in the enchorial or vulgar, and a third in Greek, being a translation of the other two; and that there is no fraud or deception in this description, is at once made evident by the coincidence of the numerals at the end of the hieroglyphical text with the concluding words of the Greek inscription.[1] Instead, therefore, of qualifying these characters or sculptures as *sacred*, the Greeks, had they been aware of their real nature, or of *all* purposes to which they were applied, would have described them as *monumental*, and thus distinguished them from the other forms of writing in use amongst the Egyptians, by the circumstance which appears to have almost invariably regulated their application. They constituted the monumental writing of ancient Egypt; and as such were distinguished from the intermediate form, called the *hieratic*, which is for the most part confined to the papyri, and still more from the *enchorial* or *demotic*, which appears to have been employed for the ordinary purposes of life. In common language, where nice distinctions are seldom necessary, the term *hieroglyphics* is indifferently applied to all the three forms of writing, monumental, hieratic, and enchorial; but, in a treatise like this, where the object is to convey accurate information, we must be careful to avoid such confusion, and at the same time to impress upon the mind of the reader the necessity of keeping constantly in view the distinctions here traced, which will afterwards be more fully unfolded and explained.

I. HISTORICAL AND CRITICAL VIEW OF THE OPINIONS ENTERTAINED RESPECTING HIEROGLYPHICS, AND OF THE ATTEMPTS MADE, AT DIFFERENT TIMES, TO DECIPHER THEM.

Hist

All antiquity is agreed in representing the country of the Pharaohs as the birthplace of science, learning, and art, and as the theatre of the earliest form of civilization of which any monument or even tradition has been preserved. At a period when the soil of Greece and of Italy was covered with primeval forests, affording shelter only to wild beasts, or to roving barbarians hardly less savage, the valley of the Nile was occupied by a people far advanced in civil and social improvement, and who had already constructed those Titanian monuments which still command our wonder and admiration, after the lapse of more than three thousand years, and the ravages of successive conquests. Nor has this people been indebted for their high celebrity either to the barbaric splendour of military achievements, or to any of the ordinary elements which constitute material grandeur. On the contrary, the circumstances which have mainly contributed to ensure them an incontestible superiority over most other nations of the world are, the antiquity of their civilization, the wisdom of their institutions and laws, the extent and variety of their knowledge, the singular character of their government and religion, and the everlasting monuments on which they have engraved their history, and inscribed the names and titles of their gods and their kings. Long before any other country had emerged out of barbarism; when even antiquity, in the ordinary estimate, had not begun; Egypt enjoyed the benefit of a regular government, and cultivated with equal ardour and success those sciences and arts which the Greeks afterwards borrowed, but did not in every instance improve.[2]

As early as the days of Moses, who was himself instructed in the wisdom of the Egyptians,[3] that people, amongst whom laws, institutions, learning, and the arts had already attained an extraordinary development, appear to have reached the maximum of improvement; they had, in fact, completed their ascending movement, and were fixed on that elevated position which nations generally occupy, for a longer or shorter period, before they begin to descend, and in which the genius of their civil, religious, and social system was eminently calculated to maintain them, for ages, stationary. All the notices incidentally given by the sacred historian, corroborated by the evidence of contemporary monuments, clearly indicate a people who had already arrived at this grand limit, and who were in the full possession and enjoyment of all the advantages derivable from the peculiar forms of religion and government under which they lived. Even in that remote age, the civilization of the Egyptians had passed into a proverb; nor is it by any means improbable that the Jewish legislator, in framing a code of laws for the people whom he was directed by his high mission to deliver from bondage, and form into a nation, transfused into it somewhat of the practical or written wisdom which he had learned in the country of his birth and education.

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[1] This was first remarked by Mr Akerblad, who pointed out, at the close of the hieroglyphical inscription, the three first numerals, indicated by I. II. and III. where the Greek has "the first and the second," Και στησαι ἐν ἑκαστωι των τι πϱωτων και δευτεϱω[ν θεων ἱεϱωι], the end being broken off.

[2] Etienne Quatremère, *Recherches sur la Langue et la Littérature de l'Egypte*, p. 2. Paris, 1808, in 8vo.

[3] "Erat autem Moses eruditus in omni sapientia Ægyptiorum." But Philo, in his life of the Jewish lawgiver, enters into details respecting the education of Moses. "Cum enim felicitate ingenii magistrorum, ex universa Ægypto convocatorum doctrinam excederet, et simul multa ingeniose excogitaret; numeros quidem, et geometriam, musicam rhythmicam, harmonicam, metricam, sive contemplativam accepit ab Ægyptiis doctoribus; maxime vero *occultam philosophiam descriptam*, ut vocant, *literis hieroglyphicis*, hoc est, notis animalium quæ ipsi venerantur pro numinibus." Justin Martyr, in his *Protrepticon*, denies that Moses studied geometry, but affirms that the Jewish leader was initiated in the mysteries of hieroglyphics. He states, "Mosen, omisso studio omnium mathematicarum, quæ in Ægypto vulgares erant, et viles, adjecisse animum *ad solas hieroglyphicas disciplinas*, quæ tum apud eos *solæ in honore et pretio erant*, et non quibuslibet, sed *præcipuis et probatissimis viris, et in abditis locis secreto traderentur*. Has cum didicisset Moses, nil tamen unquam secundum eas, aut dixit, aut fecit; quod contrarium esset unius veri Dei cultui." In this last particular, however, Clemens Alexandrinus is at variance with Justin; for, in the fifth book of his *Stromata*, he says, "Moysen, *juxta hanc hieroglyphicæ doctrinæ consuetudinem multa sub tropicis, ac mysticis animalium symbolis, vitæ moralis præcepta occulte tradidisse*, solis divinæ legis amatoribus pervia; qualia sunt illa, neque porco, neque aquila, neque accipitre, aut corvo vescendum."

From the era of Moses, by whom Egypt is connected with the earliest traditions, no less than with the first historical monument of the human race, until that of the Persian conquest, when its glory and independence perished together; that is, during a long interval of about ten centuries; a few detached and scanty notices, accidentally preserved and often negligently recorded, comprehend all that can be gleaned from the ancient authors respecting either its internal condition or its external relations. It appears, however, that, both before and after the Persian invasion, the Greeks were in the habit of resorting to Egypt to be initiated in the laws, customs, and institutions, as well as science and learning, of the Egyptians; that, notwithstanding all they have alleged as to the exclusion of strangers or foreigners, access was freely afforded them to that knowledge of which the ministers of religion were the sole depositaries; and that in proportion as the seminal principles of civilization began to take root in the genial soil of Greece, they crowded back to obtain fresh supplies from the great storehouse whence the first portion of the good seed had been derived. Thales, Pythagoras, Plato, and many others, were all instructed in the Egyptian school, where they learned the elements of that science which they afterwards taught to their countrymen;[1] in Miletus, in Samos, in Crotona, and in Athens, the disciples of the hierogrammatists kindled the lamps which had been trimmed and supplied in Egypt; and, what is less known though equally certain, the rudiments of that art, the originals of those beautiful forms, which the fine natural genius of the Greeks, improving on their models, carried to an almost ideal perfection, may even now be discovered in the bas-reliefs which cover the temples, palaces, and tombs scattered along the valley of the Nile. The fanatical fire-worshippers of Iran, led by a ferocious conqueror, had, no doubt, wreaked their utmost fury against the edifices consecrated to the worship of the gods of Egypt. In their blind hatred of idolatry, they ravaged the country which they had overrun, and deluged it in blood; but they were neither able to destroy the monuments on which they had exhausted their iconoclastic rage, nor to extirpate the learning which they could not appreciate. Hence, when the fortunes of a second conquest had placed kings of Greek descent upon the throne of the Pharaohs, Egypt, under their enlightened sway, recovered a portion of its ancient splendour; the treasures of that renowned seat of early civilization were placed within the reach of philosophic investigation; Greece repaid a portion of the debt which she had long before contracted; science and learning were cultivated with ardour and success in the new capital to which the Macedonian conqueror had bequeathed his name; and when, at length, the star of the Ptolemies set to rise no more, and Egypt was degraded into a province of the Roman empire, the masters of the world came in their turn to dispose of all that a third conquest had spared.

To the Greeks, therefore, who had so long been connected with Egypt, and to the Romans, by whom the Greeks were at length replaced, it was natural to look for the most ample information respecting the institutions, manners, customs, arts, antiquities, science, and literature of that interesting region. Nor, in regard to some of these subjects, did the curious look altogether in vain. Herodotus has devoted a considerable portion of his history to details connected with the laws, usages, manners, and topography of Egypt, which he studied on the spot; and much useful information may likewise be collected from the writings of Diodorus Siculus, Strabo, and others, as well as from those of the later Roman authors, in their incidental notices of that country. But there is one subject, perhaps the most interesting of all, respecting which they have supplied little or no intelligible information; we mean the literature of Egypt, including therein the different methods of writing practised in that country from the earliest times.

In Egypt, the arts of sculpture and painting were at all times subordinate to, and in reality branches of, the art of writing; whilst the monuments scattered over its surface were almost all covered externally with sculptures, or internally with paintings, obviously employed as a species of written language, and intended to serve as records of past events, or of laws, usages, customs, and rites, which had existed at the time when these memorials were originally traced. Here was a circumstance apparently calculated to stimulate the most sluggish curiosity, and to excite even indifference itself to inquire and examine. For what subject of greater interest could possibly be presented to the human mind, than the pictured records of the earliest civilization, which, with a view to the perpetuity of their endurance, had been consigned to eternal monuments? But, from whatever cause, whether from that absurd pride which led the Greeks and Romans to disdain studying those forms of speech which they considered as barbarous, or from the total want of philological talent, and an incapacity for pursuing painful and laborious speculations, the classical writers supply us with nothing beyond a few vague and imperfect notices, which it is often equally difficult to understand or to reconcile; and, whilst they tell us not only that Egypt was the parent of all arts and sciences, but that the hieroglyphical inscriptions on its public monuments contained a summary of the most important mysteries of nature and the most sublime inventions of man, they at the same time pretend that the interpretation of these characters had been so studiously concealed by the priests from the knowledge of the vulgar, and had indeed been so imperfectly understood by themselves, that, in the days of the later Roman emperors, it was wholly lost and forgotten. It is even alleged, though the story seems to rest upon no authentic foundation, that a reward was offered in vain, by one of the first Cæsars, for an interpretation of the inscription on an obelisk, then recently brought from Egypt to Rome.[2] Modern ingenuity is not therefore likely to derive much assistance from any thing which has been transmitted to us on this subject by the Greek or the Roman writers. Their ignorance of the hieroglyphic system in its details is either admitted or evident; and even Clement of Alexandria, who certainly understood the different methods of writing practised in Egypt, has expressed himself with so much technical conciseness, not to say obscurity, that, with all the lights of recent discovery to guide us, it is by no means an easy task to interpret his meaning.

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[1] "Horum itaque admirandum studium," says Kircher, "cum in Græcia percrebuisset, Græcorum sapientissimi ejus gustandi allecti desiderio, Solon videlicet, Thales, Plato, Eudoxus, Pythagoras, et Lycurgus in Ægyptum ad consuetudinem cum sacerdotibus contrahendam sese contulerunt." (*Obelisci Ægyp. Interpret. Hierog.* p. 144. Rome, 1666, in folio.) The learning of the Egyptians was exclusively in the hands of the priests, especially of those who were called *ἱερογραμματεῖς*, or *sacred scribes*, and seems to have been embodied in a great number of volumes, which also contained the annals of the nation, with whatever related to its laws and religion. Diodorus Siculus, describing the palace of Osymandias, makes mention of a library; and Manetho, cited by Jamblicus, states the number of books attributed to Hermes or Thoth, or belonging to that celebrated personage, at thirty-six thousand five hundred and twenty-five. (Zoëga, *De Orig. et Usu Obeliscorum*, p. 502; and Wilkins, *Dissert. de Lingua Coptica*, at the end of the *Oratio Dominica* of Chamberlayne, p. 81.)

[2] Young, *Account of some Recent Discoveries in Hieroglyphical Literature*, p. 2.

In the infancy of art and civilization, mankind appear to have employed mimetic images, or portraits, to represent individual objects, and give notice of events to those at a distance. Thus, the Mexicans denoted the arrival of the Spaniards by a rude delineation of a ship, and of a man distinguished by the peculiarities of the European dress. This is what may be called *picture writing*, or the natural representation of objects or actions. But mere mimetic images, which could convey no idea of time, nor indicate any abstract quality or attribute, were totally insufficient for the purposes of communicating information and recording events. Hence conventional signs, sometimes kuriological and sometimes tropical,[1] were chosen to serve as symbols both of things and thoughts, of objects in nature and ideas of the mind. But much time must have elapsed before men learned to communicate with one another by means of symbolical pictures or representations; and no length of time could possibly render such a method of communication easy. The painter or sculptor, as it might be, would probably begin improvement by lessening the size and abridging the number of his signs; the language spoken to the ear helping him to represent that which was to be addressed to the eye. But, in the formation of language, man invariably proceeds from particulars to generals; classifying individuals according to their species, and arranging qualities or attributes under their proper categories. Thus, in inventing words for expressing his ideas, he would also invent the means of limiting their number; and, as oral preceded written language, the forms and figures of speech would instruct the graphic artist how to express his sentiments and abridge his symbols. The metaphors which he employed in speaking would naturally suggest the images which he might use in writing. If, when he spoke, he called a strong man a lion, when he wrote he might draw the figure of that animal as the symbol of strength or force. But the inconvenience of representing the entire image would be almost immediately felt; and therefore necessity would teach the use of synecdoche, or putting a part for the whole, as when the Mexicans represented the *rabbit* by its *head*, and the *reed* by its *flower*. By another natural transition, or rather advance, an action or event would be indicated by some object necessary to its accomplishment, or the concomitant thereof, as when the Egyptians expressed the existence of a *siege* by painting a *scaling-ladder*.[2] Thus the classifications which take place in all languages, but more especially the tropes and figures which abound in all dialects spoken by nations not yet refined by the highest civilization, must have greatly facilitated both the invention and the comprehension of hieroglyphics.[3] In the progress of improvement, then, we have two stages clearly defined; first, *picture-writing*, which consists in the mere representation of events, or of objects in a state of action with one another; and, secondly, *hieroglyphics*, or symbolical writing, which is sometimes kuriological, and sometimes tropical.

Nor is all this matter of hypothetical speculation. Humboldt, in treating of the graphic system of the Mexicans, which he has commented on with great learning and ingenuity, shows that both the stages above described in some measure co-existed amongst them, and were occasionally combined, though never confounded. They had picture-writing, in its simple and primitive form; and they had likewise a species of hieroglyphical representation, far inferior indeed to that which is found in the Egyptian inscriptions, but still to a certain extent constructed upon the same, or at least similar principles. It appears that the use of hieroglyphical paintings was common amongst the Toltecks, the Aztecks, and other tribes inhabiting the elevated plain of Anahuac, which extends northward from Mexico, and is nearly the same with the territory known by the name of New Spain. But no trace of alphabetical characters was anywhere to be found. The analysis of sounds, which leads to the most admirable, we might say the most miraculous, of all inventions, an alphabet, had not been attained by any native of the American continent; and it is even probable, as Humboldt conjectures, that the progressive perfection of symbolical writing, and the facility with which objects were delineated, prevented the introduction of letters. They have at least done so, for a much longer time, with the Chinese, who have contented themselves with fourscore thousand characters, composed of two hundred and fourteen keys, or radical hieroglyphics. The same learned traveller proceeds to inform us, that the Azteck people had real hieroglyphical characters for water, earth, air, wind, day, night, speech, motion; that they had the same for numbers, and for the days and months of the solar year; that these signs, added to the painting of an event, marked the time and other circumstances of the action; that amongst the Mexicans there were found vestiges of the hieroglyphics called *phonetic*, which indicate not relations with things, but with the spoken language; and that, upon the whole, the Mexican paintings bear a great resemblance, not so much to the hieroglyphical writings of the Egyptians, as to the rolls of papyrus found in the swathings of the mummies, which, according to him, are all paintings of a mixed kind, uniting symbolical characters with the representation of an action.[4] In a word, the Mexicans, at the time when their country was overrun by the Spaniards, appear to have made considerable progress in that method of writing which had attained to so high a degree of perfection amongst the Egyptians; they had passed through the first stage in the career of improvement, and were already entering upon the second, when the hieroglyphic, which is at first employed to modify, comes ultimately to supersede picture-writing.

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[1] Those hieroglyphics in which part of a material object is put for the whole, are here called *kuriological;* and those in which one thing is put for another, on account of some real or supposed analogy between them, are denominated *tropical.*

[2] Horus Apollo, *Hieroglyphica*, lib. ii.

[3] Drummond, *Origines, or Remarks on the Origin of several Empires, States, and Cities*, book iv. chap. 9.

[4] Humboldt, *Researches concerning the Institutions and Monuments of the ancient Inhabitants of America*, English translation. "When we examine the history of those nations to which the use of letters is unknown," says this celebrated traveller, "we find, in both hemispheres, that men have attempted to paint the objects which struck their imagination; to represent things that were complex, *by putting a part for the whole;* and thus to compose such pictures as would serve to perpetuate the memory of remarkable events. The Delaware Indian, in scouring the forests, carves some lines on the bark of a tree, to mark the number of the enemy he has killed. Even conventional signs are introduced; and a single stroke marks whether the scalp has been cut from the head of a man or a woman. Such representations, however, are not to be confounded with hieroglyphics, which are essentially different from the mere representation of an event, or of objects in a state of action with one another." He adds, "The first missionaries who visited America compared the Azteck paintings with the hieroglyphical writing of the Egyptians. Kircher, Warburton, and other learned men, have contested the propriety of this comparison, not having been careful to distinguish the paintings of a mixed kind, *in which real hieroglyphics, sometimes kuriological, sometimes tropical, are added to the natural representation of an action.*"

But although hieroglyphics were a great and manifest improvement on mimetic images or picture-writing, still this method of communication was found essentially defective; its symbols were constantly liable to be misunderstood, the art of painting or engraving them could only be practised by a few, and there were some things which could not in this way be expressed at all. Sensible of these inconveniences, and impelled by the natural disposition to abbreviate and simplify, the Egyptians appear, at an early period of their history, to have made some advances towards the introduction of a more compendious and practicable method of expressing their thoughts, by reference partly to the sounds, and partly to the syllabic combinations, of their living speech; in other words, to have entered on that course of improvement which, if pursued, would have ended in the formation of an alphabet. But, notwithstanding all that has been said to the contrary, it is now pretty certain that they stopped short at the threshold, and extended the use of phonetic symbols no further than appeared necessary to remedy the more obvious defects of the hieroglyphic method of writing.

Accordingly, Herodotus, after mentioning that the Egyptians wrote from right to left, contrary to the method in use amongst the Greeks,[1] proceeds to inform us that they employed *two* kinds of characters; the one denominated *sacred*, ἱερα, and the other *popular*, δημοτικα;[2] but he states nothing which could lead us to infer that the sacred and popular characters had any affinity, or that the latter were, through an intermediate form, derived from the former. Diodorus Siculus repeats the statement of Herodotus almost in the same words; adding, however, that the popular characters were taught to all, but that the knowledge of the sacred characters was confined exclusively to the priests.[3] This is undoubtedly concise enough; but it nevertheless embraces all the information which these writers, both of whom had visited Egypt, have thought proper to communicate upon this interesting subject. The statement of Herodotus and Diodorus, however, is in perfect accordance with the inscription on the Rosetta column, in regard to which it is impossible to suspect any error, seeing it bears to have been engraved under the inspection of the priests themselves. That celebrated monument, agreeing in this particular with the authors just named, makes mention of only *two* kinds of characters; the one called *enchorial*, ἐγχωρια γραμματα, or "characters of the country," evidently identical with the *demotic* or *popular* characters of Herodotus and Diodorus; and the other called *sacred*, ἱερα. Thus far, then, the Rosetta inscription and the Greek historians are agreed. But as the latter gives us no information respecting the peculiar nature of the sacred as contrasted with the demotic or enchorial characters, nor conversely, we must turn to the next ancient writer, who treats incidentally of the subject, and endeavour to ascertain whether he has communicated any thing calculated to extend our knowledge, or to supply what is wanting in the statement of his predecessors.

In a well-known passage of the *Stromata* of Clemens Alexandrinus, that learned father enumerates, with great conciseness, but with a degree of precision to which modern discovery has given a high interest, the different kinds of writing in use amongst the Egyptians, and states generally the peculiarities by which these are distinguished. The passage in question, which has been frequently quoted, and often misunderstood or mistranslated, will be found not only to supply the defects in the statement of the Greek historians, but also to receive a singular confirmation from the discoveries of which it is the principal object of this article to give some account.

"Those who are educated amongst the Egyptians," says Clemens, "learn first of all the method of Egyptian writing called EPISTOLOGRAPHIC; secondly, the HIERATIC, which the hierogrammatists (sacred scribes) employ; and, lastly, the most complete method, the HIEROGLYPHIC. The hieroglyphic [is of two kinds]; the one *kuriologic*, (or denoting objects in a direct manner) by means of the primary letters of the alphabet; the other *symbolical*. Of the *symbolical* [there are several sorts]; one represents objects directly by *imitation;* another expresses them *tropically* (that is, indirectly or figuratively); whilst the third employs allegories, expressed by certain ænigmas. Thus, according to the method of representing objects directly or properly by *imitation*, the Egyptians make a circle when they wish to represent the sun, and trace a luniform figure (or crescent) to denote the moon. According to the *tropical* method, they represent objects by means of certain analogies, which they transfer into the expression of those objects by various changes, transpositions, and modifications, very frequently by complete transformations. Thus, when they wish to transmit the praises of their kings under the form of religious legends, they employ *anaglyphs* (that is, transpositions or transformations of the hieroglyphs). Of the third kind of symbolical writing, which is *ænigmatical*, let this serve as an example: The Egyptians assimilate the oblique course of the other [planetary] stars to the bodies of serpents, but the sun they represent by the figure of a scarabœus."[4]

In this passage, it is evident that Clement of Alexandria admits three principal and distinct methods or kinds of the Egyptian writing: first, the EPISTOLOGRAPHIC; secondly, the HIERATIC; and thirdly, the HIEROGLYPHIC.

Of the first and second kinds he gives no detail or explanation whatever. The third, or *hieroglyphic*, which alone occupies his attention, is divided into two sorts: one described as κυριολογικη δια των πρωτων στοιχειων, literally, *kuriologic by means of the first elements;* and the other denominated συμβολικη, *symbolic*.[5] Of the former sort Clemens says nothing; but he enters into details respecting the latter, which he subdivides into three secondary species. The first of these (ἡ κυριολογικη κατα μιμησιν) is indicated with precision, as well by the words themselves, as by the two examples given in illustration: it consists in representing an object properly (κυριολογεισθαι) by imitating (κατα μιμησιν) its form. The second, called the tropical or figurative, is very obscurely defined, and the example is not much clearer than the definition. It is difficult to discover what the author means by the *anaglyphs*, which, he says, the Egyptians employed to hand down the praises of their kings, and which, if they consisted of transpositions merely, might have been formed out of mimetic representations as well as out of tropical symbols.[1] From the classification, however, it appears that, by anaglyphs he understands *sculptured figures* employed as a species of *writing*. As to the third species, namely, the *ænigmatical*, there is no room either for doubt or difficulty.

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[1] This is the truth, but not the whole truth, as will appear more fully in the sequel.

[2] Διφασιοισι δε γραμμασι χρεωνται (Αἰγυπτιοι), και τα μεν αὐτων ἱερα, τα δε δημοτικα καλεεται. (Lib. ii. c. 36.)

[3] Διττων γαρ Αἰγυπτιοις ὀντων γραμματων, τα μεν δημωδη προσαγορευομενα παντας μανθανειν, τα δ' ἱερα καλουμενα παρα μεν τοις Αἰγυπτιοις μονους γινωσκειν τους ἱερεις. κ. τ. λ. (Lib. iii. c. 3.)

[4] Αυτικα οἱ παρ' Αἰγυπτιοἱς παιδευομενοι πρῶτον μεν παντων την Αἰγυπτιων γραμματων μεθοδον ἐκμανθανουσι, την ΕΠΙΣΤΟΛΟΓΡΑΦΙΚΗΝ καλουμενην· δευτεραν δε, την 'ΙΕΡΑΤΙΚΗΝ, ᾗ χρῶνται οἱ ἱερογραμματεις· ὑστατην δε και τελευταιαν 'ΙΕΡΟΓΛΥΦΙΚΗΝ, ἡς ἡ μεν ἐστι δια των πρωτων στοιχειων κυριολογικη, ἡ δε συμβολικη. Της δε συμβολικης ἡ μεν κυριολογεῖται κατα μιμησιν, ἡ δ' ὡσπερ τροπικως γραφεται, ἡ δε ἀντικρυς ἀλληγορειται κατα τινας αἰνιγμους. 'Ηλιον γοῦν γραψαι βουλομενοι κυκλον ποιουσι, σεληνην δε σχῆμα μηνοειδες, κατα το κυριολογουμενον εἰδος. Τροπικῶς δε κατ' οἰκειοτητα μεταγοντες και μετατιθεντες, τα δ' ἐξαλλαττοντες, τα δε πολλαχως μετασχηματιζοντες χαραττουσιν. Τους γουν των βασιλεων ἐπαινους θεολογουμενοις μυθοις παραδιδοντες, ἀναγραφουσι δια των αναγλυφῶν. Του δε κατα τους αἰνιγμους τριτου εἰδους δειγμα ἐστω τοδε· τα μεν γαρ τῶν αλλων ἀστρων, δια την πορειαν την λοξην ὀφεων σωμασι ἀπεικαζον, τον δε 'Ηλιον τῳ του κανθαρου, κ. τ. λ. (*Stromat.* lib. v. p. 647, Potter.)

[5] In this passage, the words κυριολογικος, κυριολογεῖθαι, are understood of expressions proper to designate objects according to the ordinary usage, and in opposition to figurative terms, or periphrases. Thus Longinus, or the author, whoever he was, of the Treatise on the Sublime, says, ὀυτως ἡ περιφρασις πολλακις συμφθεγγεται τῃ κυριολογιᾳ.

But instead of the *three* kinds of Egyptian writing here described, Herodotus and Diodorus Siculus mention only *two*, namely, the *popular* and the *sacred characters;* a statement which is completely confirmed by the Rosetta inscription, where *two* kinds only are spoken of, viz. the *enchorial*, identical with the *demotic*, and those called *sacred*. These authorities, however, may be satisfactorily reconciled. All the difference between them consists in this, that Clement of Alexandria mentions the *hieratic* writing, in regard to which Herodotus, Diodorus, and the Rosetta inscription are all perfectly silent. But the reason of this is sufficiently evident. The historians and the inscription include the *hieratic* amongst the *sacred characters*, whilst Clement, having employed a more restricted term, found it necessary to distinguish this intermediate form from the *hieroglyphic*, of which, also, he alone makes mention. A few observations will be sufficient to place this matter in the clearest light.

It is agreed upon all hands that the *epistolographic* of Clemens Alexandrinus is identical with the *demotic* of Herodotus and Diodorus, and with the *enchorial* of the Rosetta inscription. But the *hieratic* was certainly a species of the *sacred characters*, inasmuch as it was the form employed by the *hierogrammatists*, or sacred scribes; and hence Clement has denominated it the *sacerdotal writing*, from its having been employed by the priests in manuscripts. The *hieroglyphic*, however, was, properly speaking, the *monumental writing*, as is indeed expressed by the term (ἱερογλυφικα), which literally signifies *sacred characters* SCULPTURED or *engraved;* whilst the *hieratic* might be called the *hieroglyphic writing*, or *sacred characters* WRITTEN. This distinction explains and reconciles every thing. Herodotus and Diodorus do not employ the word ἱερογλυφικα; the epithet they apply is ἱερα, *sacred*, which necessarily includes both kinds of *sacred writing*, the *hieratic* as well as the other. But Clemens Alexandrinus speaks of the *hieroglyphic*, an expression which is less generic, and cannot include the hieratic, a kind of writing which was not employed on the *sculptured* monuments (γεγλυμμενα). The learned father, therefore, differs from the others merely in this; that they have only employed generic expressions, whereas he has entered into the detail of the species. Discrepancy there is absolutely none. For the same reason, in the Rosetta monument, the monumental characters are designated by the epithet ἱερα, instead of ἱερογλυφικα, which might have appeared the term most proper to describe the kind of characters engraved on that stone. But the distinction was unnecessary. For, as the *hieratic* was never employed in monumental inscriptions, and as the question here related to the cutting or engraving of *sacred characters* on the pillar, these characters could be nothing but *hieroglyphics;* and consequently the generic expression ἱερα, *sacred*, was, in this case, altogether as precise as the specific expression ἱερογλυφικα would have been.

Having made these observations with a view to remove ambiguity, and prevent the reader from suspecting the existence of discrepancies, where, in reality, there are none, we shall next exhibit a comparative scheme by means of which the accordance of all the texts, and the different kinds of Egyptian writing mentioned by the ancients, together with their respective relations and dependencies, may be at once perceived and understood.

<table>
<tr><td rowspan="8">Egyptian writing is divided by Herodotus, Diodorus, and the inscription of Rosetta, into two kinds of characters, viz ....</td><td rowspan="3">I. Popular, called</td><td colspan="3"><i>Demotic</i> and <i>demodic</i> by Herodotus and Diodorus.</td></tr>
<tr><td colspan="3"><i>Enchorial</i> in the inscription of Rosetta.</td></tr>
<tr><td colspan="3"><i>Epistolographic</i> by Clemens Alexandrinus.</td></tr>
<tr><td rowspan="5">II. Sacred, divided by Clemens Alexandrinus into ....</td><td colspan="3">1st, <i>Hieratic</i>, or sacerdotal writing.</td></tr>
<tr><td rowspan="4">2d, <i>Hieroglyphic</i>, composed of...</td><td colspan="2">1. <i>Kuriologic</i>, by means of the primary letters of the alphabet.[2]</td></tr>
<tr><td rowspan="3">2. <i>Symbolic</i>, comprising</td><td>1. <i>Kuriologic</i>, by imitation.</td></tr>
<tr><td>2. <i>Tropic</i>, or figurative, including <i>anaglyphic</i>.</td></tr>
<tr><td>3. <i>Ænigmatic</i>.</td></tr>
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[1] "Je voudrais," says M. Letronne, "pouvoir définir ce que l'auteur entend par des *anaglyphes*, qui servaient, comme on voit, pour l'expression *tropique* ou *figurée:* dans la rigeur, la première espèce, comme la seconde, devait se composer de *figures* auxquelles convenait également le nom *d'anaglyphes* lorsqu'elles étaient sculptées sur les monumens. Pourquoi donc Clément d'Alexandrie borne-t-il les anaglyphes à l'écriture symbolique figurée? Il faut qu'il entende par-là une espèce particulière de *figures sculptées*, servant toutefois comme *écriture*." (*Examen du texte de Clément d'Alexandrie, relatif aux divers modes d'écriture chez les Egyptiens*, apud Champollion, *Précis du Syst. Hiérogl.* p. 381.) The reader will also find some judicious observations on this subject, by Baron Silvestre de Sacy, in the *Journal des Savans* for March 1825, p. 251, 252.

[2] In regard to the species of hieroglyphic writing described by Clemens as κυριολογικη δια των πρωτων στοιχειων, two questions have arisen, viz. first, In what sense is the word στοιχειων to be understood? and, secondly, What kind of modification does that word receive by being joined with the adjective πρωτων? Upon the fullest consideration, we have followed Letronne in translating πρωτα στοιχεια the *first* or *primary alphabetical letters*. But to this translation there have been started a variety of objections, which we shall now proceed shortly to consider. The principal of these is, that στοιχεια signifies *elements*, not *alphabetical letters* or characters, the name of which in Greek, we are told, is γραμματα. (See Goulianoff, *Questions Archéographiques*, p. 8; *Edinburgh Review*, vol. xlv. p. 103.) Now, we know very well that στοιχεια signifies *elements*, and also that γραμματα is the proper term for *alphabetical letters;* but this does not prevent στοιχεια, employed absolutely, as in the expression above quoted, and used in reference to *writing*, from having the same proper and technical sense. The word στοιχειον, in its radical sense, means a *constituent element* of things, and is consequently susceptible of very different meanings, according to the words with which it is combined, or, when it is employed absolutely, according to the nature of the subject under consideration. This word, which Plato first uses in the philosophical sense of *natural element*, as earth, air, fire, and water, is found in the Politeia, the Sophist, and in twenty places of the Theætetes, in its generic acceptation of *constituent element* of any thing, and, applied to language, *constituent element* of words, that is, *alphabetical letters*, in as far as they represent the *elementary sounds* of each syllable. In fact, στοιχειον is continually opposed by him to συλλαβη. Thus, ὡς μεν ΣΤΟΙΧΕΙΑ ἀγνωστα, το δε των ΣΥΛΛΑΒΩΝ γενος γνωστον,—and ἀρ᾽ αἱ μεν συλλαβαι λογον ἐχουσι, τα δε στοιχεια ἀλογα,—and φερε δη, την συλλαβην ποτερον λεγομεν τα ἀμφοτερα στοιχεια,—

Accustomed to a method of writing in which signs were employed as the representatives of *sounds* only, the Greek and Roman authors, who had either directly or indirectly acquired any notion or idea of the graphic system of the Egyptians, and particularly of their monumental writing, seem to have been chiefly struck with the *figurative* and *symbolic* or *ideographic* characters which are so largely intermixed therein; and these, as being the most remote from the nature of those signs with which alone they were conversant, appear to have almost exclusively engaged their attention. Hence they nowhere expressly mention any other class or description of signs; they nowhere explicitly and distinctly intimate, what they could scarcely have been altogether ignorant of, that the Egyptians, along with the ideographic symbols, employed certain images and characters as the representatives of simple or elementary sounds. Even Clemens Alexandrinus, in the passage above quoted and analysed, describes the phonetic hieroglyphics in the most concise manner possible; so concise, indeed, that his statement ("kuriologic, by means of the primary elements" of words), from being unaccompanied with any development or explanation, remained perfectly unintelligible, until the ingenious investigations of Young, Champollion, Letronne, and others, suggested the true interpretation. To this circumstance, then, may perhaps be ascribed the ineffectual efforts of the moderns to resolve or elucidate the hieroglyphical inscriptions. Finding in the classical authors indications only of picture-writing and of symbols employed tropically or figuratively, and never once suspecting the existence of characters of a different kind, the learned men of the sixteenth, seventeenth, and eighteenth centuries invariably proceeded upon the supposition that the hieroglyphic writing was wholly ideographic, or, in other words, composed of characters every one of which was either the natural or arbitrary representative of a distinct idea.

On this assumed principle, indeed, they were all agreed; and, to say the truth, it seemed to receive confirmation from the fact that the hieroglyphical symbols whose forms and values had been indicated by Diodorus Siculus, Horus Apollo, Plutarch, Clemens Alexandrinus, Eusebius, and others, were all of them without exception ideographic. The number of these symbols, compared with the immense variety of characters observable on the monuments, was no doubt exceedingly small; nor, from the known characters, was it possible to deduce any general

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and προσγινωσκειν τα στοιχεια ἁπασα ἀναγκη τῳ μελλοντι ποτε γνωσεσθαι συλλαβην, κ. τ. λ. In these, and in other passages of the same kind, στοιχεια designates the *sounds* of the *letters* which form each *syllable*; and hence Plato, in another place, speaks of τα των γραμματων στοιχεια τε και συλλαβαι. In the mind of this author, στοιχειον is applied not only to the *articulation*, but to the *figure* or character (γραμμα) which represents it; the one is the element of *spoken* language, the other is the element of *written* language. Aristotle uses this word in the same manner when, speaking of the different parts of speech, he opposes στοιχειον to συλλαβη, the one being a *simple* and the other a *compound* sound. The word στοιχειον, then, without losing any thing of its general signification of *constituent element*, became, when modified according to the subject to which it was applied, the absolute expression, first, of the *four elements*, and, secondly, of the *letters of the alphabet*, which are the *elements* of language (της λεξεως τα στοιχεια ἐστι τα εἰκοσιτεσσαρα γραμματα, as Diogenes Laertius observes). But the only grammatical distinction between στοιχειον and γραμμα consists in this, that στοιχειον designated the *letter spoken*, and γραμμα the *letter written*; the one was applied to the *articulation* itself, and the other to the *visible sign* or character by which it was represented. The Greek grammarians are unanimous on this point; and the distinction is also very well stated by Dionysius of Halicarnassus, in his treatise *De Compositione Verborum*: Ἀρχαι μεν οὖν εἰσι της ἀνθρωπινης και ἐναρθρου φωνης, αἱ μηκετι δεχομεναι διαιρεσιν, ἁς καλοῦμεν ΣΤΟΙΧΕΙΑ και ΓΡΑΜΜΑΤΑ. Γραμματα μεν ὁτι γραμμαῖς τισι σημαινεται· στοιχεια δε ὁτι πᾶσα φωνη την γενεσιν ἐκ τουτων λαμβανει πρωτην, και την διαλυσιν εἰς ταυτα (στοιχεια) ποιεῖται τελευταιαν. The Latin grammarians have made the same distinction between *elementum* and *litera*, which correspond exactly to στοιχειον and γραμμα. Thus Suetonius calls the letter D *quarta elementorum litera*; and Ausonius speaks of *elementorum prima signa*, where *signa* is put for *literæ*. But in Greek, as in Latin, usage in a great measure effaced these distinctions, and the two words were indifferently employed, the one for the other, as perfectly synonymous, each signifying properly and technically *letters of the alphabet*.

This point being established, then, it remains to be seen what effect the word πρωτων placed before στοιχειων can add to the idea. And, at first, considering the principles which Champollion had unfolded in his *Lettre à M. Dacier*, we were led to conclude that πρωτα στοιχεια meant the first or *initial letters of words*; a conclusion which we stated, along with the grounds upon which it had been adopted, in the article *Hieroglyphics* which appeared in the *Edinburgh Review* (vol. xlv. p. 96, *et seqq.*). But further examination, and more particularly the light which M. Letronne has thrown on the subject in the second edition of Champollion's *Précis du Système Hiéroglyphique* (p. 376, *et seqq.*), have induced us to abandon this idea as inadmissible, and to adopt a different interpretation. If, in fact, the meaning of Clemens Alexandrinus had been what we then conceived it to be, he would not have said δια των πρωτων στοιχειων, but δια των ἑκαστου ὀνοματος, or ἑκαστης λεξεως πρωτων στοιχειων. "A moins de supposer que l'auteur n'avait aucun sentiment de sa propre langue, ni l'ombre de sens commun," says M. Letronne, "il est impossible de donner une signification aussi determinée à l'expression στοιχεια, qui, dans un sujet pareil, prise ainsi absolument, signifie en général les *lettres de l'alphabet*, ou ne signifie rien de tout." This, we confess, appears to us to be quite decisive. The interpretation of first or *initial elements of words*, proposed in the *Edinburgh Review*, and the more general one of *initial elements*, suggested by M. de Goulianoff, and afterwards made the foundation of the acrostic system of writing which M. de Klaproth calls *Acrological Hieroglyphics*, were equally adopted, without perceiving, that if the term *element* be not taken in a clear and determinate sense, or, in other words, be not construed with reference to a specific subject, such an expression as that employed by Clemens can have no meaning whatever. He who translates the words *initial elements*, must be prepared to show *what* initial elements are meant; and if he do not, or cannot, his version must go for nothing. It is impossible to draw any conclusion from a vague generality, which, like an identical proposition, fills the ear and cheats the understanding. And, on the other hand, it is absurd, in interpreting such terms, to attach to them a limitation which, besides being gratuitous and unwarranted, is calculated to annihilate their character as general expressions. We conclude, therefore, first, that the interpretation of the *initial letters* of words is inadmissible; and, secondly, that the word πρωτα, conformably to its proper signification, indicates a species of letters, or *primitive sounds*, considered in relation to others that are *secondary* or derivative. And here we observe, that this can only be understood in two ways: 1*st*, As a Greek addressing Greeks, Clement might employ an idea which was familiar to them, that of the formation of their own alphabet, which, according to the general tradition of Greece, was at first composed only of the characters or signs of *sixteen sounds*: Or, 2*dly*, The word πρωτα may be conceived as relating, not to the primitive or Phœnician alphabet, said to have been imported into Greece by Cadmus, but to *primitive sounds* in general; that is, to the most simple and elementary of all. In regard to the former hypothesis, it may be said that it accords with the nature of the Cadmean letters, which are more simple and elementary than the eight others subsequently added, and which, consequently, may be considered either as the *first* in the order of time, or the *primary* and *elementary*, with reference to the *secondary* and composite characters. But the latter is, upon the whole, that to which we incline. It is scarcely probable that Clemens Alexandrinus would attempt to explain the phonetic system of the Egyptians by an example or illustration drawn from the obscure traditionary history of the Greek alphabet; whilst, on the other hand, it cannot be doubted that, amongst all nations who have possessed *signs of sounds*, the number of these signs was at first limited to the *principal sounds*, and that others were successively added, in proportion as men found it necessary to decompose these primary sounds, and to have certain *shades* of them represented by distinct characters. Lastly, the passage which has occupied so much of our attention, is not the only one where express mention is made of an Egyptian alphabet. "Hermias informs us," says Plutarch, "that Hermes was the inventor of letters in Egypt. Thus, *to represent the first letter* [of their alphabet], *the Egyptians figured an ibis*, a bird which belongs to Hermes." It is impossible to express more clearly the nature of a *phonetic hieroglyph*, namely, a *sound* represented by the image of an object.

principle by the assistance of which the unknown could be ascertained or interpreted. But fanciful ingenuity soon supplied all defects; and the learned, rather than confess their ignorance, drew largely on their imaginations. Setting out with the preconceived notion that each hieroglyph stood as the representative of a distinct idea, they thought only of discovering or imagining the esoteric meaning which it was supposed to involve. It was never for a moment doubted that the most profound mysteries of nature and of art lay hidden in these monumental sculptures. The simplest characters, employed perhaps to represent phonetically a proper name, were conceived to be types or symbols of ideas too lofty for ordinary comprehension, and worthy of the eternal records to which their preservation had been consigned. Thus, imagination usurping the place of reason, and the wildest conjectures being substituted for facts, the learned who had undertaken to interpret the Egyptian monuments soon became entangled in an inextricable labyrinth of incongruous fancies, and, like the spirits of Milton when puzzled by their metaphysical speculations, "found no end in wandering mazes lost." The farther they advanced the thicker became the darkness, and the more inextricable the perplexity.

Such appears generally to have been the method, if method indeed it may be called, pursued by Pierius, and more especially by Kircher, who imitated and improved on the example of conjectural interpretation given by his predecessor. "The extensive learning of Pierius," says Mr Roscoe, "is chiefly discoverable in his great work on Hieroglyphics, in which he has undertaken to illustrate, from Egyptian, Greek, and Roman symbols, almost every branch of science and of art." The work thus described is entitled *Hieroglyphica, sive de Sacris Ægyptiorum Literis Commentarii*, Basiliæ, 1556, in folio; and, in the fifty-eight *Commentaries* of which it consists, there is certainly displayed a great deal of learning and ingenuity; but, unfortunately, the one is wholly misapplied, and the other is of that anomalous description which constantly resolves either into absurdity or extravagance. An idea of this singular production, from which Kircher appears to have derived his peculiar inspiration, may be formed from the summary contained in a brief address to the reader. "Habes in hisce Commentariis non solum variarum historiarum, numismatum, veterumque inscriptionum explicationem, verumetiam præter Ægyptiaca et alia pleraque mystica, tum locorum communium ingentem magna cum oblectatione sylvam, tum sacrarum literarum, in quibus haud et Christum ipsum, et Apostolos Prophetasque hujusmodi locutionibus usos fuisse videmus exquisitam interpretationem; ut sane vero non temere Pythagoram, Platonem, aliosque summos vivos ad Ægyptios doctrinæ gratia profectos intelligas; *quippe cum hieroglyphice loqui nihil aliud sit, quam divinarum humanarumque rerum naturam aperire.*"

Such is the account given of the *perjucundum beneficium per Pierium oblatum;* nor can it be denied that his oblation is devoid of entertainment, however small may be the addition which it is calculated to make to our knowledge of things human and divine. The author not unfrequently invents the symbol as well as the explanation, and of course finds but little difficulty in making the one correspond with the other. He also takes metaphorical language *ad pedem literæ;* translates it into a visible image or symbol, which he describes with infinite minuteness of detail; and then proposes a resolution or explanation, from which he deduces a long series of consequences, some of them ingeniously puerile or elaborately ludicrous. Nor, in his interpretation of symbols actually employed in hieroglyphical legends and inscriptions is he less imaginative or less entertaining. If right in the first instance, as, for example, in regard to the figure of the lion, he generally contrives to be absurd in the second; he introduces combinations which were never before imagined, and stumbles upon explanations which set sense and gravity equally at defiance. He tells us truly that a lion is the natural symbol of strength or force; but nobody could conjecture or divine from this that the representation of a lion devouring an ape means, according to Pierius, a remedy for fever. "Ego sane disciplinas Ægyptiorum in hujusmodi re secutus, compertum esse inquam, leonem febri correptum, vel si ad furorem usque exæstuet, *unius pastione simiæ liberari.* Quapropter Ægyptii sacerdotes si febricitantem hominem, et sibimet auxilia comparantem significare vellent, leonis simiam vescentis hieroglyphicum ponere soliti sunt; *tanta enim indignatione simiam fert leo, ut nullum animal avidius perdere desideret.*" (P. 8.) The Egyptians, according to Clemens Alexandrinus, assimilated the course of the sun to the body of a scarabœus, upon the same principle that they compared the oblique course of the planetary stars to the bodies of serpents. This statement is clear, and distinct, and intelligible; but Pierius takes a different and much more curious view of the matter, "Cur enim quis Ægyptios sacerdotes irrideat," he asks, "quod mundi speciem ipsosque motus per scarabœum significare tradiderint, si pilulas illas in quibus seminium ex sese primum habuerint, ac in vermiculos primum, mox in certam effigiem conformati fuerint, ad mundi ipsius imaginem et rationem fieri compertum est? Scarabœus enim certo anni tempore bubulum excrementum nactus, materiam eam sibi suscipit elaborandam, quod primo statim Pacis suæ versu mordet Aristophanes, *αιρ' αιρε μαζαν ὡς ταχιστα κανθαρῳ.* Quo loco mazam Poëta pro excremento posuit utcunque primum ex ea pilulas conficit, ut jam mundi ipsius formam imitatur, mox eas ab exortu occasum versus posticis impellens pedibus, non intermissa ratione protrudit, ipse interim aversus ortum spectat, *quasi de industria id det operam, ut cœli ipsius exemplar intuendo, imaginem ejus exprimere conetur.*" (P. 60.) This and the preceding example will serve as well as a thousand to give the reader an idea of the "great work on Hieroglyphics" spoken of by Mr Roscoe; a work in which all sorts of animals, and parts of animals, vegetables, implements, utensils, weapons, and other objects, artificial as well as natural, are symbolised, sometimes individually, sometimes in arbitrary or grotesque combinations, and in which, from beginning to end, it is impossible to discover the slightest approach towards a rational and sound method of inquiry.[1]

After an interval of about a century, Pierius was succeeded by Kircher, who, instead of confining himself to the interpretation of detached symbols, boldly attacked the Egyptian monuments themselves; and, by a strange intermixture of cabbalistical science with the extravagant fancies of a refined system of demonism, attempted to expound the inscriptions with which they are covered. His first published work was his *Obeliscus Pamphilius*, which appeared at Rome in the year 1650; but the *magnum opus* in which his whole system is most elaborately detailed, we cannot say *explained*, is the *Œdipus Ægyptiacus*, vel *Theatrum Hieroglyphicum*, Rome, 1654, in four vols. folio; a work of profound research, infinite learning, and unequalled absurdity. In the *Œdipus Ægyptiacus*, Kircher professes to give a new and hitherto unattempted interpretation of the obelisks and other hieroglyphical monuments extant, whether in Egypt, at Rome, or in the more celebrated museums; and we shall immediately submit to the reader a specimen or two illustrative of the mode in which he has accomplished the task undertaken by him. A further exemplification of his system, in all its mystical extravagance, will be found in the *Obelisci Ægyptiaci nuper inter Isaei Romani rudera effossi Interpretatio*, which appeared two years after the publication of the *Œdipus Ægyptiacus*. These six folio volumes contain some tolerably faithful, though inelegant, representations of the principal monuments of Egyptian art, which had been brought to Europe before the time of the indefatigable Jesuit; and, as his system of interpretation succeeded equally well whether he chanced to begin at the beginning, the middle, or the end of an inscription, he has never, in any instance, failed to subjoin an exposition of what he conceived or imagined to be the import of the characters or legends represented.

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[1] We repeat, however, that the book is amusing, on account of the perverse ingenuity it displays, and the never-failing facility with which the author at once manufactures and expounds his symbols. For instance, a single crane, according to him, means *custodia*, but a plurality of these birds signifies *democratia*, though on what analogy, real or imaginary, we are not informed. From this interpretation, however, he deduces a very sensible etymology: "Sane quidem apud nostros consensus unioque partium in eandem sententiam aut rem, Latino vocabulo formam ab ipsis gruibus videtur accepisse, ut inde CONGRUERE pro *convenire* dicamus." (P. 128.)

According to Kircher, the obelisks, the mummies, and the amulets, all contain mysterious doctrines in religion or metaphysics; and these he proceeds to unfold with as much confidence as if he had been the *mystagogus* of ancient Egypt, and had inherited all the esoteric learning for which the priests of that country were so much celebrated. No difficulty or obscurity ever for a moment impedes the progress of Kircher; his system enables him to penetrate at a glance the most recondite mysteries. Thus, in the oval, cartouche, or ring, on the Pamphilian obelisk, which contains the title AOTKPTP, Αυτοκρατωρ, *Emperor*, expressed in phonetic characters, the learned Jesuit discovers the following luminous oracle: "The author of fecundity, and of all vegetation, is Osiris, whose generative faculty is derived from heaven in his kingdom by the holy Mophta."[1] In like manner, the cartouche or ring of the same obelisk, which contains, in phonetic characters, the words ΚΗΣΡΣ ΤΜΤΙΑΝΣ ΣΒΣΤΣ, Καισαρ Δομιτιανος Σεβαστος, *Cæsar Domitianus Augustus*, signifies, according to Kircher, "Generationis beneficus præses, cœlesti dominio quadripotens, aerem per Mophta beneficum humorem aereum committit Ammoni inferiora potentissimo, qui per simulacrum et cærimonias appropriatas, trahitur ad potentiam exerendam."[2] Out of a proper name, written phonetically, the laborious and imaginative Jesuit elaborates all this untranslateable and unintelligible gibberish. Again, in his *Œdipus Ægyptiacus*, when treating *De Simulacris Ægyptiorum portatilibus*, Kircher translates the serpent, which is a homophone of the letter D, *vitalis*; the three upright lines representing the numeral *three*, *trium elementarium mundorum*; the broken line, which represents N, *humor*; the extended arm, D or T, *beneficus*; the ibis, A, *Mercurium, qui*; the vase and the chain, NH, *in aquam Niloticam, ope catenæ numinum aquaticorum*; the plough, denominated by him *hieralpha*, and a phonetic homophone of M, *Agathodæmon humorem naturæ deducit*; lastly, the sceptre and the bee, the abbreviated Egyptian expression of SOUTEN, *director* or *governor*,[3] signify, according to Kircher, *Ubi polymorphus Dæmon singulis distributa sua portione, inde necessariarum rerum abundantiam confert.*[4] These examples will, we conceive, suffice to show that the learned Jesuit had consulted his imagination alone in devising interpretations so absurd and unintelligible; that all his labour and research were expended in vain; and that, so far from contributing in any degree to elucidate the Egyptian inscriptions, he was eminently successful in thickening the darkness in which they were involved.

But extravagant and nonsensical as all this may appear, and no doubt is, Kircher was nevertheless the founder of a school. The recipient power of human credulity has no limits when vanity or self-love is once conciliated; and, as it is at all times much easier to imagine than to examine, investigate, or analyse, the admirers and disciples of the learned Jesuit failed not, in some instances, to improve upon the absurdities of their master. To men who had no light to guide them, and no footing upon which to take their stand, his mystical jargon appeared a sort of oracular language, which, though nothing could be made of it, was believed to contain every thing. From the operation of the principle, *omne ignotum pro magnifico*, his day-dreams became a sort of transcendentalism in Egyptian archæology; and there were not a few who devoutly believed that Kircher had found out every thing contained, or rather concealed, in the Egyptian inscriptions, if it were only possible to discover his discoveries.[5] But the strange fancies and cabbalistical reveries which excited the stupid wonder of inferior minds, failed to impose upon the strong sense and the powerful intellect of Bishop Warburton. In his justly celebrated work, *The Divine Legation of Moses demonstrated*, that learned prelate discussed, with consummate scholarship, the different ancient texts relating to the methods of writing practised amongst the Egyptians; distinguished theoretically the several sorts of characters employed by them; and deduced, from his inquiries, the important observation, now completely verified, that the *sacred characters*, or hieroglyphics, were not so denominated, as being exclusively appropriated to *sacred subjects*, but that, as stated at the commencement of this treatise, they constituted a real written language, applicable to the purposes of history and common life, as well as to those of religion and mythology. He was no doubt so far mistaken in supposing that each of the three kinds of characters constituted a distinct and independent system of writing. But as he confined himself entirely to such inferences as seemed logically deducible from the ancient authorities examined and discussed by him, without attempting to verify or correct his conclusions by a direct application to the Egyptian monuments, his misconception in this particular was perhaps unavoidable, and ought in no degree to lessen our admiration of that sagacity which led him to divine a truth which had never been suspected by any one before him, and which the subsequent progress of discovery completely demonstrated. If the profound remark of this learned prelate had been duly appreciated, and prosecuted to its consequences, the *quæstio vexata* of Egyptian hieroglyphics would probably have been, in part at least, resolved half a century earlier. But succeeding writers, haunted by the spirit of Kircher, dreamed only of *symbols;* the existence of phonetic signs, or an alphabet, was never suspected by any one except Zoega, who, unconscious of the value of his own ingenious conjecture, abandoned it as soon as produced;[1] it seemed, in fact, to be tacitly agreed that letters were unknown in the country where they are commonly supposed to have been first invented; and though hypotheses were multiplied, the study was not in consequence advanced. Like a temple half buried in the sand drifted from the desert during a long series of ages, Egyptian literature powerfully attracted the attention and excited the interest of those who stopped to gaze on its mystic form and magnificent proportions; but the entrance to the sacred edifice had not yet been discovered and cleared out, consequently the interior remained wholly unknown. The superstition of antiquarianism still hovered round it, and the mystery of ages, in itself an object of strong interest to many, remained inviolate. But the day of the shovel and the spade was nevertheless fast approaching.

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[1] *Obeliscus Pamphilius*, p. 557.

[2] *Obeliscus Pamphilius*, p. 559. In regard to the Pamphilian obelisk, Kircher has been doubly unfortunate. *It is not genuine.* Of the obelisks still in existence there are perhaps about thirty, larger and smaller, which may be considered as genuine. Several others are decidedly spurious, having been chiefly sculptured at Rome in imitation of the Egyptian style, but so negligently and unskilfully as to exhibit a striking difference even in the character of the workmanship. Such are the Pamphilian, in explanation of which Kircher published the folio volume before us, consisting of near six hundred pages, and also the Barberinian or Veranian obelisk. In both of these the symbols are put together in a manner wholly arbitrary; and when an attempt is made to imitate the appearance of a name, the characters are completely different at each repetition. Another very celebrated monument, the Isiac table, which Kircher also undertook to explain and illustrate, is equally incapable of supporting a minute investigation conducted on solid principles. For the inscriptions neither bear any relation to the figures near which they are placed, nor form any connected sense of their own; and the whole is undoubtedly the work of a Roman sculptor, imitating only the general style and the separate delineations of the Egyptian tablets, as indeed some of the most learned and acute of our antiquaries had already asserted, notwithstanding the contrary opinion of several foreigners of the highest reputation for their intimate acquaintance with the works of Greek and Roman art. (Young on *Hieroglyphical Literature*, pp. 27, 28.)

[3] Rossellini, *I Monumenti dell' Egitto e della Nubia*, tom. i. parte prima, p. 114.

[4] *Œdipus Ægyptiacus*, tom. iv. Synt. xvii. cap. 2, p. 494.

[5] So late as the year 1821, there issued from the archiepiscopal press of Genoa a new translation of the hieroglyphics of the Pamphilian obelisk, a monument which (as we have already shown) is decidedly *spurious*, but which, according to the Italian Œdipus of symbols, "preserves the remembrance of the triumph over the ungodly, obtained by the worshippers of the thrice Holy Trinity, and of the Eternal Word, under the sway of the sixth and seventh kings of Egypt, in the sixth century after the Deluge;" that is, at a period when neither the "thrice Holy Trinity," nor the "Eternal Word," had as yet been revealed to mankind. From the same incomparable authority we learn, to the utter confusion of our chronology, that one of these pious monarchs was no other than Sesac or Sheshak, who, according to the Old Testament, pillaged Jerusalem, carrying off as lawful spoil the treasures of the temple and of the house of David. Pierius and Kircher, with all their fanciful extravagance, were men of real learning, scholars in the best sense of the term; and though they failed to interpret the hieroglyphics, they were careful not to outrage history and chronology, which, in fact, it was one of their great objects to illustrate and confirm. But this translator of an untranslateable monument seems either to have written his book in a calenture of the brain, or to have published it as an experiment (clumsy enough, in all conscience) upon the credulity of mankind.

Amongst the first contributions to the study of hieroglyphics in this country, may be mentioned two Essays by Mr Alexander Gordon, a draughtsman and antiquary of considerable eminence; the one having for its object to explain the hieroglyphical figures upon the coffin of an ancient mummy belonging to a Captain Lethieullier, and the other, in like manner, to expound the hieroglyphical figures upon an Egyptian mummy in the museum of Dr Mead. These Essays are accompanied with twenty-five copperplates, in which, besides the different views of the soroi or mummy cases, are delineated with tolerable fidelity the *apices* of several obelisks, some Egyptian antiquities in the Ashmolean Museum, groups copied from monuments in other collections, amulets, figures of Isis and Canopus, wooden images of the dead (*παραδειγματα νεκρων ξυλινα*), urns, and other ancient remains; to which is added, a table of the characters found on the Egyptian monuments then in Britain, and amounting to 248 in number. The plates, however, were published before the text with which they are now accompanied; and, in fact, the Essays are only designed to explain three out of the twenty-five, namely, those in which are represented the figures on the mummy-cases. Of the remainder an explanation is also promised, but it does not appear that the author ever fulfilled his intention. Mr Gordon's text is principally descriptive and critical; and he displays equal learning and good sense in his observations on the ancient authorities. But, like his predecessors, he thinks of nothing but symbols, and, in no instance, makes even the slightest approach towards the interpretation of a single character or group which the ancient writers have not explained. The concluding paragraph of the Essay on Lethieullier's mummy will be sufficient to convey to our readers an idea of the whole, as well as to confirm the truth of the observation, that our author was as far from the right course as any of those who had preceded him. "The whole, then, on this mummy," says he, "seem chiefly to be so many *physical symbols*, representing the different powers or properties of their chief deity Osiris or the Sun, as acting in and upon the different parts of nature; and what is on the back of the mummy, a combined figure of both Osiris and Isis, *symbolising universal nature.* And what is curious on this mummy, are the *flagellum* of Osiris, and the *falx messoria* of Isis, exhibited near their mutual figures, being the characteristical marks or rather trophies of their mutual inventions, namely, of the use of grain and agriculture; the one instrument for reaping, the other for threshing the corn; inventions for which, among many others, they were deified; inventions to which the world owes the first bringing of mankind into society; inventions from whence religion, arts, learning, and whatever else is valuable among mankind, owe their origin."[2] The view here referred to is *not* given in the plates; but we can have little doubt that a *lituus* has been mistaken for a *falx messoria*, and a shakal-headed sceptre for a *flagellum.* The idea that the sacred characters might constitute a written language seems never to have entered the mind of this learned and intelligent antiquary.

We come now to consider one of the boldest and most original attempts ever made to penetrate the inscriptions on the Egyptian monuments, and the honour of which is due to M. de Guignes, the celebrated French orientalist. The Abbé Barthélemy having read to the Academy of Belles Lettres a memoir on the Phœnician Letters, M. de Guignes, in examining it, happened to cast his eyes on a dictionary in which the ancient Chinese characters were represented, and observing a striking conformity between these and the letters in question, he at once recollected the opinion expressed by Huet, the celebrated bishop of Avranches, as to the common origin of the Chinese and Egyptians, and resolved to investigate the subject, not as a curious speculation, but with a view to determine the truth. The results of this investigation he communicated to the Academy of Belles Lettres, on the 14th of November 1758, and published the year following under the title of *Mémoire dans lequel on prouve que les Chinois sont une Colonie Egyptienne.* In this memoir, M. de Guignes undertakes, not to explain the monuments of the Egyptians, but to propose some reflections on their system of writing, to examine its progress, to compare it with that of the Chinese, and to show that both nations had originally the same hieroglyphs. With the assistance of the Chinese characters he attempts to penetrate those of the Egyptians, to develope their composition, and to establish their relation to or identity with the Chinese hieroglyphics; he also explains several Egyptian characters; and, lastly, he compares the language and the hieroglyphics of Egypt and of China with the languages and methods of writing which obtained amongst the Hebrews, the Arabians, the Syrians, and other nations of the East. We shall endeavour to state as briefly as possible an outline of the investigation which we have thus generally described.[1]

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[1] "Sed satis est exemplorum classis ænigmaticæ, superest quinta classes *notarum Phoneticarum.*" (See his great work, *De Origine et Usu Obeliscorum*, p. 454. Rome, 1797, in folio.)

[2] An Essay towards explaining the Hieroglyphical Figures on the Coffin of the Ancient Mummy belonging to Captain William Lethieullier, by Alexander Gordon, A. M. London, 1737, in folio. To which is subjoined, by the same author, An Essay towards explaining the Ancient Hieroglyphical Figures on the Egyptian Mummy in the Museum of Dr Mead, Physician in ordinary to his Majesty, same date.

The hieroglyphical writing of the Egyptians and that of the Chinese are equally composed of different figures representing men, parts of the human body, animals, plants, vases, instruments, celestial bodies, and so on. But the Chinese writing, though composed of the same elements with the Egyptian, is a kind of cursive writing, in which all these figures are represented in the merest outline, without distinguishing the parts which ought to be strongly brought out from those which ought to be less so; that is, all the lines have the same force. In this consists the chief difference between these two kinds of writing; for if the Chinese were finished off like the Egyptian hieroglyphics, their identity, says M. de Guignes, would at once be perceived. He further observes, that the Chinese group and place beside one another several simple characters, which form together a single compound character expressing a word or an idea; and that the same singular proceeding is found to have obtained in the Egyptian writing. From the relations which have only for their object the exterior form of the characters, he then passes to the composition of these characters, that is, to the different parts of which the group is formed; and then proceeds to consider the question, whether those of the Egyptian hieroglyphics of which Horus Apollo has preserved the signification, are composed of the same ideas or the same elements with those of the Chinese. On the result of the examination of this question depends the relation which our author proposes to establish between China and Egypt.

The Chinese possess two hundred and fourteen elementary characters, which the grammarians have called *keys;* and these keys are either employed alone, as characters serving to express an idea, or variously combined one with another, in which case they are only considered as parts of the same character or group. Each of these parts is the representation of an idea which, united to two or three others, produces a word, or another idea resulting from the combination of these simple elements; that is, they form together a species of phrase which is "comme la définition d'une idée plus composée." For example, the Chinese character which expresses *night* is formed of three of these keys,—of one which signifies *obscurity*, of another which signifies the action of *covering*, and of a third which indicates *man;* so that the phrase *obscurity covering men* is the Chinese equivalent of the word *night*, to which it exactly corresponds. In like manner, the character which signifies *music* is composed of three parts or keys, one representing *wood*, another a *thread* or *cord of silk*, and a third *sound;* because the first instruments of music were made of wood, or boards, upon which were extended silken cords. This phrase, therefore, when rendered literally, signifies *sound produced by threads or cords of silk extended on wood.* Hence it may be concluded that these two hundred and fourteen keys are the representatives of as many simple and primitive ideas, which, by means of different combinations, were employed to express new ideas, in proportion as accident or necessity led to their formation. But, according to M. de Guignes, the same observations apply equally to the Egyptian hieroglyphics, in which may be found simple characters corresponding to the keys of the Chinese, and also groups or compound characters. The number of the former is not considerable, being nearly the same as that of the Chinese keys, and represented by the same figures, having the same signification. If, then, with all these points of resemblance, the Egyptian groups are composed of the same ideas or the same elements, it may be concluded that these two nations had at one time the same system of writing and the same words; and that the Chinese characters, especially when resolved into their elements, may assist in enabling us to interpret those of the Egyptians.[2]

But in order to avoid every kind of conjecture, M. de Guignes avails himself of the information communicated by Horus Apollo, who has preserved the analysis and interpretation of several Egyptian hieroglyphs, and proposes to show that the Chinese characters, being composed of the same elements as those of the Egyptians, have also the same signification. According to Horus Apollo, the Sun and the Moon grouped together form an Egyptian character, signifying the *succession of time*, or the *first principle.* In Chinese, the same elements, the Sun and the Moon, have exactly the same signification, and mean the *succession of time, revolutions*, the *principle of all things.* In Egypt, a horizontal line crossed by a perpendicular line expressed the number *ten.* It is not a little remarkable that the Chinese employed the same character in the same sense. "Un caractère de cette espèce ne tient point à ces idées générales qui tombent dans l'esprit de tous les hommes." In Egypt, the cynocephalus symbolically indicated sadness; in China, the same figure, accompanied with the character for *voice*, signifies the same thing. To designate *education*, and an *ancient origin*, the Egyptians carved or painted a *bundle of reeds.* This symbol is founded on ideas so singular that remote nations could scarcely imagine it, much less agree as to its signification. Yet the Chinese employ a bundle of reeds in the same sense as the Egyptians, and, by using characters of this kind, show that, originally, they had communication with that people. Lastly, the Egyptians expressed *science* by the *dew which falls from heaven.* This metaphor exists in Chinese, and the character which signifies *science*, or a *learned man*, is composed of three elements or keys, one of which designates the *rain* or the *dew*, the other *heaven*, and the third *man;* a phrase which can only signify the *man on whom descends the dew of heaven.* In Deuteronomy we have the entire formula of this hieroglyph. *Concrescat ut pluvia doctrina mea, fluat ut ros eloquium meum, quasi imber super herbam et quasi stillæ super gramina.* The Egyptians compared *science* to the dew which falls upon plants and causes them to fructify; and the same imagery was employed by the Hebrews, who had lived long in Egypt, and also by the Arabians and Syrians, the neighbours of the Egyptians, and whose language naturally exhibited traces of their communication with that people.[1]

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[1] Lettre de Pekin, sur le Génie de la Langue Chinoise, et la Nature de leur Ecriture Symbolique, comparée avec celle des Anciens Egyptiens, par un Père de la Campagnie de Jesus, Brussels, 1772. *Journal des Savans* for the same year. Lettre sur les Caractères Chinois, par le Révérend Père * * * *, de la Compagnie de Jesus, Brussels, 1773. This letter, however, is dated at Pekin, the 20th of October 1764.

[2] A singular circumstance has recently transpired. Signor Rossellini, the associate of M. Champollion in the Egyptian expedition, and author of the learned work entitled *Monumenti dell' Egitto e della Nubia*, already quoted, is in possession of a sort of smelling-bottle, evidently of *Chinese porcelain*, and covered with characters to all appearance *Chinese.* This curious relic was found by Rossellini himself in a tomb, which, as far as could be ascertained, had not been opened since the days of the Pharaohs. (*Quarterly Review*, vol. liii. p. 139.)

From these hieroglyphics, the import of which we learn from Horus Apollo, M. de Guignes, after showing that the Chinese have characters composed of the same elements, and bearing the same signification, concludes that those found on the monuments, having exactly the same figure and the same elements as the Chinese, must likewise have the same signification, and consequently that the hieroglyphics of Egypt may be interpreted by means of dictionaries of the ancient Chinese characters. Nor did he stop even here. Although these hieroglyphics may be explained without knowing the sound or pronunciation which the Egyptians assigned them, as happens in Chinese where the pronunciation of a character has been lost or forgotten; yet he believed it possible to recover even the sound of the hieroglyphics, that is, the spoken language of the Egyptians. But into this part of the subject it would be foreign to our present purpose to enter in detail. It may be sufficient to state, that De Guignes considered all the elements of the Egyptian and Chinese hieroglyphics as so many alphabetical letters, simple or syllabic, "faisant répondre à une seule lettre les hiéroglyphes les plus simples, et à une ou à deux syllabes ceux qui sont plus composés;" that the Chinese keys, though hieroglyphics, are at the same time letters or syllables, the combination of which forms the most composite terms that are found in all the oriental languages with the same signification; that the fixation of these keys to a certain letter or syllable is invariable in all circumstances; that the oriental letters are significative, and originated in hieroglyphics, most probably the same with those of the Egyptians; that this numerous alphabet, composed of about two hundred and fourteen figures, is identical with that which the Egyptians called *hierogrammatic* or *sacerdotal writing*, into which a greater or smaller number of *hieroglyphic characters* were inserted; and that the latter, whether *kuriological* or *symbolical*, were employed in their natural or metaphorical sense, as the case might be, the symbolic hieroglyphics being less a particular kind of writing than a symbolic style or figurative mode of expression.

Such is a rapid sketch of the highly ingenious and refined speculation of M. de Guignes. It was successively attacked by Pauw and Deshauterayes;[2] but neither of these writers seems to have perceived the real fallacy upon which the whole of this beautiful fabric is reared. The assumed identity between the Chinese elementary characters or keys, and the Egyptian hieroglyphics, is entirely imaginary; as is also the principle of combination, upon the Chinese system, extended to the latter. Nothing of this sort has as yet been discovered on any Egyptian monument. Compound ideas are expressed in the monumental writing by juxtaposition alone; nor is there the slightest evidence to show that the Egyptians had characters representative of the syllabic elements of words, or the constituent parts of ideas. It may be true, therefore, that a certain conformity is discoverable between Egyptian and Chinese customs or doctrines, and it may even be admitted that both nations had a common origin; but neither of these points can ever be considered as established by reasoning based on an erroneous assumption, nor can the identity of their language and history, opposed as it is by so many circumstances, physical, political, civil, and religious, be deduced from a few specious and plausible coincidences, such as ingenuity may easily discover between any two nations of the earth, however widely separated by time, place, and every distinctive characteristic or peculiarity. In a word, to use the language of an able writer, "on ne doit aujourd'hui regarder ce système que comme le rêve d'un homme d'esprit, qui est séduit par une idée plus brillante que solide."[3]

"Among the works of modern authors who have employed themselves in the study of hieroglyphics," says Dr Young, "it is difficult to say whether those were the more discouraging which, like the productions of Father Kircher and the Chevalier Palin, professed to contain explanations of every thing, or which, like the ponderous volume of Zoega *On the Obelisks*, confessed, after collecting all that was really on record, that the sum and substance of the whole amounted to nothing."[4] This was no doubt disheartening enough; and what added to the discouragement was, that between these extremes there existed no middle term. But the candid and honest avowal of the learned Dane ought not to deprive him of the merit which is justly due to him for the important services he has rendered to the cause of Egyptian literature. His great work,[5] if it contains no discoveries, is at least valuable as a repository of authorities and facts, and presents, in an accessible form, a mass of knowledge, which, as it cost the labour of a life to collect and arrange it, is greatly calculated to facilitate the inquiries and investigations of all who devote themselves to the study of Egyptian archæology. It is divided into five parts, which are again subdivided each into chapters and sections. The first part exhibits the testimonies of the ancients respecting the obelisks and στηλαι of the Egyptians; the second contains an enumeration and description of Egyptian obelisks, including such as have experienced fractures and other injuries, as well as those which still remain entire; the third treats of the uses of the obelisks, or the purposes for which they were erected, and records

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[1] Mr Needham, an Englishman who, in the year 1761, had visited Turin, and examined the Egyptian antiquities in the cabinet of his majesty the king of Sardinia, appears to have come to nearly the same conclusions with M. de Guignes; though, as his claim was only put forward *three years after* the ingenious speculations of the Frenchman had been published, we have no means of determining the question of priority, unless we hold the *Lettre sur les Caractères Chinois* as a decisive authority, which we are by no means inclined to do. Having observed that the symbols, or hieroglyphic characters, on the Isis of Turin, were similar to several Chinese characters found in the Dictionary entitled *Tehing-tsee-Tong*, Mr Needham conjectured, 1*st*, That the Chinese characters might, in several respects, be identical with the hieroglyphics of Egypt; and, 2*dly*, That the sense of the hieroglyphics might be discovered by comparing with them the appropriate signification of the Chinese characters. "Les nouvelles observations de Mr Needham," says the author of the *Lettre* above referred to, "font espérer quelque chose de plus heureux pour la gloire de nôtre siècle: il a comparé les caractères Chinois avec les hiéroglyphes d'Egypte, il y a trouvé une ressemblance, du moins une analogie, qui lui fait croire qu'on pourra enfin savoir le secret des mystères de Memphis, et rompre la barrière de tenèbres qui nous empêche de faire remonter nos connoissances jusqu'au temps les plus voisins du Déluge." The author adds, "Quelle conquête pour la républiques des lettres, *si elle a jamais lieu*." The conquest would, no doubt, have been great, if it had ever been made; and we know no other obstacle to its accomplishment except that the thing proposed is manifestly impossible. From all that we have been able to learn on this subject, it appears that the road to Memphis does not pass by Pekin.

[2] Deshauterayes, *Doutes sur la Dissertation de M. de Guignes, qui a pour le titre*, Mémoire dans lequel on prouve que les Chinois sont un colonie Egyptienne, *proposées à MM. de l'Académie des Belles-Lettres*, Paris, 1759, in 12mo. See also De Guignes, *Réponse aux Doutes proposées par M. Deshauterayes*, Paris, 1759, in 12mo.

[3] *Biographie Universelle*, art. GUIGNES, *Joseph de.*

[4] Young, *Discoveries in Hieroglyphical Literature*, p. 2.

[5] *De Origine et Usu Obeliscorum*, ad Pium Sextum Pontificem Maximum, auctore Georgio Zoega Dano. Rome, 1797, in large folio.

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the different opinions which have been promulgated on this subject by Kircher, Goguet, the members of the Academy of Inscriptions, Bruce, and many others, including Jablonski, Mercatus, Bergæus, and others; the fourth is devoted to the consideration of the origin of these monuments, and, in particular, embraces the author's views, or rather collections, respecting the origin and use of letters amongst the Egyptians; the fifth and last treats of the history of the obelisks, and of their various epochs. As a digest of all the learning and information on the subject which existed at the time of its publication, this work is therefore of the highest importance; and its value is greatly enhanced by the beautiful and accurate engravings with which it is accompanied. Zoega has indeed left little to be gleaned in the field which he undertook to reap; he has gathered into one great storehouse, for the use of those who may succeed him, a vast body of knowledge which previously lay scattered over an immense surface, or concealed in nooks and corners; and he has so arranged and methodized his collection as to render its materials easily accessible to every inquirer. Nor have the discoveries latterly made in Egyptian literature superseded or antiquated the labours of this indefatigable scholar. On the contrary, these have acquired additional importance from the circumstance that, whilst an entirely new direction has been given to learned curiosity, the persons engaged in prosecuting those discoveries have been spared the fatigue of much collateral research, and been placed in a much more favourable position than they could possibly have occupied, if no such work as this had been in their hands.

But whilst Zoega studied practical utility, or at least sought to render knowledge more generally available, others indulged only in speculation. But this now took a direction somewhat different from that in which it had previously flowed. The Abbé Pluche, for instance, in his account of the symbolic writing of the ancient Egyptians, maintains stoutly that the whole of it consists of emblems, expressive of doctrines connected with the science of astronomy and the division of time in the calendar; and his followers (for he had not a few in this country, as well as on the Continent), so far from being startled with the incoherence of his views and the arbitrary violence of his explanations, came to the conclusion that the innumerable inscriptions which cover the Egyptian monuments are all referrible to a single science, and in fact to one and the same order of ideas. With inquirers of this class the only signs in favour were the signs of the zodiac. In every legend, in every cartouche, they discovered astronomical emblems expressive of astronomical truths. According to their interpretations, indeed, the whole business of life, in ancient Egypt, must have consisted in studying the heavens, and translating into obscure or doubtful symbols the results of this continued celestial observation. But the author of the work entitled *De l'Etude des Hiéroglyphes*, published at Paris in 1812, took a different, though not more irrational, view of the subject. Believing it possible, by the aid of ancient traditions, and a knowledge of the symbols and emblems employed by different nations, to arrive at some general principle which might serve as a key to the Egyptian inscriptions, he formed a collection of what he calls *les symboles des peuples*, or popular symbols of Africa, Asia, and America; and having applied it to the interpretation of the hieroglyphics of Egypt, he had the singular happiness to discover, on the portico of the great temple at Denderah, not a dedication to Isis, but a translation of the hundredth psalm of David; one of the last compositions, certainly, which we should have expected to find in such a place. Nor is this the only discovery of the kind which we have to record. The anonymous author of the *Essai sur les Hiéroglyphes Egyptiens*, not content with supposing that the hieroglyphics express emblematically a series of ideas analogous to those which are found in the Bible, maintains that they are neither more nor less than simple letters, and that, considered as such, they express words in the Hebrew language. But, as the number of distinct characters upon the monuments falls little short of a thousand, he has not explained how the Egyptians happened to have so copious an alphabet, exceeding the Chinese elementary characters or keys in the proportion of three to one; how this alphabet applied to Hebrew, a language, all the words of which consist of various combinations of twenty-two elementary sounds; and how the Egyptians came to inscribe their monuments with a foreign language which they never spoke, and most probably did not understand.

Theorists discover no difficulties, or, if they do so, disregard and overleap them. We have already seen that Kircher's method of interpretation succeeded equally well, whether he happened to begin at the beginning or at the end of an inscription; and the same thing might no doubt be predicated of that method which proceeds on the assumption that *all* the hieroglyphics are letters expressive of words in the Hebrew language. But the sagacity of this class of interpreters has in some cases conducted them to very opposite results. The Chevalier Palin, for instance, beginning by way of variety in the middle of the inscriptions, discovered that Hebrew translations of many of the Egyptian rolls of consecrated papyrus are to be found in the Bible under the name of the Psalms of David. The author of the Essay above mentioned, and the ingenious chevalier, therefore, though proceeding on nearly the same principles, have arrived at very different results. According to the one, the hieroglyphics are letters, and the language of the Egyptian inscriptions is Hebrew; according to the other, the Psalms of David are, in part at least, composed of translations from the consecrated rolls of papyrus inscribed with pure Egyptian. The one makes the Egyptians borrow every thing from the Hebrews; the other makes the Hebrews borrow a great deal from the Egyptians. But, whatever may be thought of the judgment of these antiquaries, their opinions are not particularly discreditable to their talents and ingenuity. For, having once allowed themselves to set out with the notion that it was possible to determine the sense of the hieroglyphics by internal evidence, the imperfections of their superstructures were the unavoidable consequences of the unsubstantial nature of the foundations on which they were raised.[1]

It is not a little mortifying to the pride of human skill and learning, that the key which had long been sought for in vain was at length in some measure discovered in consequence of the accidental disinterment of a single block of stone, which for ages had lain under ground. It is well known that the French expedition to Egypt was accompanied by a commission of the National Institute, most liberally provided by the government of the day with the requisite means for investigating all that related to science or to literature in that wonderful country. In the proceedings of this body the general-in-chief, Napoleon, took the greatest interest; he seemed to consider his glory as not less concerned in the illustration than in the conquest of Egypt; and, amidst all the cares and distractions of his situation, he was unremitting in his endeavours to promote the objects for which the commission had been appointed. The labours of this body were at length made public, with all the elegance which the arts of printing and engraving could communicate; and the splendid work entitled *Description de l'Egypte* will be an enduring monument of republican liberality and imperial magnificence. But although much was thus effected in elucidation of the history, antiquities, religion, institutions, and arts of ancient Egypt, not a single ray of new light was shed on the language and letters, the hieroglyphics and papyri, of that singular country; and the principal benefit which the learned of Europe derived from the publication of this national work consisted in the multiplication of hieroglyphic texts, engraved, for the most part, with equal beauty and accuracy. These, however, were unavailing for the advancement of Egyptian literature, as long as the true method of interpreting them, either in whole or in part, remained unknown; and it must have been felt by the French as not a little humiliating to their vanity, that an *accident*, which occurred in the course of their military labours, and of which the fortune of war afterwards denied them the benefit, should have conduced more towards the elucidation of the monumental inscriptions of Egypt than all the labour, research, and ingenuity which had for ages been expended on them. Whilst a division of the French troops occupied the town of Rosetta, a party of workmen, employed in digging for the foundations of Fort St Julian, discovered and disinterred a huge block or pillar of black basalt, exhibiting the remains of *three* distinct inscriptions; but the French being soon afterwards dislodged by the British, were prevented from removing this monument, which consequently fell into the hands of the conquerors, and was subsequently brought to England, amongst other trophies of the Egyptian campaign, and deposited in the British Museum.[1]

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[1] Young, *Recent Discoveries in Hieroglyphical Literature*, p. 3.

A cursory inspection of the Rosetta inscription was sufficient to establish the truth of the opinion which had been expressed by Warburton, that the hieroglyphics constituted a real written language. Of the three inscriptions sculptured on its sides, a considerable part of the first was unfortunately wanting; the beginning of the second and the end of the third were also mutilated; but the last, written in Greek, concluded with the important information that the decree inscribed on the monument, in honour of Ptolemy Epiphanes,[2] had been ordered to be engraved in *three* different characters, namely, the *sacred* or hieroglyphic, the *enchorial* or letters of the country, and the *Greek*. Here, then, was an authentic specimen of the hieroglyphic characters, *expressly accompanied by a Greek translation*.[3] But before any use could be made of the Greek version, it was obviously necessary that it should be carefully examined, and, as far as possible, restored. With this view the Society of Antiquaries caused a correct copy of the triple inscription to be engraved and circulated, and Porson and Heyne, the two best scholars of the age, employed themselves in completing and illustrating the Greek text; a task, in the performance of which the superior industry and vigilance of the German gave him a decided advantage over the more active and irregular genius of the English Hellenist. But no data had as yet been obtained, by means of which a comparison might be instituted between the Greek which Heyne had restored, and the hieroglyphical or enchorial texts, of which not a single character was known. There existed indeed a traditional record of the true value of a particular character, denoting *life*, which had been handed down by the ecclesiastical writers, and had been generally received as accurate by scholars and antiquaries; but beyond this nothing whatever was known, whilst the explanations given by Horus Apollo in his *Hieroglyphica*, were somewhat hastily set down as mere puerilities. In these circumstances, there remained but one course to be adopted; namely, to adjust the inscriptions, so that they might as nearly as possible coincide, and, from the situations of the proper names in the Greek inscription, to endeavour attentively to ascertain their corresponding positions in one or both of the other inscriptions. By this means, if characters merely phonetic entered into the composition of the hieroglyphic and enchorial texts, the true value of some of them would be ascertained; but if these texts were found to consist chiefly of characters not phonetic, it was at least probable that the proper names would be written alphabetically, and that, even from the comparison of these, some important inferences might be deduced. It was, therefore, a matter of indifference whether the comparison was first made between the Greek and hieroglyphic, or between the Greek and enchorial text; but as a notion happened to prevail that the enchorial was altogether phonetic, the first attempt was made upon that part of the triple inscription.

The Baron Silvestre de Sacy, justly celebrated for his eminent attainments both as a scholar and as an antiquary, had the honour of taking the lead in this investigation. Having examined the portions of the enchorial text corresponding, by their relative situations, to two passages of the Greek inscription, in which occur the proper names ALEXANDER and ALEXANDRIA, he soon recognised two well-defined groups of characters nearly resembling each other, and which, he conjectured, were the enchorial representatives of these names. He also made out satisfactorily the *locus* or position of the proper name PTOLEMY; but beyond this he found it impossible to advance a single step, and ultimately abandoned the pursuit as hopeless. M. de Sacy, however, had not laboured in vain. He had, in some degree, determined the positions of three proper names; and, what was far more important, he had shown that the investigation, which he gave up in despair, was not so impracticable as he had imagined. Mr Akerblad,[4] accordingly, resumed the inquiry at the point where it had been abandoned by his predecessor, and completely demonstrated the truth of what M. de Sacy had done little more than conjecture, namely, that the enchorial text contained Greek proper names written in Egyptian characters. Continuing his comparative readings, Mr Akerblad subsequently attempted from them to construct an alphabet; but, excepting in as far as regarded the proper names, whence he deduced about fifteen characters, the attempt proved a failure, partly because he had imbibed the notion that the whole inscription was alphabetical, and partly, too, from expecting to find in the Egyptian writing all the vowels which the same words contain in the Coptic texts still extant; an error which a due consideration of the practice observed in the Hebrew, Chaldaic, Arabic, and other written oriental languages might have enabled him to avoid. Mr Akerblad contributed nothing towards the elucidation of the first or hieroglyphic inscription on the Rosetta monument, if we except a detached but acute observation respecting the three numerals at the end; and it is even alleged that he was disposed to acquiesce in the correctness of Palin's interpretation, which proceeds upon the supposition that parts of the first lines of the hieroglyphics still remain on the pillar.[1] Be this as it may, however, to M. de Sacy and to Mr Akerblad, particularly the latter, belongs the distinction of having made the first advances in the right direction. The progress of discovery is for the most part gradual, and it requires successive efforts to clear much ground in a domain where there are no landmarks to guide the explorer, and where, in puzzling his way through the wrecks of ages, his own natural sagacity is at every instant liable to be bewildered by the fancies, errors, or exaggerations of those who have preceded him. But if there be any truth in the observation, *ce n'est que le premier pas qui coute*, the merit due to these distinguished individuals will never cease to be fully acknowledged by the historians of hieroglyphical discovery.

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[1] Young, *Discoveries in Hieroglyphical Literature*, p. 5.

[2] It hence appears that the hieroglyphical method of writing continued to be understood and employed in the time of Ptolemy Epiphanes, that is, two centuries before Christ. At what time it ceased to be so has not been ascertained.

[3] The concluding words of the Greek, as restored by Porson, are these: [Το δε ψηφισμα τουτο ἀναγραψαι εἰς στηλην μελανος σ]τερεου λιθου, τοις τε ἱεροις, και ἐγχωριοις, και ἑλληνικοις γραμμασιν· και στηλαι ἐν ἑκαστῳ των τε πρωτων και δευτερω[ν θεων ἱερῳ. Thus translated by Heyne: "Et incidere hæc in *duro* (Porsonus vult *nigro*) lapide, Sacris, et Patriis, et Græcis litteris; et statuere in unoquoque et prioris et secundi ordinis templo."

[4] A diplomatic gentleman then resident at Paris, but afterwards the Swedish chargé d'affaires at Rome. Having resolved into its component parts the group representing ALEXANDER, and ascertained that other groups signified PTOLEMY, ARSINOE, BERENICE, and other proper names occurring in the Greek part of the triple inscription, Mr Akerblad published the alphabet which he had collected from these names, containing about fifteen well ascertained characters. He then applied himself to decipher the remainder of the inscription, which, he hastily took it for granted, consisted of Coptic words expressed in alphabetical characters; but in this attempt he was completely unsuccessful. The greater part of the characters which he met with in the inscription were not such as had occurred in the proper names; nor could he obtain a series of Coptic words by assigning to the new characters any powers that he could think of or imagine. He appears never to have suspected that the words of the inscription could be any other than Coptic, or that these words could be represented otherwise than phonetically. (See an excellent paper on the *Enchorial Language of Egypt*, in the third number of the *Dublin University Review*, p. 4.)

Matters were in this state when Dr Young commenced his investigations. Little or nothing had as yet been done to interpret the sacred characters, or hieroglyphics; but the germ of all the succeeding discoveries may be said to have been found, when the idea had once been suggested of fixing the positions of the proper names, and considering the corresponding groups of figures as representing their constituent sounds. Having been induced, as he informs us, to offer to the conductors of a periodical publication an article containing an abstract of the *Mithridates* of Adelung, a work then recently received from the Continent, his curiosity was forcibly excited by a note, in which the editor, Professor Vater, asserted that the unknown language of the Rosetta inscription, and of the bandages often found with the mummies, was capable of being analysed into an alphabet consisting of little more than thirty letters; but having retained merely a general impression of this bold and striking assertion, he thought no more of these inscriptions until early in 1814, when they were recalled to his attention by the examination of some fragments of papyrus which had been recently brought to England by Sir W. R. Boughton, and on which, after a hasty inspection of Mr Akerblad's pamphlet, he communicated some anonymous remarks to the Society of Antiquaries. His interest in the subject being thus awakened and stimulated, he, in the summer of the same year, applied his mind first to the enchorial, and afterwards to the hieroglyphic inscription; and, by a methodical comparison of the different parts with each other, he was able, in the course of a few months, to send to the *Archæologia* a "conjectural translation" of each of these inscriptions, distinguishing the contents of the different lines with as much precision as his materials then enabled him to attain. He was obliged, however, to leave many important passages still subject to doubt; but he hoped to acquire additional information before attempting to determine their signification; and having fairly broken ground, he flattered himself that he would soon be in a condition to advance with facility and rapidity. In the meanwhile, he endeavoured to make himself familiar with the Memphitic and Thebaic versions of the Scriptures. Aware, from the researches of Quatremère, that the remains of the ancient Egyptian language are preserved in these versions, he hoped, with the aid of this knowledge, to read the enchorial inscription, at least, into a kindred dialect; and although he felt himself gradually compelled to abandon this expectation, he soon afterwards published anew, in the *Museum Criticum* of Cambridge, his conjectural translation, with considerable additions and corrections. Lastly, in the article EGYPT, printed in the fourth volume of the Supplement to the former editions of the present work, he digested in a methodical form the results of his researches, and, in particular, inserted a Vocabulary containing upwards of two hundred names, words, or epithets, which he had succeeded in deciphering in the hieroglyphical and enchorial texts, with some additions derived from his readings in the Egyptian manuscripts. This article, forming altogether an astonishing effort both of scholarship and ingenuity, was published in December 1819, and almost immediately attracted the attention of the learned throughout the whole of Europe. With the exception of the slight aids afforded by the researches of De Sacy and Akerblad, neither of whom had been able to decipher a single character of the *hieroglyphical* inscription, it had the merit of complete originality;[2] and hence it was not only received with admiration by all who were capable of appreciating its merits, but it produced a general rush to the study of hieroglyphical literature, and mainly contributed towards those further discoveries, of which it will be our business to render some account in a succeeding section of this article.

Although much has been done for the elucidation of the Egyptian texts, monumental as well as enchorial, since Dr Young published this record of his investigations; although some errors have been corrected, many additions made, and the whole reduced into a systematic form; yet we should consider ourselves as unjust to the memory of that most ingenious man, and as even guilty of removing one of the great landmarks of learning, were we, in this new and improved edition of the Encyclopædia, either to withhold or to alter a production which, in fact, constitutes an epoch in the annals of letters. For this reason all that part of the article above mentioned which was devoted to the subject of hieroglyphics, is republished entire in the third, fourth, and fifth sections of this general treatise; accompanied only with a few explanatory and corrective notes, intended to keep in view what has been effected by others, and also to prepare the reader for the expositions which follow. We have only further to add, upon this head, that the historical and critical view of the progress of opinion and discovery on the subject of hieroglyphics, which we have here brought down to the period at which the researches of Dr Young were given to the world in a somewhat matured form, will be continued in the explanation of the various systems which have since been promulgated by those who have endeavoured either to extend or to overthrow the principles upon which Dr Young conducted his investigations. But, in the meanwhile, we shall so far interrupt the development of our general plan as, in the next section, to submit to our readers an abstract of the facts and arguments by which the substantial identity of the different dialects of Coptic with the language of ancient Egypt has, in our opinion, been completely established, and an obstacle which might have impeded the future progress of investigation thus cleared away.

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[1] This supposition is contrary to the fact. As already stated, the commencement of the hieroglyphic inscription is wanting.

[2] "Dr Young," says Mr Salt, "seems to me to stand alone with regard to the *progress* he has made in the enchorial, as well as for his having *led the way* to the true knowledge of hieroglyphics." (*Essay on the Phonetic System of Hieroglyphics*, p. 1.)

II. IDENTITY OF THE COPTIC DIALECTS WITH THE ANCIENT LANGUAGE OF EGYPT.

Language is, after all, the most durable of human monuments. Conquerors may overthrow empires and states, earthquakes may swallow up cities, time may confound all things besides; but the winged words in which man gives utterance to his feelings and thoughts often outlast all these ravages, and preserve the memory of nations long after they have ceased to exist. That which seems the most fragile, the most variable, the most evanescent of human attributes or possessions, becomes in reality the most permanent, the most indestructible. If no longer able to support an independent existence, it clings to and coalesces with some more recent and robust dialect; if lost in one form, it is almost certain to re-appear in another, exhibiting, amidst all changes and disfigurations, incontestible traces of its origin. This law of decay and reproduction, of fluctuation yet permanence, is so general, we might almost say universal, that it is principally from analytical inquiries into the origin, composition, and affinities of language, that we derive what knowledge we possess of the early history and fortunes of nations. It is impossible, therefore, to believe that the form of speech which long prevailed in ancient Egypt can have utterly perished, or that remains of it may not still be discovered in one or other of the dialects in which it appears to have merged. The Persian, the Macedonian, the Roman, the Arabian, and the Ottoman conquests, have successively discharged their fury upon that devoted country; and even those monuments which seemed destined to receive the epitaph of Time itself, are mouldering and crumbling into ruin; but, unlike the temples, palaces, and piles stupendous, which once adorned the valley of the Nile, the language of the Pharaohs, though greatly mutilated, has been arrested in its decline, and all of it that remains has long since been placed beyond the reach of further injury.

If the case, however, were different from what is here stated; if the language of ancient Egypt had perished as completely as the dialects spoken before the Flood; still it would not be impossible to obtain some knowledge of those inscriptions which have so much occupied the attention of the learned both in ancient and in modern times. With the aid of such monuments as those of Rosetta and Philae, in which the hieroglyphical texts are rendered into a known language, we should still be able, if not to read those texts into the language which they originally represented, at least to determine inductively the values of the principal characters, or groups of characters, of which they are composed; and we should thus, to a certain extent, be provided with the means of attempting empirical explanations of texts unaccompanied with versions. Nevertheless it is undoubted that such an ancient language, even if it had ceased to exist independently, and if its remains were only to be found mixed up in another dialect, perhaps blended with heterogeneous elements, would, on being separated from all extraneous forms, prove eminently serviceable in facilitating inquiries, having it for their object to explain the monumental inscriptions and other Egyptian texts. The value of such an auxiliary, indeed, can only be fully appreciated by those who have devoted themselves to these laborious and difficult investigations; but, from the explanations and details which are contained in the succeeding sections of this treatise, even the general reader will be enabled to form a tolerably just idea of its importance. In the meanwhile, that no branch of this subject may be left unexplained, we shall endeavour to state, as briefly as possible, the grounds upon which we hold it to be demonstratively certain that the Coptic and the ancient Egyptian are substantially identical.

There can be no doubt that the Egyptian language and characters subsisted under the Ptolemies. If the Greek alone was in use at the court of these princes, and in the city of Alexandria, the capital of their empire, it cannot be disputed that in the more remote towns, and particularly in the Thebaid, the Egyptian language continued to be understood and spoken as formerly. This fact, attested by the Rosetta inscription, is confirmed by a passage of Plutarch, in which he relates that Cleopatra, the favourite of Cæsar and of Antony, replied, without the intervention of an interpreter, to the Ethiopians, the Troglodytes, the Hebrews, the Arabians, the Syrians, the Medes, and the Parthians, and that she also understood the languages of many other nations; whilst the kings, her predecessors, had scarcely given themselves the trouble to learn the Egyptian, and some of them had even neglected the Macedonian.[1] That a barbarous people may adopt the laws, and even the language, of their conquerors, is what may easily be believed; but it is altogether incredible that a civilized people like the Egyptians, strongly attached to their own usages, and proverbially averse to those of strangers, should have abandoned or corrupted their language, in which a great number of works had been composed; more especially as the Greek princes who governed Egypt after the death of Alexander do not appear to have, in any respect, interfered with or opposed the prejudices or inclinations of their subjects in favour of their vernacular idiom. If, during the lapse of a certain period, little is to be found respecting either the existence or the condition of the Egyptian language, it should be recollected that the history of Egypt during this period is very little known, and that the greater part of the works which would have thrown light on the reign of the Ptolemies have unfortunately perished.

But it is nevertheless certain that, under the dominion of the Romans, the Egyptian continued to be the language of the people. Origen, in his treatise against Celsus, observes, that "if a Greek desired to teach any useful doctrine to the Egyptians and Syrians, he would prefer learning the barbarous languages of those nations, to being wholly unintelligible by addressing them in Greek." The same father, in another place, asks why the fables which the Greeks derive from the subject of their gods, should be regarded as more worthy of credit than those of the Egyptians which have sprung from a similar source, or what rational ground there is for preferring Mnemosyne mother of the Muses, Themis mother of the Hours, Eurynome mother of the Graces, and other Greek names, to those which have been consecrated by the mythology of ancient Egypt. Nor are these the only proofs that the Egyptian language still continued to be understood. The Emperor Severus caused all the books which treated of the occult sciences to be removed from the temples of Egypt, and placed in the tomb of Alexander, that no one might in future either see the body of that prince, or read what had been written in those books. We learn from Capitolinus that the Roman soldiers raised a tomb to Gordian, on which they engraved an inscription in Greek, Latin, Persian, Hebrew, and Egyptian characters, in order that it might be read by all the world. The Emperor Diocletian, irritated at the Egyptians on account of their revolt, caused all the books on chemistry composed by their learned men in ancient times to be searched out and con-

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[1] Τῶν ϖϱο αὐτης βασιλεῶν εὐδε την 'Αιγυϖτιων ἀνασχομενων ϖεϱιλαβειν διαλεκτον, ἐνιων δε κὰι το Μακεδονιζειν ἐλιποντων. (Plutarch *in Vita Antonii*, tom. i. p. 913, ed. Ruald.)

Coptic.

signed to the flames, from an absurd apprehension that the people might acquire riches by means of this art, and be again in a condition to rise against their oppressors. Lastly, from the first ages of Christianity, the books of the Old and New Testament had been translated into the Egyptian language.

The greater part of the learned, Lelong, Renaudot, Wilkins, Münter, Woide, and Georgi, are of opinion that this version existed in the second century; and Woide even attempts to prove that the composition of the famous Sahidic manuscript of Dr Askew, entitled ΤΠΙΣΤΗ ΣΟΦΙΑ,[1] *Sapientia Fidelis*, containing the philosophy of the Gnostics, is to be referred to the same epoch. Picques thinks that the Coptic translation of the New Testament, which we now possess, was executed in the fifth century, when those who desired to be considered learned, or had connections with Alexandria, cultivated an acquaintance with the Greek or Latin, although the greater number spoke nothing but Egyptian. Paul the hermit, according to St Jerome, was equally conversant with the Egyptian and the Greek tongues. St Antony knew only Egyptian, in which language he addressed to different monasteries several letters, of which Mingarelli has published two fragments written in the Sahidic dialect. The author of the acts of St John and St Simeon, who suffered martyrdom under Diocletian, informs us that he wrote his history with his own hand, and then caused it to be translated into Egyptian by a copyist called Menas. Palladius and Rufinus were equally skilled in Greek, Latin, and Egyptian literature; and the former mentions that the abbot Apollo selected three men possessing the same accomplishments (*ἐμπειρους της Ἑλληνικης, και Ῥωμαϊκης, και Ἀιγυπτιακης διαλεκτου*). Joseph of Thmuis understood thoroughly, not only the Egyptian, but also the Greek. Jerome informs us that, in the Egyptian, the word PSONTOM-PHANEC signified *Saviour of the world*, and that, in the native idiom, Egypt was still denominated *Ham*. Pachomius, in his infancy, was taught Egyptian by his parents, and never knew any other language, as appears by the history of his life. To those of the brethren who understood not Egyptian, Theodorus acted as interpreter, and explained the discourses of Pachomius; he also translated into Egyptian the letter addressed to him by St Athanasius. In the Coptic acts of the martyrdom of St Apater, it is stated that the governor of the Thebaid addressed a communication to that saint in the Egyptian language. The Syriac author of the life of St Ephrem mentions that this saint, having undertaken a journey to Egypt, went to visit St Bischoï, but as they understood only each his mother tongue, it would have been impossible for them to converse together, if God had not granted to Bischoï the gift of speaking Syriac, and to St Ephrem that of explaining himself in Egyptian. Dioscorus, patriarch of Alexandria, in his eulogium on the bishop of Tkôou, with whom he travelled to the council of Chalcedon, states expressly that the latter knew only Egyptian. "As I understood not his conversation, the deacon Peter," says he, "acted as our interpreter." He adds, "The deacon Theopistos said to me, What shall we do with this mute, ATHROF, who has embarked with us? Are the heretics Egyptians, that he should have been sent to dispute with them?" Lastly, the author of an Arabic note inserted in a Coptic manuscript, preserved in the King's Library at Paris, informs us that, before the invasion of the Moslemins, it was the custom in Egypt, in the celebration of the offices, to read in Greek the lessons of Scripture, and to explain them in Coptic; and it appears from a fragment published by Georgi, that the inhabitants of Upper Egypt recited in both languages litanies, and other parts of the liturgy.

These authorities, and others which might be produced, leave no doubt whatever as to the preservation of the Egyptian language down till the period referred to in the last of them; it had in fact survived all casualties, and it co-existed with the Greek, even in the service of religion, without being displaced or abrogated by that polished idiom. But it is nevertheless true that the Coptic presents us with a multitude of Greek words, and that the actual alphabet of the language is almost entirely Greek, having retained only a small number of Egyptian characters, which it appears to have borrowed from the enchorial or current writing of ancient times. Are we then to conclude that this language is only a corruption or off-set of the Greek? It would be quite as reasonable to maintain, with Kircher, that Greek is derived from the Egyptian, or to pretend that the Persian language is only a dialect of the Arabic. Foreign terms introduced into a language change not either its nature or its form, any more than the food introduced into the body, though composed of the most diversified ingredients, makes any change in the personality or identity of the individual who receives it. Of this the English is a living and remarkable proof. The intermixture of Greek words in the Egyptian language is attributable to several causes. In the first place, a new form of government having been established in Egypt, first under the Ptolemies, and then under the Romans, the Egyptians were under the necessity of borrowing from the language the names of dignities, and all the terms which had reference to the administration. Secondly, the Christian religion having early penetrated into Egypt, introduced into that country a multitude of ideas altogether new and strange to the inhabitants, and which, consequently, could not be expressed by the words of their language; besides, several terms had been consecrated by religion, and a reasonable apprehension was entertained lest they should lose their true and proper signification by being translated into another idiom. It was necessary, therefore, to have recourse to the Greek, which was the language of the first preachers of the Gospel, and in which indeed were contained all the fundamental books of the Christian faith. Thirdly, some of those who translated Greek works into Egyptian, found it no doubt convenient, when they either happened not to understand a word, or could not readily find a Coptic equivalent, to leave it as it stood in the original; whilst others, to display their knowledge of both languages, employed indifferently Greek or Egyptian words. It must not, however, be supposed that all the Coptic books which we possess contain an equal number of Greek expressions: these are sometimes of more and sometimes of less frequent occurrence: but, in general, it may be observed that comparatively few can be cited, the equivalents of which were to be found in the Egyptian, a circumstance which M. Quatremère had frequent occasion to verify.

But a question here arises, namely, at what period the Egyptians renounced their ancient mode of writing, whether phonetic or other, to adopt the Greek alphabet, augmented by some letters borrowed from the enchorial characters. On this subject the learned are much divided. Some, as Lacroze and Father Georgi, carry the change as far back as the reign of Psammeticus; but this hypothesis is refuted by the date of the inscription of Rosetta, namely, the reign of Ptolemy Epiphanes, when the ancient methods of writing were still employed. Bonjour fixes it at the epoch of the conquest of Egypt by Alexander; Montfaucon, Jablonski, and Valperga, are of opinion that it took place under the Ptolemies; Schow thinks that the introduction of the Coptic alphabet was considerably anterior to our era;[1] whilst Zoega, founding on a passage of Aristides relative to the word Κανωβος, concludes that the Greek characters were not adopted in Egypt before the third century; an opinion which is confirmed by the passage of Capitolinus already referred to, where that author speaks of the inscription engraved upon the tomb of the Emperor Gordian, "Græcis, et Latinis, et Persicis, et Judaïcis, et *Ægyptiacis literis.*" By the Egyptian characters here mentioned cannot be understood the Greek letters, which are expressly distinguished; nor can the sacred characters, or hieroglyphics, be meant, because, even supposing that this kind of writing was known and understood in Egypt at the period referred to, it must have been within the reach of too small a number of persons to be employed in an inscription intended to be read by all the world (*ut ab omnibus legeretur.*) It appears, then, that the Egyptian letters here mentioned are the *demotic* or *enchorial* characters, and that these remained in use amongst the people of Egypt at the time of Gordian's death, which, according to the calculation of Tillemont, took place in the year 244, or about the middle of the third century of the Christian era.

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[1] The want of Coptic characters renders it necessary in this, and will oblige us, in other instances, to employ the Greek letters.

The Egyptian language was divided into three dialects: the Coptic of Misr, which is the same with the Sahidic; the Bahiric, so called from the province of Bahirah; and the Bashmouric, which was at one time in use in the province of Bashmour. But the only forms now in use are the Bahiric and the Sahidic, both of which dialects are derived from one and the same radical language. The Bahiric, also denominated the Memphitic, is easily distinguishable from the Sahidic, the differences which exist between them being known; and the former was the language of Lower Egypt, whilst the latter was that of the Thebaid or Saïd. But of these two dialects, which is the more ancient? This is a question which it is exceedingly difficult to resolve, as the historical monuments throw no light on the subject, and we are consequently reduced to mere conjecture. Macrizy, Renaudot, Lacroze, and Jablonski, regard the Sahidic dialect as the more ancient; but Georgi has contended for the priority of the Memphitic, and his opinion is also that of Valperga and of Münter. Mingarelli, however, has not ventured to decide the question either one way or other; but it may not unreasonably be supposed that the Thebaic or Sahidic dialect, in which are written the most ancient monuments extant in the Coptic language, and of which mention is made in the life of Pachomius, and perhaps also the Bashmouric, existed primitively in the Egyptian language, at the same time with the Memphitic. If, as Georgi has demonstrated, the Egyptian words, transmitted to us by the ancient authors, appear to have been for the most part borrowed from the last of these dialects, this circumstance ought to excite no surprise; for, as neither the Greeks nor Latins had many occasions to penetrate into the Thebaid, which was remote from the court and the centre of administration, the language of that province must have been less known to them than the dialect of Lower Egypt, which they were accustomed to hear spoken. Besides, the Thebaic dialect, which is a less cultivated form than the Memphitic, was not perhaps in use at this time, excepting in the villages, or in towns of the smallest class. But that the Memphitic dialect was in reality richer than the Sahidic remains to be proved; in fact, the latter, besides a sufficiently large number of words which properly belonged to it, had the distinctive peculiarity of readily adopting, with a slight change, all the Memphitic words. If the Thebaic manuscripts, then, appear to exhibit a greater number of Greek expressions, this intermixture, which is no doubt attributable to the caprice of the writers, and to the operation of the other causes already specified as affecting the Coptic generally, does not appear to have had much influence on the usage of the language; otherwise they would not have taken the precaution, in the Sahidic lexicons, of explaining the Greek words by native terms, a practice which, as far as we have observed, has not been followed in any of the Memphitic vocabularies.

But it has been objected, that, if the Coptic language represents, or is substantially the same with, the ancient Egyptian, we ought to discover in it the roots or original forms of all the Egyptian words which have been transmitted to us by the Greek or Latin authors; whereas it is not denied that the etymologies proposed by the learned who have occupied themselves with such researches are very far indeed from being all equally fortunate or successful.[2] In answer to this objection, which appears plausible and embarrassing, we have to observe that we admit the premises, but dispute the validity of the conclusion deduced from them. 1*st*, The search for etymologies is of itself extremely hazardous and conjectural. If Varro the most learned of the Romans, Servius the commentator of the Æneid, and the other Latin grammarians, were mistaken as to the origin of many words in their own language; if, in the French language, there exists a great number of terms, the etymology of which cannot now be discovered; and if Ménage, notwithstanding his vast erudition, has fallen into a multitude of errors on this subject; can it be wondered that the same thing should occur in the case of a foreign language which has been dead for centuries, and of which but few monuments have been preserved? 2*dly*, All the terms of the ancient Egyptian with which we are acquainted have been transmitted to us by the Greeks or the Romans, who, for the most part, were absolutely ignorant of that language; consequently, part of the explanations which they have given was probably conjectural, and, when they furnish no interpretation at all, the difficulty is still greater. Before attempting to trace these words, we would require to be certain as to the true readings; but how can such certainty be attained in regard to terms collected by foreigners, disfigured by a vicious pronunciation, and afterwards altered by the negligence of the copyists? It appears, also, from the contradictory explanations which the ancients have left of the names of Osiris and other divinities, that the Egyptians themselves had no very definite ideas as to the origin of many words in their language; and that their etymology, every authentic trace of which has now disappeared, was sometimes abundantly arbitrary. 3*dly*, It is possible that several of the Egyptian words which the ancients have transmitted to us belonged to the sacred language, the knowledge of which was confined to the priests, whilst the terms were employed in a sense different from that which was attached to them by the vulgar. 4*thly*, If, as has already been observed, the Christian re-

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[1] But he adds a qualification: "Tempus autem quo hæc unio alphabeti Græco-Ægyptii cum antiquo Ægyptio facta fuerit, deficiente omni auctoritate historica, adcurate definiri nequit." (Schow, *Charta Papyracea*, p. 118. Rome, 1788.)

[2] "On peut être surpris," says M. Akerblad, "que les savans comme Lacroze, Jablonski, et autres, qui ne connoissoient qu'une partie des ouvrages Coptes que nous possédons aujourd'hui, se soient imaginé qu'avec ces foibles moyens ils pourroient retrouver dans l'Egyptien moderne les étymologies de tous les noms des divinités Egyptiennes: aussi pas une seule des étymologies qu'ils ont proposées relativement aux noms des divinités dont il est fait mention dans le monument de Rosette, ne se trouve confirmée par ce monument." (*Lettre sur l'Inscription de Rosette*, p. 51.)

Coptic.

ligion introduced a great number of Greek words into the Egyptian language, it must at the same time have abolished and caused to disappear all the terms which relate to the ancient mythology.[1] *5thly*, We have already seen that the language of Egypt was divided into three dialects; the Memphitic or Bahiric, the Thebaic or Sahidic, and the Bashmouric. But, of these three dialects, the first is that of which we have the most information, though our knowledge of it is very far from being complete. The Sahidic we possess in a very imperfect state, whilst the monuments written in that dialect, and known in Europe, are still but few in number. The Bashmouric is so completely unknown, that M. Quatremère, with all his research, succeeded in procuring only a single word of this dialect,[2] which M. Champollion, nevertheless, quotes with confidence as an existing form of the Coptic.

But a revolution equally rapid and complete suddenly changed the political condition of Egypt. The Arabians, whom Mahommed had inspired at once with fanaticism and the spirit of conquest, abandoned their arid deserts, destroyed the monarchy of the Persians, and seized on the finest provinces of the Greek empire. In the twentieth year of the hejira, Amru-ben-el-As, general of Omar, one of the successors of the Prophet, entered Egypt at the head of a body of Moslemins; and as that country was then distracted by the religious dissensions of the orthodox Greeks (Melkites), who adhered to the council of Chalcedon, and of the native Egyptians (Jacobites), who were its implacable enemies, he found little difficulty in uniting it to the empire of the Arabians. Amru, equally politic and brave, whilst he waged an exterminating war against the Greeks, endeavoured by every means to conciliate the good-will of the Egyptian Jacobites; and, with this view, having recalled their patriarch Benjamin, who, under the reign of Heraclius, had been driven from his see, and forced to take refuge in the Thebaid, he authorized that prelate to resume the exercise of his functions. About the same time, the Christians of Egypt began to be denominated *Copts;* a name supposed by some to have been derived from that of an ancient king called *Kobt*, and by others to have originated from the Greek city of Coptos, whilst a third class contend that the Christians of Egypt were called Κοπτοι by the Greeks, in consequence of their adhering to the rite of circumcision, and a fourth, that the word *Copt* is only a corruption of the word ’Αιγυπτιος. (See the article Egypt, *sub initio.*)

But be this as it may, whilst it continued to be for the interest of the conquerors to pursue a conciliating line of policy towards the native population, or, in other words, to strengthen themselves by fomenting divisions and animosities in regard to disputed points in religion, the Egyptian language flourished, at least no obstacle was opposed to its cultivation. In a short time, however, the Copts as well as the Greeks began to be oppressed by their cruel and avaricious conquerors; the tyranny, which at first was only partial, became general; and the native population, being reduced to abject poverty, soon fell into a state of profound ignorance. Forced to learn the language of their masters, they neglected their ancient tongue, which daily became less useful; those of them who held the situations of *moubascher*, that is, of secretaries or intendants under the princes and grandees, had no other interest but to speak and write Arabic with purity; and thus the knowledge of Coptic began to decline, and was at length altogether lost in Egypt. But at what precise epoch the ancient language ceased to be spoken and understood, is a question which, considering the silence of the historical monuments, it is by no means easy to resolve. It appears, however, from a passage in the preface to the History of the Patriarchs of Alexandria by Severus, bishop of Ashmouneïn, that in the tenth century of our era the Coptic was no longer spoken in Egypt; but it is nevertheless certain that, long after this period, persons of consideration who desired to distinguish themselves by their acquirements studied Coptic, and that this language was as generally understood in Egypt as the Latin language is at present in Europe. There are still extant Coptic works composed long subsequently to the epoch fixed by Renaudot as that when the ancient language fell into total desuetude amongst the Egyptian Christians, namely, the century after the Mahommedan invasion; and, as Macrizy mentions the Coptic in several parts of his Description of Egypt, it would appear that, at the period when he wrote, that is, about the commencement of the fifteenth century, the language was not entirely lost. But for further details on this subject we must refer the reader to the learned and satisfactory work of M. Quatremère.

Having thus traced a rapid outline of the history of the Egyptian or Coptic under the Ptolemies, the Romans, and the Arabians, marking its different epochs, and indicating generally the changes it experienced, we shall now proceed to give a short account of the efforts which the learned of Europe have at different times made, sometimes with greater, sometimes with less success, to rescue that ancient idiom from oblivion, and, if we may so express ourselves, to impart to it a new existence.

Scaliger is commonly considered as the first who contemplated such an undertaking; but, if he really meditated the design which is attributed to him, it seems pretty certain that he was not in a condition to carry it into effect; for, as he makes a great parade of his acquaintance with Arabic, it may be presumed that he would not have been silent on the subject of Egyptian, if he had really known any thing of that language; and it is not a little remarkable, that in announcing his project of publishing a polyglot psalter in six languages, which he enumerates, he says not a word of Egyptian, nor is that language included in the number. Leonard Abela, who died at Rome in 1605, having been created bishop of Sidon, and sent to the East as apostolic nuncio by Gregory XIII., visited Syria, Mesopotamia, and Egypt, and during his travels made himself well acquainted with the oriental languages, including Egyptian; but whether he brought home any Coptic manuscripts, or imported only the knowledge he had acquired, has not been ascertained. John Baptist Remondi intended to publish the Bible in ten languages, namely, in Latin, Greek, Hebrew, Chaldaic, Arabic, Egyptian, Ethiopian, Armenian, Syriac, and Persian; and, besides the texts, and the different Latin versions, this collection was to contain grammars and lexicons of all these languages. But unfortunately his enterprise proved abortive, and the Egyptian remained completely unknown until the enlightened exertions of Peiresc procured for the learned of Europe the means of studying that language.

This illustrious man, to whom letters are under lasting obligations, spared neither pains nor expense to procure Coptic manuscripts. Of these he obtained several from Egypt, comprehending the gospels, epistles, and psalms, the Coptic ritual, and the liturgies of St Basil, St Gregory, and St Cyril; and he also expected the prophets in Coptic, as well as a psalter in seven languages, viz. Hebrew, Syriac, Greek, Coptic, Ethiopian, Persian, and Armenian, together with other curious manuscripts; but all of them were seized and carried off by pirates. Afflicted but not discouraged, Peiresc, having learned that the pirates had sailed for Tripoli, wrote to the pasha of that town, received a favourable answer, and not long afterwards was presented with a package wrapt up with great care, and said to have been transmitted from Tripoli. Peiresc, rejoiced at recovering the lost treasure, liberally rewarded the unknown persons by whom, as he supposed, it had been brought back to him. He was very disagreeably surprised, however, on opening the package, to find that it contained nothing but the Arabic dictionary of Raphelengius. But his zeal to promote the study of Coptic was in no degree cooled by the fraud thus practised on him; and having with a view to this engaged Samuel Petit and Salmasius to cultivate that new branch of literature, he communicated to them all the manuscripts which he had in his possession. Petit, however, appears to have made but little progress in this study; but Salmasius applied to it with great vigour, and had the merit not only of entering a new path without any guide, but also of inducing the learned to follow his example. In his different works may be seen the use which he made of the Coptic in explaining a number of Egyptian words; and his letter to Golius is particularly deserving of attention.

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[1] "Il ne faut donc pas s'attendre à en trouver aucune trace dans les livres Egyptiens que nous possédons, qui appartiennent tous au genre ecclésiastique, et dont plusieurs, tels que les Actes des Martyrs, présentent une grande uniformité, tant pour le style que pour les faits." (Quatremère, *Recherches sur la Langue et la Littérature de l'Egypte*, p. 28.)

[2] The fragment of St Paul, published by Georgi and Münter, has been referred to this dialect, but, as M. Quatremère thinks, erroneously. (See *Recherches*, ubi supra; also Georgi, *Præfat. in fragment. Evangel. S. Johan.* p. 54, et seqq., and Münter *Commentatio de indole Versionis Sahidicæ Novi Testamenti*, p. 75, et seqq. Copenhagen, 1789.)

About this time Pietro della Valle returned from his travels in the East, bringing with him several Coptic manuscripts, and amongst others an extensive Copto-Arabic lexicon, accompanied with grammars. These he placed in the hands of Thomas Obicini, who had long resided in the Levant, for the purpose of being translated into Latin. The work was successfully commenced; and the congregation of the Propaganda had already caused to be cut the Coptic characters, which served to print the *Alphabetum Coptum seu Ægyptiacum*, a work which appeared in 1629. But the affairs of Obicini having fallen into confusion, the undertaking languished, and was at length totally interrupted by the death of the translator, amongst whose papers scarcely any thing was found relative to the work. Peiresc, however, having heard of the manuscript, and being extremely desirous for its publication, pressed Pietro della Valle to lend it him for the purpose of having it translated by Salmasius. The Italian, it seems, refused, but consented to communicate it to Kircher, who was then at Rome, and had acquired a great reputation; or, at all events, he preferred that the translation should be executed under his own eye. Salmasius was in despair on finding that the credit of such a work was to be reaped by another; and in a letter on the subject which he addressed to Peiresc he evinces a bitter feeling of disappointment.

Kircher, with the assistance of the manuscripts of Pietro della Valle, and those of the library of the Vatican, published, first, his *Prodromus Ægyptiacus*, Rome, 1636, and then his *Lingua Ægyptiaca Restituta*, Rome, 1644. The first of these works contains several preliminary dissertations, some of them perfectly foreign to its object, with an essay on Coptic grammar; the second, which, with all its errors, is an useful and meritorious work, contains a grammar and a Copto-Arabic vocabulary. The numerous faults committed by Kircher would deserve indulgence, and due allowance would be made for the difficulties incident to the task undertaken by him, were it not for his unpardonable arrogance, and the bad faith with which he has inserted in his work words which are not to be found in the original; as, for instance, MENDJÊS *hircus*, which Jablonski suspected to be supposititious, and which Quatremère was unable to discover in the manuscript of Pietro della Valle. Hence, the enthusiasm which Kircher's work at first excited soon cooled, and the author incurred severe censure for his extravagance and dishonesty. Bochart and Ludolf refuted his assertion that the Greek is derived from the Egyptian; Wagenseil analysed his explanation of an inscription engraved on Mount Sinai, and proved its falsehood; Picques alleged that, besides his mother tongue, Kircher knew only a little Latin, and almost no Greek; and Renaudot, who has entered into extensive details respecting the works of the Jesuit, pronounces upon them a severe judgment, which is confirmed by Wilkins, Blumberg, Lacroze, Jablonski, Barthélemy, Tromler, and Schmidt. So great, indeed, was the distrust excited by the exposure of his malpractices, that, at one time, his *Lingua Ægyptiaca Restituta* was believed to be a literary fraud; but this opinion is entirely inadmissible, now that the original manuscript has been recovered.[1] Kircher also translated into Latin an Egyptian manuscript containing the ceremonies used amongst the Copts in ordinations.

Amongst the manuscripts of Samuel Petit, deposited in the King's Library at Paris, M. Quatremère found a Coptic alphabet, with observations written in Latin, and also two French letters addressed to Petit from Tours, the author of which appears to have been profoundly conversant with the oriental languages. It is now known that these letters are the production of Gilles de Loche, a capuchin, who, according to Gassendi, returned from his travels in Egypt about the year 1633. Gessner, in his *Mithridates*, collected the Egyptian words which the ancients have transmitted to us; Bochart published a greater number; and Ménage, in illustrating the three dialects, collected and explained all the foreign words, Egyptian, Lybian, Persian, Macedonian, and others contained in the Greek and Latin authors. Tromler mentions a confession of faith in Latin and Coptic, printed at Rome in the year 1668; and Lelong indicates a dissertation of Erasmus Vinding, *De Linguæ Græcæ Ægyptiacæ Affinitate*, Copenhagen, 1660. Hottinger, in his *Bibliotheca Orientalis*, has given some details respecting the Egyptian language. Theodore Petræus, who had resided long in Egypt, studied Coptic, collected manuscripts in that language, and on his return published the first psalm in Coptic, with an Arabic translation and a Latin version. He also translated into Latin, from the Coptic text, the epistle of St Paul to the Ephesians. Huntington, during his stay in Syria and Egypt, employed himself in collecting oriental manuscripts, particularly in Coptic, and his rich collection was afterwards deposited in the Bodleian Library at Oxford. Marshal, celebrated for his labours on the Anglo-Saxon, was also profoundly acquainted with the oriental languages, and particularly with Coptic. Not satisfied with having collated the Coptic version of the gospels with the Greek text, and collected the various readings, he undertook to publish the New Testament in the same language; but after every thing had been prepared, this useful enterprise failed in consequence of the premature death of the editor, who only lived to print a single sheet, containing the first three chapters of St Mathew's gospel, accompanied with a Latin version, and notes.

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[1] "Il est certain que Kircher, qui se piquoit de déchiffrer avec succès les hiéroglyphes et les caractères les plus inconnus, donna souvent prise sur lui à ses ennemis, et s'exposa à des méprises ridicules, en expliquant comme Egyptiennes et insérant dans ses ouvrages des inscriptions *tracées à plaisir*. On peut voir dans M. Tromler la manière dont il fut pris pour dupe par André Muller, gouverneur de Berlin, qui lui présenta des caractères factices, qu'il n'hésita pas à déclarer Egyptiens: Leibnitz parle d'une inscription envoyée de Vienne, que Kircher jugea composée ne mots Arabes, Syriaques, etc., tandis que Luc Holstenius n'y vit, avec raison, que des caractères Grecs un peu défigurés. (Quatremère, *Recherches*, pp. 54, 55.)

The study of Coptic was much encouraged at Oxford by the liberal patronage of the bishop, Dr Fell, who had caused Coptic types to be cast at his own expense for the intended work of Marshal, and who afterwards assisted Thomas Edward in his researches. Edward Bernard, having studied Coptic, left in manuscript an Egyptian lexicon, in which he explains many points concerning Egyptian antiquities. In 1686, Witsen, burgomaster of Amsterdam, presented to the university of Oxford the Ethiopian and Coptic punches, which he had sent to Edward Bernard. Bonjour, an Augustin friar of Toulouse, published *Exercitatio in Monumenta Coptica seu Ægyptiaca Bibliothecæ Vaticanæ*, Rome, 1699, in 4to; a work which is highly commended by Lacroze, and which displays a profound acquaintance with the Coptic language. This learned friar died in China in 1714, leaving several manuscript works, the most important of which is a History of the Dynasties of Egypt, cited by Cuper and by Georgi. Coptic literature owes much to Pope Clement XI., who, in the early part of the eighteenth century, sent three missions to Egypt in quest of manuscripts, and enriched the library of the Vatican with that beautiful and precious collection, which the treaty of Tolentino transferred to Paris, but which was afterwards restored on the downfall of Napoleon. Nor were the learned of Germany neglectful of the study of Coptic. Pfeiffer applied himself to the cultivation of that language, in which he wrote some indifferent verses. Andrew Muller studied Coptic, and applied it to the explanation of some words in the Bible. Acoluthus, a minister of the gospel at Breslau in Silesia, also devoted himself to this pursuit, and published a work entitled *Lingua Ægyptiaca Restituta*, in which he pretended that the ancient Egyptian had nothing in common with the Coptic, but might be detected in the modern Armenian. Acoluthus was a man of learning; but with all his erudition he was unable to give any colour of probability to this chimerical hypothesis. In the year 1716, Blumberg published a short Coptic grammar entitled *Fundamenta Linguæ Copticæ*, of which Lacroze has pronounced a very favourable opinion. Blumberg also promised a Copto-Latin and Latino-Coptic dictionary; but domestic misfortunes and a premature death prevented him from carrying his design into execution.

In France, Coptic literature was enriched by a great number of Coptic manuscripts brought from Egypt by Vansleb, and deposited in the library of the king. Louis Picques, doctor of the Sorbonne, who had distinguished himself as an orientalist, also applied with ardour to the study of Coptic, and was the first who recognised the variety of dialects. Besides the various readings of the Coptic and Armenian versions of the New Testament, we are indebted to him for ingenious etymologies of some Egyptian words, and amongst others of the famous name of Joseph, which has exercised the sagacity of several modern writers. This name, which the seventy-two write *Ψονθομφανηχ*, is, according to Picques, composed of the Coptic words ΠΣΟΤ-ΜΕΦΕΝΗ, *salus mundi*, the "safety of the world;"[1] which appears to be the only true etymology. He also made a great number of corrections on the lexicon of Kircher, and, in the few works which he published, displayed an erudition which justifies the commendations bestowed on them by his contemporaries. But all the orientalists who had yet appeared were eclipsed by the Abbé Renaudot, whose name will ever be dear to the lovers of eastern literature. In 1716, he published his Collection of the Oriental Liturgies, three of which (those of St Basil, St Gregory, and St Cyril) were translated from the Coptic; but the want of the characters prevented him from printing the original texts. To this translation are subjoined commentaries full of erudition, and several dissertations, particularly one entitled *De Copticarum Alexandrinorum Liturgiis*, and another, *De Lingua Coptica*. Scarcely had this work appeared, when it was attacked with the greatest asperity by Lacroze, under the pretext of avenging the memory of Ludolf, who had been severely handled both in the History of the Patriarchs of Alexandria, and also in the Collection of Liturgies. Lacroze was no doubt a formidable adversary, and he certainly detected some faults in the Collection of the learned Abbé, such as *Bibite vos omnes omnes* for *Bibite omnes*, which he denounces as an important falsification. But these errors were not of sufficient magnitude to justify the fierce ebullition of literary wrath displayed by Lacroze upon this occasion; and it is not a little amusing to find that, whilst exaggerating the oversights of his opponent, he is himself betrayed into some very serious inaccuracies. "En effet," says M. Quatremère, "si l'Abbé Renaudot n'avoit pas dans le Copte des connoissances très étendues, il est certain qu'il possédoit parfaitement l'Arabe et le Syriaque." This Lacroze is himself forced to admit.

As yet, however, the progress of the Egyptian language had been but slow and imperfect. All the Coptic monuments were still in manuscript, and the learned had no guide except the lexicon of Kircher, which, besides the errors with which it teems, and the omission of a great number of words, has the serious inconvenience of not being arranged in alphabetical order. But these obstacles were now about to be removed; and the first who contributed to facilitate the acquisition of Coptic was David Wilkius, a Prussian by birth, who, during his residence in England, changed his name into that of *Wilkins*, by which alone he is known. Wilkins applied with ardour to the study of Coptic, and after having examined every work connected with that language in the Bodleian Library, he travelled through France and Italy, occupying himself in copying or collating all the manuscripts he could find. In 1715, he published, in Chamberlayne's collection, the Lord's Prayer in Coptic, with a grammatical analysis, and a dissertation *De Lingua Coptica*. In 1716, he published, at the expense of the university of Oxford, the New Testament in Coptic, accompanied with a Latin translation. Lacroze, who examined this work with great care, discovered a multitude of errors both in the text and in the translation, and thence conceived a most unfavourable opinion of the talents of Wilkins, whom he taxes with gross ignorance of Coptic, and even places in this respect below Kircher. But this censure must appear somewhat too severe, when we reflect on the difficulties Wilkins had to surmount in the study of a dead language, which he had learned without a guide, and without having either a grammar or a dictionary to assist him. He redeemed his character, however, by his Coptic Pentateuch, which appeared in 1731, and in which, according to Jablonski, he greatly surpassed any thing he had previously done. Wilkins also proposed to publish a Coptic grammar and dictionary; but finding no encouragement, the enterprise was at length abandoned. The manuscript of his History of the Church of Alexandria was unfortunately lost immediately after his death, and all the exertions of Woide to recover it proved fruitless.

Lacroze, who about the same time occupied himself with the study of Coptic, left far behind him all those who had entered on the same career. He communicated his acquisitions on this subject to the celebrated Paul-Ernest Jablonski, so well known by his great erudition, and his labours connected with Egyptian antiquities; and Jablonski having, during his travels, copied, in whole or in part, several Coptic manuscripts, at Paris, at Leyden, and at Oxford, communicated these copies to Lacroze, who, with their assistance, and that furnished by the manuscripts of the library of Berlin, composed a very exact dictionary of the Coptic language. This work was that of all his manuscripts upon which the author set the greatest value; but not having the means of publishing it, he contented himself with printing the preface, which appeared in the *Bibliotheca Historico-Philologica Bremensis* (tom. v. p. 744). To his dictionary Lacroze annexed a list of words in the Sahidic dialect, in regard to which Picques and Renaudot had but confused notions, whilst all the other men learned in Coptic, including Wilkins, were absolutely ignorant of its' existence. The reputation of Lacroze's lexicon having spread throughout Europe, Wilkins, who had also composed a Coptic dictionary, proposed to Lacroze to cast both works into one, and to print it under their joint names, either at London or at Berlin; but the latter, who knew the merit of his own work, and felt no desire whatever to amalgamate it with that of Wilkins, declined the proposal. After the death of Lacroze, his Coptic dictionary passed with his other manuscripts into the hands of Jordan, his biographer; and, when the latter died, his brother sold the Coptic and Armenian dictionaries to the university of Leyden. In the Royal Library at Paris there is a copy of the Coptic dictionary in the handwriting of Lacroze.

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[1] The Egyptian name of Joseph, expressed in Hebrew characters, is *Zaphnathpaneah*, which, as we have seen above, is written *Psonthomphanêch* in the Septuagint version; but there can be little doubt, we think, that both were formed from the Egyptian words *Psot-mepheneh*, as Picques has most ingeniously supposed.

Jablonski, in his *Pantheon Mythicum*, and in his dissertations on the god Rempha, the land of Goshen, Memnon, and other kindred subjects, made frequent use and showed a profound knowledge of Coptic. He had also laboured for many years on an Egyptian glossary, in which he collected, arranged in alphabetical order, and, with the assistance of the Coptic, explained, all the Egyptian words which are found dispersed in the Greek and Latin authors, and even in the Hebrew text of the Bible. He had also written a multitude of notes and corrections on the New Testament and Coptic Pentateuch of Wilkins. At his death these annotations, as well as the copies he had made of Memphitic and Sahidic manuscripts, were sold by his son to Dr Radcliff of Oxford; whilst another part of his papers, containing the glossary already mentioned, with a number of dissertations, discourses, and other productions, some of them still inedited, were sent to Leyden to the learned Ruhnkenius. Sensible of the value of these papers, Ruhnkenius placed them in the hands of Henry Albert Schultens, who readily undertook to arrange them for publication; Schultens, however, died soon afterwards; and, at the solicitation of Ruhnkenius, Tewater, professor of theology in the university of Leyden, consented to take charge of the publication, which accordingly appeared at Leyden in 1804, under the title of *Jablonskii Opuscula.* The Egyptian glossary forms the first volume of this collection, and, from the great erudition displayed in it, is calculated to add new lustre to the reputation of its celebrated author.

Amongst those who cultivated some acquaintance with Coptic may be mentioned Bayer, who studied it in the works of Lacroze; Richard Cumberland, bishop of Peterborough, who, having received a copy of Wilkins' Coptic New Testament, commenced the study of the language in his eighty-fourth year; George Whiston, who copied and translated into Latin the Pentateuch, and also composed a Coptic lexicon; Wasse and Gagnier, the latter of whom copied for Lacroze the Acts of the Apostles in the Sahidic dialect, from a manuscript in the Bodleian Library; Henselius, who gave some details on the Coptic in his *Synopsis Universæ Philologiæ, et Harmonia Linguarum totius Orbis*, Nuremberg, 1741; the Abbé Barthélemy, who, in his *Réflexions Générales sur les Rapports des Langues Egyptienne, Phénicienne, et Greque*, inserted in the Memoirs of the Academy of Belles-Lettres, evinced a considerable acquaintance with Coptic; Kocher of Berne, the author of a very learned dissertation *De Etymo nominum Cnuphis, aliorumque adfinium, ex Ægypto repetundo*, praised by Jablonski and Reiske; and Schmidt of the same place, who devoted himself exclusively to Egyptian studies, made frequent use of the Coptic to explain Egyptian words, particularly in his able dissertation *Sur une Colonie Egyptienne établie aux Indes*, and even composed a Coptic dictionary. Raphael Tuki, who was a Copt by birth, and bishop of Arsinoë, printed at Rome the liturgic works of his nation, in Coptic and in Arabic. He published the missal in 1736, the psalter in 1744, the diurnal in 1750, the first part of the pontifical in 1761, the second in 1762, the ritual in 1763, and, lastly, the office of the Virgin in 1764. Tuki also composed a Coptic grammar, which was published at Rome in 1778, by the congregation of the Propaganda, but which, like all the works of the orientals on the subject of grammar, is defective in method, and devoid of critical accuracy. Assemanni also published at Rome various liturgic pieces in Coptic and Arabic, with a Latin version. Lastly, Christopher Muller, in a work entitled *Satura Observationum Philologicarum*, Leyden, 1752, made some use of the Coptic, which he had learned with the help of Lacroze's dictionary, communicated to him by Dithmar Hakman, minister at Wassenaer.

Scholtz, preacher to the king of Prussia at Berlin, occupied himself with ardour in the study of Coptic. In 1748, he obtained permission from the university of Leyden to take a copy of Lacroze's lexicon; and this was accordingly done by Woide, a Pole, then a student in that university, who also took a copy of the dictionary for himself. Before this, Scholtz, being brother-in-law to Jablonski, had been assisted in his Coptic studies by that celebrated scholar, who communicated to him copies of his manuscripts; and having also at his disposal all the treasures of the library of Berlin, with the inedited remarks of Lacroze, he had composed a grammar of the Memphitic and Sahidic dialects, and a dissertation on the Coptic language. Afterwards, becoming possessor of the lexicon of Lacroze, and conceiving that the size of the work would be an obstacle to its publication, he made an abridgment of it, in which he carefully preserved all the words and significations, contenting himself with retrenching only the passages which in the original had been cited at length. This work had been completed, when, in 1765, Woide, passing through Berlin on his way to England, was intrusted by Scholtz with the abridgment of the dictionary, the grammar, and the dissertation, in order that he might endeavour to get them published. Woide, on his arrival in this country, applied to Dr Durell, vice-chancellor of Oxford, and, after a negotiation of more than two years, it was at length decided that the lexicon, grammar, and dissertation should be published at the expense of the university of Oxford. It was judged proper to print the dictionary first, as being the most important work. Woide, however, being dissatisfied with the abridgment of Scholtz, would have preferred publishing the lexicon as Lacroze had left it, with the passages cited at length; but although it would have been easy to verify the citations from the New Testament and the Pentateuch by the printed copies, it became almost impossible to refer to the passages from the psalms, liturgies, and other inedited works, of which there existed at most only two or three copies, in each of which the pagination was different. On the other hand, Lacroze, in composing his dictionary, had possessed but few aids; the works which he put under contribution being the New Testament, the psalms, the liturgies of St Basil, St Gregory, and St Cyril, and some extracts from the Pentateuch, Daniel, and the office of passion week. Sensible of the imperfection of this work, Woide, having collected a great number of additions from the Pentateuch, a volume of Coptic prayers, and other sources, solicited and obtained permission to insert these additions in the text of the dictionary. But the impression being already considerably advanced, and Scholtz, who wished the dictionary to be as short as possible, having desired the additions to be made at the end, Woide, after printing a small number in the body of the dictionary, where they appear in parentheses, resolved to publish a supplement in a separate form; and, in fact, he composed a very extensive Sahidic dictionary, though he was prevented by circumstances from completing his whole design.

The dictionary of Lacroze appeared in the year 1775, and the printing of the grammar was next commenced. But as this work, from its great length and want of method, seemed rather calculated to repel than to encourage students, it was resolved to print only an extract, and to deposit the original in the Bodleian Library. Scholtz consented to this arrangement, and Woide undertook to execute an abridgment of the work, which appeared in 1778. Woide performed his task with equal judgment and ability; he changed the plan adopted by Scholtz, who had separated the elements of the Sahidic dialect from those of the Memphitic; he recast both grammars into one, contenting himself with indicating, after each rule of the Memphitic dialect, the relations or the differences presented by the Sahidic; he expunged whatever seemed superfluous or useless, and inserted new observations, the fruit of a profound study of the language, with a multitude of passages and examples drawn from the Memphitic and Sahidic manuscripts which he had copied. His next undertaking was to collect and to publish all the fragments extant of the Sahidic version of the New Testament; and the impression was already far advanced, when death put a period to his laborious and useful career. But the work was continued by Ford, professor of Arabic at Oxford, and appeared in 1799, in one volume folio. Woide left numerous copies of Coptic and Sahidic manuscripts, a dissertation in English on the Coptic language, and the supplement to the lexicon of Lacroze.

With the aid of this dictionary, which Woide had lent him, J. Reinhold Foster applied to the study of Coptic, in which he made great proficiency, as appears by his letters to Michaelis, and by his work *De Bysso Antiquorum*. In 1767, Tromler published at Leipsig a small volume entitled *Bibliothecæ Copto-Jacobiticæ Specimen*, containing an enumeration of the works which had appeared on the language, history, and religion of the Copts, and preceded by a dissertation *de Fatis Linguæ Copticæ*. At Rome, the celebrated Cardinal Borgia, distinguished as a zealous and munificent patron of letters, engaged Georgi, who, in his *Alphabetum Tibetanum*, had evinced an intimate acquaintance with Coptic, to publish an ancient Sahidic fragment in his cabinet containing part of the Acts of St Coluthus. This work appeared at Rome in 1781, with a translation and notes by Georgi, and accompanied with a curious preface, in which the learned cardinal himself relates all that is known of the history and worship of St Coluthus. Georgi then occupied himself in translating and commenting on a very ancient fragment in the same cabinet, containing the Greek text and the Sahidic version of a portion of St John. This work appeared in 1789. In 1793, he published a second edition of the Acts of St Coluthus, with new additions, numerous notes, and a variety of Sahidic fragments from the cabinet of Cardinal Borgia. In the preface he has inserted extracts from several acts of martyrs, written in the Memphitic dialect, which the cardinal had caused to be copied by Tuki, from a manuscript in the Vatican Library; but the careless Copt had done his work very negligently, for the copy made by him is full of errors.

Whilst the works of Georgi thus contributed to advance the study of Coptic in the south, several learned men of the north of Europe directed their attention to that language. Adler, already distinguished by his acquirements as an orientalist, having learned Coptic during his residence at Rome, proceeded to examine the Sahidic manuscripts of Cardinal Borgia, after which he copied the book of Job and the fragments of the New Testament; he also employed the Coptic language to explain several Egyptian words. Münter, whom Cardinal Borgia had induced to study Coptic, caused to be printed at Rome, in 1786, the ninth chapter of Daniel, in the two dialects, with a translation and notes. On his return to Copenhagen he also published an excellent dissertation on the Sahidic version of the New Testament, to which he subjoined fragments of the epistles of St Paul to Timothy. Münter afterwards undertook, in conjunction with Adler, to publish the prophecy of Daniel in the Memphitic dialect, the book of Job, the greater part of the book of Proverbs, and fragments of the New Testament, in the Sahidic dialect.

Mingarelli, who at an advanced age studied Coptic, published at Bologna in 1785, several Sahidic fragments from the collection of the Chevalier Nani at Venice, with a Latin translation and notes. Zoega, of whom we have already spoken, made frequent use of the Coptic in his learned works on Egyptian coins, and also in that on the origin and use of the obelisks. It was he whom Cardinal Borgia selected to prepare a detailed catalogue of the Coptic and Sahidic manuscripts of his collection. Father Simeon a Magistris, in his edition of Daniel according to the Septuagint, and Bernard de Rossi in his dissertation *Della Lingua propria di Cristo*, have given some details respecting the Coptic language. In the year 1785, Thomas Valperga, abbot of Caluso, published at Parma a grammar of the Coptic language, under the assumed name of Didymus of Turin. Baron Silvestre de Sacy, one of the most learned orientalists of modern times, has made use of the Coptic language for explaining several Egyptian words, in his Observations on the name of the Pyramids, and also in his Letter on the triple inscription of Rosetta. Mr Akerblad, a learned Swede, applied with indefatigable ardour to the study of Coptic during his residence at Paris and at Rome; and his Letter on the inscription of Rosetta, in which he displayed equal erudition and sagacity, entitled him to rank amongst the small number of those who have thoroughly understood Coptic. In this class a distinguished place must be allotted to the accomplished author of the *Recherches sur la Langue et la Littérature de l'Egypte;* a work which is not more remarkable for profound research and extensive erudition, than for sound criticism and the happy union of conciseness and perspicuity. Nor is the celebrated author of *Asia Polyglotta* inferior to any of his predecessors or contemporaries in the knowledge of Coptic. This he has made sufficiently evident by his Letters on Acrological Hieroglyphics, and still more by his *Examen Critique des Travaux de feu M. Champollion sur les Hieroglyphes*, Paris, 1832, a work of disproportionate severity, but of great learning and extreme critical acuteness.

Without a knowledge of Coptic it is next to impossible to make any advance worth mentioning in the study of hieroglyphics. This is too obvious to require almost any illustration. If the Coptic be essentially identical with the ancient Egyptian, that is, if the remains of the latter be incorporated in the different dialects of the former, it is evident that the phonetic alphabet can never be applied to any good purpose except by those who are in a condition to distinguish and to understand something of the language in which the inscriptions are written. A person ignorant of Coptic may indeed decipher, by means of this alphabet, the

Rosetta Inscription.

foreign proper names contained in the ovals or rings; but beyond this he cannot advance a single step; to him a legend or a text must be as inaccessible as if nothing had been done on the subject of hieroglyphics since the days of Pierius and of Kircher. Accordingly, all those who have recently treated of the subject evince, by their writings, that they have been at pains to acquire in a greater or less degree this indispensable preliminary qualification. See, in particular, Rosellini, *I Monumenti dell' Egitto e della Nubia*, Pisa, 1832, 1833, 1834; and Wilkinson, *Materia Hieroglyphica*, Malta, 1828; also *Topography of Thebes, and General View of Egypt*, London, 1835.[1]

III. DR YOUNG'S ANALYSIS OF THE TRIPLE INSCRIPTION OF ROSETTA.

The block or pillar of black basalt, found by the French in digging up some ground at Rosetta, and now placed in the British Museum, exhibits the remains of three distinct inscriptions; and the last, which is in Greek, ends with the information, that the decree which it contains was ordered to be engraved in three different characters, the sacred letters, the letters of the country, and the Greek. Unfortunately a considerable part of the first inscription is wanting; the beginning of the second, and the end of the third, are also mutilated; we have, therefore, no precise points of coincidence from which we can set out, in our attempts to decipher the unknown characters. The second inscription, which it will be safest to distinguish by the Greek name *enchorial*, signifying merely the characters *of the country*, notwithstanding its deficiencies near the beginning, is still sufficiently perfect to allow us to compare its different parts with each other, and with the Greek, by the same method which we should employ if it were entire. Thus, if we examine the parts corresponding, in their relative situation, to two passages of the Greek inscription in which the proper names *Alexander* and *Alexandria* occur, we soon recognise two well-marked groups of characters resembling each other, which we may therefore consider as representing these names; a remark which was first made by M. de Sacy, in his letter relating to this inscription. A small group of characters, occurring very often in almost every line, might be either some termination, or some very common particle; it must, therefore, be reserved till it be found in some decisive situation, after other words have been identified, and it will then be easily shown to mean *and*. The next remarkable collection of characters is repeated twenty-nine or thirty times in the enchorial inscription; and we find nothing which occurs so often in the Greek, except the word *king*, with its compounds, which is found about thirty-seven times. A fourth assemblage of characters is found fourteen times in the enchorial inscription, agreeing sufficiently well in frequency with the name of *Ptolemy*, which occurs eleven times in the Greek, and generally in passages corresponding to those of the enchorial text in their relative situation; and, by a similar comparison, the name of *Egypt* is identified, although it occurs much more frequently in the enchorial inscription than in the Greek, which often substitutes for it country only, or omits it entirely. Having thus obtained a sufficient number of common points of subdivision, we may next proceed to write the Greek text over the enchorial, in such a manner that the passages ascertained may all coincide as nearly as possible; and it is obvious that the intermediate parts of each inscription will then stand very near to the corresponding passages of the other.

In this process, it will be necessary to observe that the lines of the enchorial inscription are written from right to left, as, Herodotus tells us, was the custom of the Egyptians; the division of several words and phrases plainly indicating the direction in which they are to be read. It is well known that the distinct hieroglyphical inscriptions, engraved on different monuments, differ in the direction of the corresponding characters. They always face the right or the left of the spectator, according as the principal personages of the tablets to which they belong are looking in the one or the other direction; but where there are no tablets, they almost always look towards the right; and it is easily demonstrable that they must uniformly have been read beginning from the front and proceeding to the rear of each rank. But the Egyptians seem never to have written alternately backwards and forwards, as the most ancient Greeks occasionally did. In both cases, however, the whole of the characters thus employed were completely reversed in the two different modes of using them, as if they were seen in a glass, or printed off like the impression of a seal.

By pursuing the comparison of the inscriptions thus arranged, we ultimately discover the signification of the greater part of the individual enchorial words; and the result of the investigation leads us to observe some slight differences in the form and order of some parts of the different inscriptions, which are indicated in the conjectural translation published in the *Archæologia* and in the *Museum Criticum*. The degree of evidence in favour of the supposed signification of each assemblage of characters may be most conveniently appreciated, by arranging them in a lexicographical form, according to the words of the translation, the enchorial words themselves not readily admitting a similar arrangement; but the subject is not of sufficient interest for the public to make it necessary that this little lexicon should be engraved at length.

It might naturally have been expected that the final characters of the enchorial inscription, of which the sense is thus determined with tolerable certainty, although the corresponding part of the Greek is wanting, would have immediately led us to a knowledge of the concluding phrase of the distinct hieroglyphical characters, which remains unimpaired. But the agreement between the two conclusions is by no means precise; and the difficulty can only be removed by supposing the *king* to be expressly named in the one, whilst he is only designated by his titles in the other. With this slight variation, and with the knowledge of the singular accident, that the name of Ptolemy occurs three times in a passage of the enchorial inscription, where the Greek has it but twice, we pro-

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[1] In the last-mentioned work, the author, Mr Wilkinson, gives us an important piece of information connected with the subject treated of in this section. After expressing his regret that the Delta has been so little examined, "especially as some light might possibly be thrown on the remains of a very interesting period," he proceeds thus: "Another object worthy of the attention of future travellers, is the ancient library of a Copt convent at the Natron Lakes, where, besides many other manuscripts, is *a Coptic and Arabic dictionary*, which, though it cannot be purchased, *might be copied*, on a proper application for that purpose to the patriarch of Qaherah (Cairo). And as the study of hieroglyphics, and our future insight into the long-lost language and early history of Egypt, depend entirely on the possession of a similar work, it would at the present moment be an inestimable acquisition." (*Topography of Thebes*, &c. p. 347.) From all that we have known or learned of oriental lexicographers or grammarians, we are not inclined to estimate so highly as Mr Wilkinson has here done, the advantages likely to result from the acquisition of this lexicon; but, at the same time, we entirely agree with him in thinking that "proper" means should immediately be employed to obtain a copy of the dictionary, more especially as it appears to be so highly prized by the Copts. Mr Wilkinson informs us that his own efforts to obtain permission to copy it proved fruitless. But if the viceroy were induced to signify his pleasure on the subject, the patriarch would most probably find it convenient not to withhold his assent.

Rosetta Inscription.

ceed to identify this name amongst the sacred characters, in a form sufficiently conspicuous to have been recognised upon the most superficial examination of the inscriptions, if this total disagreement of the frequency of occurrence had not imposed the condition of a long and laborious investigation, as an indispensable requisite for the solution of so much of the enigma. This step, however, being made good, we obtain from it a tolerably correct scale for the comparative extent of the sacred characters, of which it now appears that almost half of the lines are entirely wanting, whilst those that remain are also much mutilated. Such a scale may also be obtained, in a different manner, by marking, on a straight ruler, the places in which the most characteristic words, such as *god*, *king*, *priest*, and *shrine* occur, in the latter parts of the other inscriptions, at distances proportional to the actual distances from the end; and then trying to find corresponding characters amongst the hieroglyphics of the first inscription, by varying the obliquity of the ruler, so as to correspond to all possible lengths which that inscription can be supposed to have occupied, allowing always a certain latitude for the variations of the comparative lengths of the different phrases and expressions. By these steps it is not very difficult to assure ourselves, that a *shrine* and a *priest* are denoted by representations which must have been intended for pictures of objects denoted by them; and this appears to be the precise point of the investigation at which it becomes completely demonstrative, and promises a substantial foundation for further inferences. The other terms, *god* and *king*, are still more easily ascertained, from their situation near the name of Ptolemy.

The most material points of the three inscriptions having been thus identified, they may all be written side by side; and the sense of the respective characters may be still further investigated, by a minute comparison of the different parts with each other. The last line of the sacred characters, with the corresponding parts of the other inscriptions, which the reader will find represented under the head *Specimens of Phrases*, will serve as an illustration of the result which has been obtained from these operations.

In thus comparing the enchorial with the sacred characters, we find many coincidences in their forms, by far too accurate to be compatible with the supposition that the enchorial could be of a nature purely alphabetical. It is evident, for example, that the enchorial characters for a *diadem*, an *asp*, and *everliving*, are immediately borrowed from the sacred. But this coincidence cannot certainly be traced throughout the inscriptions; and it seemed natural to suppose, that alphabetical characters might be interspersed with hieroglyphics, in the same way that the astronomers and chemists of modern times have often employed arbitrary marks, as compendious expressions of the objects which were most frequently to be mentioned in their respective sciences. But no effort, however determined and persevering, had been able to discover any alphabet which could fairly be said to render the inscription, in general, at all like what was required to make its language intelligible Egyptian, although most of the proper names seemed to exhibit a tolerable agreement with the forms of letters indicated by Mr Akerblad; a coincidence, indeed, which might be found in the Chinese, or in any other character not alphabetical, if they employed words of the simplest sounds for writing compound proper names.

The question, however, respecting the nature of the enchorial character, appears to be satisfactorily decided by a comparison with each other, of various manuscripts or papyri still extant. Several of these, published in the *Description de l'Egypte*, have always been considered as specimens of the alphabetical writing of the Egyptians, and certainly have as little appearance of being imitations of visible objects, as any of the characters of this inscription, or as the old Arabic or Syriac characters, to which they bear, at first sight, a considerable resemblance. But they are generally accompanied by tablets, or delineations of certain scenes, consisting of a few visible objects, either detached, or placed in certain intelligible relations to each other; and we may generally discover traces of some of these objects amongst the characters of the text that accompanies them. A similar correspondence between the text and the tablets is still more readily observable in other manuscripts, written in distinct hieroglyphics, slightly yet not inelegantly traced, in a hand which appears to have been denoted by the term *hieratic;* and by comparing with each other such parts of the text of these manuscripts as stand under tablets of the same kind, we discover, upon a very minute examination, that every character of the distinct hieroglyphics has its corresponding trace in the running hand; sometimes a mere dash or line, but often perfectly distinguishable, as a coarse copy of the original delineation, and always alike when it answers to the same character. The particular passages which establish this identity extend to a series of above ten thousand characters; they have been copied in adjoining lines, and carefully collated with each other; and their number has been increased, by a comparison with some yet unpublished rolls of papyrus. A few specimens from different manuscripts, sufficient to show the forms through which the original representation has passed, in its degradation from the *sacred* character, through the *hieratic*, into the *epistolographic*, or common running hand of the country, will be found under the head of *Comparison of Manuscripts*.

It seems at first sight incomprehensible that this coincidence, or rather correspondence, should not be equally observable in the two inscriptions of the Rosetta stone, which, if the enchorial character is merely a degradation of the sacred, must naturally be supposed to be as much alike as those of the different manuscripts in question; whilst, in reality, we can but seldom trace any very striking analogy between them. But the enchorial character, having long been used in rapid writing, and for the ordinary purposes of life, appears to have become so indistinct in its forms, that it was often necessary to add to it some epithet or synonym, serving to mark the object more distinctly; just as, in speaking Chinese, when the words are translated from written characters into a more limited number of sounds, it is often necessary, on account of the imperfection of the oral language, to add a generic word, in order to determine the signification, and to read, for example, *a goose bird*, when *a goose* only is written, in order to distinguish it from some other idea implied by a similar sound; and just as in English we might sometimes be obliged to say *a yew tree*, in order to distinguish it from *a ewe sheep*, or *you yourself*, or *the letter u*. The enchorial character, therefore, though drawn from the same source, can scarcely, in this form, be called the same language with the sacred hieroglyphics, which had probably remained unaltered from the earliest ages, whilst the running hand admitted all the variations of the popular dialects, and bore but a faint resemblance to its original prototype. Indeed, if it had been completely identical, there could have been no propriety in repeating the inscription with so slight a change of form.

The rituals and hymns contained in the manuscripts which have been mentioned, are probably either of higher antiquity than the inscription of Rosetta, or had preserved a greater purity of character, as having been continually copied from older originals. It is also remarkable, that in one of these rolls of papyrus, engraved by Denon, the introduction is in the sacred character, and some of the

Vocabulary.

phrases contained in it may be observed to be repeated in the subsequent part of the manuscript, which is in a kind of running hand, though somewhat less degraded than in most other instances.

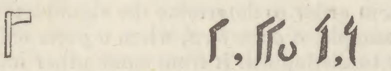
It was not unnatural to hope, that the comparison of these different manuscripts would have assisted us very materially in tracing back all the enchorial characters to the corresponding hieroglyphics, as far as the parts of the respective inscriptions remain entire, and even in filling up the deficiencies of the sacred characters where they are wanting; and something has certainly been gained from it with respect to the names of several of the deities; but, on account of the differences which had crept in between the forms of the language, expressed by the sacred and the cursive characters, the advantage has hitherto been extremely limited. It seems, indeed, to have been a condition inseparable from the whole of this investigation, that its steps should be intricate and laborious, beyond all that could have been imagined from our previous knowledge of the subject; and that, whilst a number of speculative reasoners have persuaded themselves, at different times, that they were able to read through a hieroglyphical inscription in the most satisfactory manner, beginning at either end, as it might happen, the only monument which has afforded us any real foundations for reasoning on the subject, is more calculated to repress than to encourage our hopes of ever becoming complete masters of the ancient literature of Egypt; although it is unquestionably capable of serving as a key to much important information with respect to its history and mythology. Nor is it by any means impossible, that a careful consideration of other monuments already known, or of such as are now discovered from day to day, may enable us to detect a number of unknown characters, so situated with respect to others which are already understood, as to carry with them their own interpretation, supported by a degree of evidence far exceeding mere conjecture.

IV. RUDIMENTS OF AN HIEROGLYPHICAL VOCABULARY.

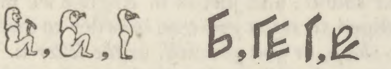
1. *Deities.*

1. The word God is always represented in the inscription of Rosetta, and often in many others, by a character resembling a particular kind of hatchet, which is delineated repeatedly at Medinet-Habou as a weapon in the hands of warriors, and is even found amongst the modern weapons engraved by Denon.[1]

GOD *powerful.*
ⲛⲟⲩϯ



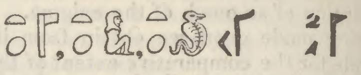
GOD *judge.*



This character is frequently exchanged, in parallel passages of different manuscripts, or of the same, for a figure sitting or standing without distinct arms or feet, either with a human head or a hawk's head; or sometimes, by a deviation from the correct nature of an abstract or general term, with the heads of different animals, according to the character of the deity to whom it is applied. But in the inscription of Rosetta this symbol appears to be exclusively appropriated to the gods in their *judicial* capacity; and it occurs several times in the term meaning *lawful,* which will be afterwards explained. This interpretation is also fully justified by the testimony of Plutarch, that "the figures of *judges* were represented without hands."

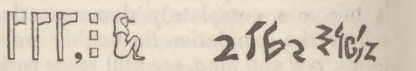
2. A Goddess is denoted by the hatchet or sitting figure, with the addition of the female characteristic, generally as a termination; but sometimes the simple character is applied to gods and goddesses indifferently.

GODDESS.
ϯⲛⲟⲩϯ



The semicircle and oblique oval, distinguishing the feminine gender, are observable in almost all well-marked names of females found in different tablets; and the crooked line, which corresponds to them, in the enchorial character of the stone of Rosetta, may be distinguished at the end of each of the five names of females that occur in the inscription. Occasionally the characteristic is prefixed, and this position agrees better with the Coptic ti, which distinguishes a female. Nor must we omit to observe, that a semicircle seems to answer to the t in some other cases, and is always expressed in the running hand by the character which Mr Akerblad calls t or d, and which is also exactly the Syriac t. The asp or basilisk standing erect is a symbol of divinity, which occurs on the green sarcophagus called the tomb of Alexander, and elsewhere, instead of the more ordinary character. In a few instances, the semicircle is found without the oblique oval. The plural, Gods,

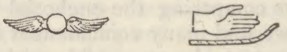
GODS.
ϩⲁⲛⲛⲟⲩϯ



is formed by repeating the character three times, or by placing three dashes after, or sometimes before it. In the enchorial inscription, the dashes are united into a crooked line, and are placed in this instance both before and after the principal character; but, in general, the second line is straighter than the first. The dual is expressed by a double character only.

3. A winged globe, sometimes flattened as if intended for an egg, but often coloured red, is very commonly represented as hovering over a hero, and generally occupies the lintel of some of the doors of a temple.

Agathodaemon.
ⲓϥⲛⲟⲩϥⲓ ?



A globe nearly similar is also sometimes connected with the head and tail of a serpent, bearing the symbol of *life,* which is the common characteristic of a deity. There can, therefore, be no objection to considering these representations as belonging to the *Agathodaemon,* or *Chnuphis* of the Greek authors; and the same symbol is sometimes found in the text of an inscription, in the neighbourhood of the pictural representation. Its sense may therefore be considered as tolerably well ascertained; but the evidence being somewhat indirect, the name is inserted in smaller characters, the same distinction being also observed in other instances. Mr Bruce informs us, in his letter to Mr Wood, that in some parts of the Tunisian dominions, serpents are still regarded as a kind of good angels. The Chnubis, or Chnumis, of the amulets, is generally represented as a serpent with a human head, or with that of a lion; and the former combination is not uncommon in the tablets of the manuscripts; but the hieroglyphic denoting it is a long undulated line, totally distinct from this character.

4. The symbol, often called the *Hieralpha,* or sacred a, corresponds, in the inscription of Rosetta, to Phthah, or Vulcan, one of the principal deities of the Egyptians.

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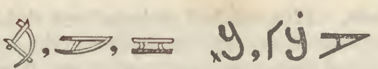
[1] See plate xcv. of Denon's work. In the figures inserted in the text the representation is for the most part given in the sacred and in the enchorial characters of the Rosetta inscription.

Vocabulary.

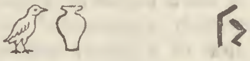
PHTHAH.
ⲡⲧⲁϩ



A multitude of other sculptures sufficiently prove, that the object intended to be delineated was a plough or hoe; and we are informed by Eusebius, from Plato, that the Egyptian Vulcan was considered as the inventor of instruments of war and of husbandry. In many other inscriptions, the pedestal or pulley is used indifferently for the plough. Horus Apollo tells us, that Vulcan was denoted by a beetle; and the Monticœlion obelisk of Kircher has the plough on three sides and the beetle on the fourth. Horus Apollo, however, is seldom perfectly correct; and the names of different divinities are frequently exchanged on the banners of the same obelisk; nor is there any clear instance of such an exchange of the plough for the beetle as occurs perpetually in the case of the pedestal. The beetle is frequently used for the name of a deity whose head either bears a beetle, or is itself in the form of a beetle; and in other instances the beetle has clearly a reference to generation or reproduction, which is a sense attributed to this symbol by all antiquity; so that it may possibly sometimes have been used as a synonym for Phthah, as the father of the gods. The plough is very rarely found as the name of a personage actually represented; and it is difficult to say under what form the Egyptian Vulcan was chiefly worshipped; but on the tablet of a Horus of bad workmanship, belonging to the Borgian Museum, he is exhibited with a hawk's head, holding a spear; whilst in the great ritual of the *Déscription de l'Egypte* (Antiq. ii. pl. 72, col. 104), he seems to be represented by a figure with a human head; an exchange, however, which is very common in some other cases, with respect to these two personifications, though it does not extend to the substitution of the heads of different animals for each other.

5. Ammon, the Egyptian Jupiter, is sufficiently identified by a combination of evidence of various kinds, although no single link of the chain extends very far. A figure with a ram's head is denoted, both on the green sarcophagus and on the temple at Elephantiné, by a water jar, sometimes, but not always, accompanied by a bird.

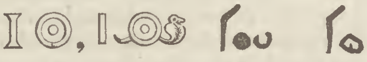
AMMON.
ⲁⲙⲟⲩⲛ



Now, a water jar of this form is constantly converted, in the running hand of the manuscripts, into a character like a z; and this character, in the enchorial text of Rosetta, is made to express the name of Jupiter; a fact which confirms the testimony of the Greek authors, who considered the Egyptian Jupiter as having been represented with a ram's head. A similar figure is found at Edfou (*Apollinopolis Magna*), and at Esneh (*Latopolis*). The temple at Edfou seems to have been dedicated by Amenophis or Memnon; and he appears to be called "lover of Ammon," that is, Miamun,[1] which is not unlike the name Memnon.

6. The common astronomical diagram for the sun, ⊙, seems to have been adopted by the Latin astrologers from their masters in Egypt; since it is not very probable that both should have employed a point in the centre of the circle, without some communication with each other, the circle alone having been mentioned by some of the Greek authors, who say that it was the symbol of the sun.

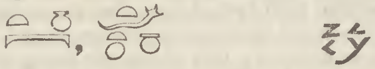
PHRE.
ⲫⲣⲏ



The deity Ra, Re, or Phre, is indicated by this character followed by an upright bar; and the circle is often enveloped in the coil of the body of a serpent, whilst an oval and an arm also frequently follow the circle. The enchorial name of the sun is extremely like that which corresponds in the manuscripts to this hieroglyphic. And a similar circle, with rays diverging from it, though seldom exactly in straight lines, is used in the sense of "enlightening," or "rendering illustrious;" and it has also been observed by some of the French, who have been in Egypt, to stand in several inscriptions with a manifest reference to light. The circle occurs also as a part of the terms month and day. In the great Hieratic Ritual, and in some other manuscripts, this name of Phré occurs very frequently under or near the tablet which contains a representation of the sun shining, as well as under the next to it, which exhibits a head rising out of a lotus, an emblem mentioned by Plutarch as relating to the sun, which here is made to spring from the pedestal, as the sun is said to have been the offspring of Phthah. Whatever plant that called the lotus may have been, it certainly does not much resemble the nelumbo of the East, which some imagine to have been the original emblem of fertility. The name Phré is almost the only intelligible combination of letters that ever occurs on the Abraxas[2] or amulets; and the monster to which it relates has generally radiations from its head, and is surrounded by six stars. The tablets of the sun in the manuscripts exhibit also little genii worshipping him, each of which is always marked "star god."

7. The name of Rhea may, without impropriety, be assigned to a female personage very commonly accompanying the sun, and distinguished by many of his attributes, thus:

RHEA.
ϯⲫⲉ ?



although the evidence would have been somewhat more conclusive if the name had been found attached to the figure of the mother in the tablet of the birth of Isis. On the coffins of the mummies, this personage is generally represented with outstretched wings, and in other tablets without wings; but she carries in both cases a circle on her head, emblematic of the sun. If we considered the analogy of the hieroglyphical name only, we should be disposed to interpret it as meaning the wife or sister of Ammon.

8. Ioh, the moon, is not a deity of very frequent occurrence; but the character is easily interpreted, both from its form, and from its being found in a different position, as a part of the word month.

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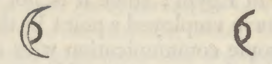
[1] Or rather Meiamun, which is more like Memnon, and may also mean "beloved of Ammon."

[2] The word *Abraxas* or *Abrasax*, which Michaelis supposes, with reason, to be older than the days of the Gnostics, and of pure Græco-Egyptian origin, may nevertheless be considered as the principal and ordinary name of the Basilidian sun-god; and its import shows that the whole superstition of the Gnostic or Basilidian school of heretics was founded upon the mysteries of the Egyptian calendar, *Abraxas* or *Abrasax* being composed of the six Greek letters which represent the number of days in the Egyptian year. Thus,

A	1
B	2
P	100
A	1
Σ	200
A	1
Ξ	60
	365

Abraxas being composed of the very same letters transposed, would of course give precisely the same result. (Vide *Auct.* apud Montfaucon, p. 355 et seqq.; Jablonski, *Dissert. de Nom. Abraxas*, § 9. 12. *Opusc.* tom. iv. p. 96 et seqq.)

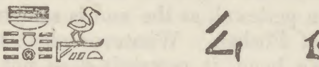
IOH.
ιοϩ



At Denderah this character is accompanied by the epithet God, and without any female termination, as well as in several passages of an epistolographic manuscript sent home by Mr Bankes; a circumstance which is favourable to the opinion that Ioh was considered as masculine in mythology as well as in grammar, just as *men* or *lunus* was sometimes made masculine by the Greeks and Romans. The fact, however, is not absolutely decisive of this question, since the character is not accompanied by the delineation of any personification of the deity.

9. The historical description of the god THOTH, or *Hermes*, as the scribe or secretary of Osiris, and the inventor of writing, sufficiently identifies him with the person who is perpetually represented standing before Osiris, and writing with a quill or a style on a square or oblong tablet. He has always the head of an ibis, and this bird, standing on a perch, constitutes his hieroglyphical name, as the ibis is known to have been the emblem of Thoth. The hieroglyphic for letters is also frequently found amongst his titles; and all these circumstances abundantly confirm the opinion of his true character, which Zoega and others had already advanced from conjecture only.

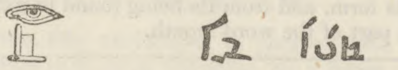
THOTH.
θωουτ



The enchorial name is very much disfigured, but the manuscripts exhibit a character which may serve to supply the connecting link, and another abridgment of the name which deviates still more widely from the original, being simply the common substitute for a feather, which here seems to stand for the whole bird, or perhaps merely for a feather which is often found projecting from the end of the perch. Next to Osiris, we find that Thoth is of more frequent occurrence than any other deity in the great ritual; and it is probable that the mummies of the ibis, which are so commonly found, were preserved in honour of him. The semicircle with two oblique dashes, under the perch, seems to correspond to the epithet "great and great" of the Rosetta inscription; this character being generally significative of a dual. The scale, with eight dashes, and two other characters, is also very frequently employed as an epithet, and sometimes as a synonym of Thoth; it seems to mean "Dispenser of the eight treasures, or laws, of the country," for Diodorus informs us that the principal laws of Egypt were contained in eight books.

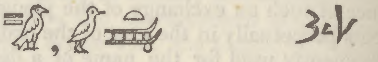
10. The name of OSIRIS is found, with the epithet "divine," in a great majority of all the mythological inscriptions that have yet been discovered; so that this circumstance alone is sufficient to show that it must have been that of the principal deity of Egypt.

OSIRIS.
ουσιρι



The enchorial character of the inscription of Rosetta is readily identified, and it agrees perfectly well with that of the manuscripts, answering to the eye and the throne; so that the manuscripts here completely supply the want of that part of the stone which contained the name in the sacred characters. This name is also universally annexed to the great figure which is found at the end of almost all the manuscripts, and on the coffins of mummies, holding a hook and a whip or fan, and of which the small detached images are also extremely common. In the sculptured inscriptions, the eye generally precedes the throne; in the running hand of the manuscripts, and on the coffins of some mummies, apparently of later date, the eye sometimes follows. Plutarch had perhaps been rightly informed respecting this character; but by a mistake, which was easily committed from a want of perfect recollection, he has called it "an eye and a sceptre;" and this combination has not been recognised as the name of a deity, though a symbol something like it occurs in some of the tablets. The pictured delineation of Osiris has indifferently a human head or that of a hawk, but never that of any other animal. The tear seems also sometimes to have been used as an emblem of Osiris, as well as of Apis and Mneuis, who were considered as representations of him. The name is found perpetually on monuments of all kinds as an epithet of a departed person; and this is one great reason of the frequency of its occurrence.

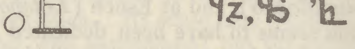
ARUERIS.



11. This divinity, the Apollo of the Egyptian mythology, is sufficiently identified by the comparison of various inscriptions with the fragment of Hermapion, preserved by Ammianus Marcellinus, as the translation of the inscription on a particular obelisk, with which, however, it does not exactly agree, although its style completely resembles that of the Egyptian inscriptions in general, and the beginning corresponds perfectly well to the beginning of almost all the obelisks in existence, supposing only the hawk to be part of the name of Arueris; which is, besides, an inference extremely probable, from the tablets of several of the obelisks, representing a deity characterised by a hawk with two bars, and styled the son of another personage who seems to be the sun, as Apollo is called by Hermapion, and Arueris by Plutarch. Mr Hamilton has also given us a Greek inscription at Ombos, in which Arueris is made synonymous with Apollo; although the hieroglyphics which have been copied from this temple afford us no assistance in the inquiry. The sort of ladder, which occurs as a second name of Arueris, is found prefixed to the hawk in its usual form, on the obelisk at Wanstead figured by Gordon, and on the frize of Montagu and Ficoroni (*Hieroglyphics of the Egyptian Society*, 7 Eo p; 9 Lk); and the same figure follows it on a statue of Pococke (vol. i. p. 212). Arueris is commonly represented either with a human head, or with that of a hawk, bearing a disc, as that of the sun is also generally depicted; and in one of Denon's plates, the two deities seem in some measure confounded. The Egyptian name may be interpreted "evening sun," as emblematic of the repose of victory; ER RUHI RE.

12. ISIS, the sister and wife of Osiris, is very naturally denoted by the throne with the female termination, thus:

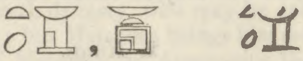
ISIS.
ησι, θεσι ?



and in more than one instance, the female figures, which have long been recognised as representations of Isis by other attributes, are distinguished by bearing the throne on the head, which is a common mode of characterising the different personages of the tablets. The manuscripts, again, enable us to discover the connecting link between the sacred and enchorial characters, and to supply the defects of the monument of Rosetta; though the resemblance is somewhat too imperfect to have satisfied us without their assistance. The goddess, thus distinguished, is very generally represented as standing at the head or feet of a corpse, with another female figure opposite to her; and we find the same personages at the opposite ends of several of the sarcophagi; so that the analogy of Isis to Proserpine, and her character as the guardian of the remains of the dead, are sufficiently consistent with these representations. On a scaraboeus brought from Egypt by Mr Legh, and in a hieroglyphical inscription at Philae, she appears to be called the offspring of Phthah. Isis often bears in her hand a sceptre forked at the foot, with a lotus for its head, whilst Osiris has more commonly a similar sceptre with the head of an animal; but these attributes are sometimes assigned to other deities. In one of the boats on the green sarcophagus, and on Letheuillier's mummy, both in the British Museum, she is personified as a basilisk. Mr Hamilton has published some Greek inscriptions from Philae, and from the small temple at Denderah, which show that Isis was the principal deity of these temples; and the hieroglyphics, as far as they have been copied, are precisely of the same import. The great temple at Karnak seems also to have been dedicated to Isis, and probably the small southern temple. On a medal, of Greek workmanship, in the Borgian Museum, we have a figure of Isis, with the word THESI, which may probably have been intended for TIESI, the Egyptian name with the feminine article.

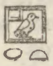
13. The constant companion of Isis can be no other than NEPHTHE.

NEPHTHE.



Her name somewhat resembles that of Isis, with a scale or basin annexed to it; but the square surrounding the throne is completed, while the scale is sometimes detached from it, with a circle interposed; and, in this form, the name comprehends one of the characters denoting a temple. It seems also to be a head of Nephthe that is found at Denderah and elsewhere, supporting a little temple or shrine, in the place of the capital of a column; nor is it improbable that the temple at Denderah was dedicated to Nephthe; for the Greek inscription has Aphrodite, which is mentioned by Plutarch as a synonym of Nephthe. It is true that the birth of Isis is represented on one of the ceilings; but it does not therefore follow that Isis was the principal goddess of the temple. A head bearing a shrine is not an uncommon ornament of a *sistrum;* and this agrees perfectly with the remark of Plutarch, that the head of Nephthe, as well as that of Isis, was sometimes represented on these instruments.

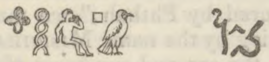
BUTO.



14. The emblem of a bird in a cage, which is often found in the manuscripts accompanied by the figure of a child, seems to indicate the character of a *nurse,* and may without inconvenience be interpreted as relating to the goddess BUTO, the nurse of Horus and Bubastis; though it would perhaps have been more correct to engrave the name in smaller letters, as denoting some degree of uncertainty. On the sarcophagus called the Lover's Fountain, in the British Museum, she is delineated with a hawk's head; and in the western temple at Philae she has a human head with a horned head-dress, and she sits near Isis and Horus; a circumstance which strongly confirms the propriety of the denomination.

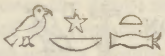
15. The enchorial name of HORUS seems to be derived from the figure of a hawk followed by the character denoting Isis; an arrangement which agrees very well with the supposition that his usual denomination was HÔRSIÊSI.

HORUS.
ϩⲱⲣⲥⲓⲏⲥⲓ?



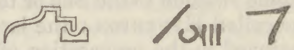
The figure of the infant, the chain, and the knot, clearly form a part of the name on a Horus engraved by Montfaucon (*Antiq. Expliq.* tom. ii. p. 302), and on an obelisk from Bosc in the Supplement of the same work. In some cases a feather, following the infant, seems to supply the place of the bird, as in Caylus (*Récueil,* tom. iv. pl. 13).

PAAMYLES.



16. PAAMYLES, mentioned by several authors as the Priapus of Egypt, is sufficiently distinguishable by his usual attributes. He is often figured with one hand only, which is elevated towards the angle of a kind of whip or fan suspended above him. At Edfou he is once denoted in an inscription by a figure like that of the tablets; and in another place by a distinct name, much resembling that of a female deity, found on some of the cases of the mummies, and who might consequently be called *Paamylia.*

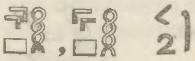
NILUS.
ⲫⲓⲁⲣⲟ



17. The Nile seems to have been reckoned amongst the deities of Egypt, and the character which appears to be appropriate to a river is found occasionally in the tablets, followed by a vessel and a spiral, which seem indeed to make a part of the name, and are accompanied by epithets of respect. This character has already been considered by Kircher and others as representing a nilometer; and the deity in question can only be distinguished by the name NILUS.

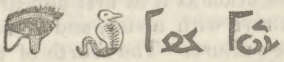
18. The sacred characters denoting APIS are pretty clearly determined by the triple inscription; the enchorial name is perfectly so.

APIS.



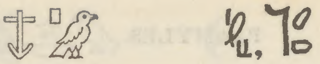
If, however, any doubt remained on the subject, it would be removed by an examination of the inscriptions on four vases, found by Paul Lucas (*Voyage dans la Turquie,* vol. i. p. 346, Amsterdam, 1720, in 2 vols. 12mo) at Abousir, the Busiris of the ancients; that is, the BE OSHIRI, or sepulchre of Osiris, as Diodorus very properly translates it. There is a received tradition that Apis was worshipped and buried here; and Lucas established its truth by finding the mummy of a bullock in the catacombs. Now, all the inscriptions on the vases end with a bullock preceded by this character, though the angles are turned in a different direction from those of the inscription of Rosetta; so that the two forms of the character seem to have been used indifferently. With this latitude, we have no difficulty in identifying the name as it occurs in almost every line of the inscriptions upon the great sarcophagus of granite, called the Lover's Fountain, formerly at Cairo, and now in the British Museum. There is some reason to suppose, from the frequency of this name, that it may have been intended for receiving a mummy of the bull Apis; although it must be confessed, that in several other monuments the names of the deities are introduced in a manner somewhat similar, with an evident relation to the designation of some human being, whom they are intended to commemorate.

MNEUIS.

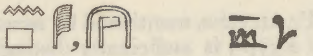


19. The enchorial name of MNEUIS is very completely ascertained by the inscription of Rosetta; and from a comparison of different passages in the manuscripts, there is reason to infer that it was intended as an imperfect representation of a basilisk and a tear; emblems which are repeatedly found in the great ritual, connected with the figure of a bullock. The sacred cow, in the manuscripts sent home by Mr Bankes, is denoted by a serpentine line with two dots, followed by the term goddess. We may venture to distinguish her by the temporary name *Damalis.* That of Io would imply too great identity with the Greek mythology.

HYPERION.

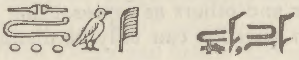


CTERISTES.

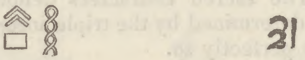


20. In the tablets representing the judgment of the deceased, we generally find two personages standing by the balance, and apparently weighing his merits; one with the head of a hawk, the other with that of a wolf, and seeming to officiate as the good and evil genius of the person. The former, denoted by a hawk with a bar, and sometimes also a spear, appears, from various monuments, to have some relation to the Sun or to Horus, and may therefore be called Hyperion; the latter is often observed to be employed in the preparation of a mummy, and may be called from this occupation Cteristes, or the embalmer. He is also frequently represented on the coffins of mummies, and elsewhere, under the form of a wolf sitting on a kind of altar; and he seems to be an immediate minister of Osiris. His hieroglyphical name is a feather, a wavy line, and a block; or a hatchet under a sort of arch.

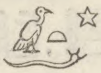
TETRARCHA.



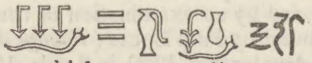
ANUBIS.



MACEDO.

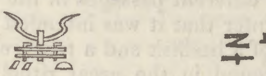


HIERACION.

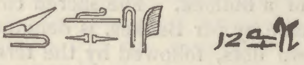


21. Under the bier on which a mummy lies, and in many other situations near the person of the deceased, we find representations of four deities who seem to be concerned in the operation of embalming, and who might even be supposed to preside over the different condiments employed, their heads frequently serving as covers for four jars, of the kind sometimes called Canopi. They may also very properly be considered as attendants of Isis, who seems to be a still more important personage on such occasions. The first of the four has generally a human head, and may be called Tetrarcha; his name contains a sort of forceps, and a broken line. The second and third have respectively the heads of a dog or baboon, and of a wolf; and they agree very satisfactorily with the well-known character of Anubis, and with that of Macedo his companion, mentioned by Diodorus as having a wolf's head, and whose name may possibly have some relation to manchat, *a worker in silver*, as that of Anubis has to nub, *gold*. The hieroglyphic name of Anubis differs from that of Apis only in having the angles directed immediately upwards, a circumstance which is not so indifferent to the signification as it at first appeared; that of Macedo has a vulture with a star, and sometimes an arm instead of the vulture. The fourth of these deities is represented with the head of a hawk, and may therefore be called Hieracion. He is denoted by a water jar, with three plants somewhat resembling leeks or onions.

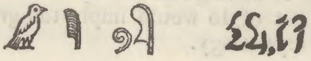
CEREXOCHUS.



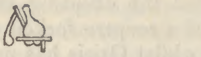
BIOXIPHUS.



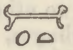
PLATYPTERUS.



MASTIGIAS.



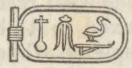
SORAEA.



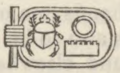
22. Amongst the many hundreds of deities who are represented in various inscriptions and sculptures, some of the most remarkable are two personages with the heads of wolves, the first characterised by a sort of raised frame or banner, and a pair of horns, which may be expressed by the pseudonymous or temporary term Cerexochus, and the second by a half bow, and a sword or knife, whence he may be called Bioxiphus; a figure with a human head, generally wearing a feather on it, and denoted by a broad feather reversed, which is implied in the name Platypterus; another wearing a cap with a whip in it, who may be called Mastigias; and a fifth in the form of a female, distinguished by a bier, who, at Edfou, bears a tear on her head, and who may be called Soraea.

2. *Kings.*

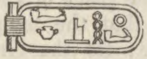
THOTHMOSIS.



MESPHRES.

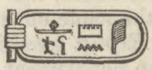


MISPHRAGMUTHOSIS.

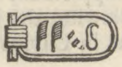


1. We are informed by Pliny, that the Alexandrian obelisk was erected by Mesphres or Mestires, the reading of the different manuscripts being different; and since no king of the name Mestires is mentioned by other authors, we may consider Mesphres as the Mephres or Mesphris who succeeded his mother Amersis about 1700 B. C. or perhaps a century or two later. The hieroglyphical name of his father contains that of the god Thoth, and may therefore possibly have been intended for the Thothmosis of the chronologers, who is said to have been the grandfather of Mesphres. The obelisk at Alexandria, now called Cleopatra's Needle, like almost all others which contain three lines on each side, exhibits different names in the middle and the outer lines. From this circumstance, as well as from the greater depth of the sculptures, which is generally observable in the middle line, there is reason to suppose that this line stood at first alone, and that the two on each side were added by a later monarch. The Lateran obelisk, however, is remarkable for exhibiting the name of Mesphres on all the lines of the different sides. The Constantinopolitan obelisk has only one line on each side, with the name of Mesphres the son of Thothmosis. The same name is also found on the gateway of the fifth catacomb, at Biban-el-Molouk; on a pillar of the palace at Karnak, and in a splendidly-coloured bas-relief on one of the interior architraves of the gallery; as well as on a seal of Denon, and on some others which were brought from Egypt by Mr Legh. The Isean obelisk of Kircher has a "son of Mesphres, favoured by Phthah;" we must therefore distinguish this king by the name Misphragmuthosis, who is recorded as the son and successor of Mesphres.

TITHOUS.

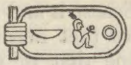


EOA.

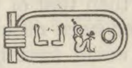


Vocabulary.

MEMNON.

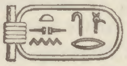


AMENSES.

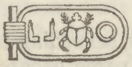


2. A multitude of ancient Greek inscriptions identify the statue of Memnon, celebrated by all antiquity for its musical powers, which, Strabo says, he heard exemplified, though he could not very positively decide whether the sound proceeded from the statue or from some of the bystanders. In one of the inscriptions we find the word *Phamenoth*, not as a date, but as a synonym of Memnon, which must be considered as identical with the Phamenoph given by Pausanias as his Egyptian name, and with the Ammenoph or Amenophis of Manetho or others, which differs from it only as wanting the article. There is, however, some doubt to which Amenophis this statue properly belongs. Manetho makes Memnon the eighth king of the eighteenth dynasty, who may be called Amenophis the Second; but Marsham brings him down to the Ammenephthes of Manetho, or Amenophis the Fourth, principally because he thinks that only a successor of Sesostris could have been well known in Asia; and he even supposes him to have been later than Homer, who, he says, never mentions him, though Hesiod calls him the son of Tithonus and Aurora. But, in fact, the name of Memnon does occur in the Odyssey, where Ulysses alludes to his beauty in a conversation with the shade of Achilles; and Hesiod could scarcely have mentioned a king as descended from a deity, that was not considerably earlier than his own time; so that the tradition of Manetho seems to be preferable to the mere conjecture of Marsham. At the same time, we cannot well call him Memnon the son of Thothmosis, the name of the father not agreeing with that of this king; and there is another circumstance which seems to lead us to the third Amenophis, intermediate between these two extremes, who was the son of Ramesses Meiamun, or Ramesses the lover of Ammon; namely, that Amenophis himself appears to have built a temple to Ammon in the isle of Elephantiné, and is called Meiamun in several of the hieroglyphical inscriptions still existing there. It appears, then, that the name Memnon must have been derived from Meiamun. Besides the different statues of the Memnonium, we find monuments of the same personage in almost every part of Egypt, though they are much more frequent at Thebes and in its neighbourhood. The name is marked on all the lion-headed goddesses of black granite which are now in the British Museum, and on some others which were in the possession of Mr Bankes. The first of this series having been purchased, as Bruce informs us, for a large price, by Donati, for the king of Sardinia, the inhabitants were induced to take some pains in digging the others out of the sand. The building called by the French the tomb of Osymandyas bears also the name of Memnon; and it is remarked by Strabo, that Memnon and Ismendes may probably have been the same person. The name is also found in the grottos at Biban-el-Molouk, on some statues representing Osiris, and in some inscriptions at Ombos, as well as on a seal of Denon. Mr Bullock presented to the British Museum a scarabœus of very hard stone, on which we find the name of Memnon, together with that of his father and mother, whom we may call, in order to preserve the mythological analogy, *Tithous* and *Eoa*, although without asserting that this Tithous was the builder of the Labyrinth, which some authors have attributed to a king named Tithoes, and others to Ismendes. The mother's name occurs also alone, as "the goddess mother," on the back of a beetle in Gordon's *Mummies* (plate xxii.), a circumstance which removes the doubt that might otherwise arise from the want of the female termination in the name; the father's is found upon a square seal in the possession of Mr Legh. There is another copy of the inscription of Mr Bullock's scarabœus, on a scarabœus belonging to Mr Palin, which had long been used by a Greek priest at Athens for stamping the paschal bread (Dubois, *Pierres Gravées*, Paris, 1817, pl. v. N. 5). The beautiful head brought from the Memnonium to the British Museum has only a part of the father's name remaining, which does not appear to be that of the father of Memnon, though the first three characters are the same; but the fourth is the pedestal representing Phthah; and a similar name is found on some other colossal statues and obelisks remaining in Egypt, as well as on a smaller figure of red granite brought by Mr Hamilton from Elephantiné. In the principal name upon the obelisk at Karnak, the final scale of the name of Memnon is exchanged for a pair of arms stretched upwards; a variation which may be expressed by calling it Amenuses or *Amenses*, from SHESH, a pair. The father's name is also a little like that of Tithous; but, that the difference is constant, may be inferred from its separate occurrence on a seal brought home by Mr Legh, a lion's head making a part of it in both instances. The true name and date of this personage must be considered as wholly unknown; though the resemblance of the name to Memnon makes it convenient to place them together. In Mr Boughton's minute golden image, engraved in the *Archæologia*, the name appears to be the same, but with the synonymous substitution of the hatchet for the judge.

HERON.



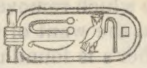
REMESSES.



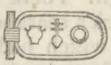
3. The obelisk at Heliopolis has every mark of considerable antiquity, and the shortness and simplicity of its inscription is appropriate to a remote period. Pliny says that Mitres or Mestires first erected obelisks at Heliopolis; he also mentions Sothis, and apparently Ramesses, as having left similar monuments of their magnificence in the same place. The principal name upon the obelisk now remaining at Matareah may also be observed in several other inscriptions, but with the substitution of two other names for that of the father, so that the name of the son must probably have belonged to many different individuals. This circumstance, as well as the sounds belonging to the different characters, agrees very well with Ramesses; for we have RE, *the sun*, and MES, *a birth*, and SHESH, *a pair*, so that we may venture to call it REMESSES; and we may take HERON for the father of the first Remesses, from Hermapion, though it is possible that he may be the Armais of Manetho; but we have scarcely sufficient evidence to appropriate to him that name. Another Ramesses seems to have been a son of Sesostris; a third Ramesses follows Ammenephthes in Manetho, and agrees with the Rhampsinitus of Herodotus, and the Remphis of Diodorus, who is mentioned as the successor of Proteus; and this may, perhaps, have been the Ramesses of the frizes of Montagu and Ficoroni (*Hieroglyphics*, 7 Ou. 9 If), who seems, from the resemblance of the different parts of the work, to have been nearly contemporary with Sesostris. (*Hieroglyphics*, 7 H. I.) There is also on the Lions at the fountain of Aqua Felice, near the baths of Diocletian at Rome, another Ramesses, the name of whose father is a little like the name supposed to belong to Arsinoe.

Vocabulary.

SESOSTRIS.

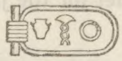


PHERON.

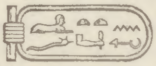


4. The obelisk erected by Augustus in the Campus Martius is said, by Pliny, to have been the work of Sesostris; and there are sufficient documents of its identity with that which had long remained buried near the Monte Citorio, and of which figures have been given by Zoega and others. The inscription was supposed, in the time of Pliny, to contain a compendium of the physical and philosophical learning of the Egyptians; but, in order to make this opinion credible, it would be necessary to admit that the princes of earlier days entertained very different ideas from those which have since been prevalent respecting the comparative importance of the abstract sciences, and of national prosperity and martial glory. If Sesostris was the son of Amenophis, he cannot have been the reigning king mentioned in this obelisk. But it may safely be attributed to Pheron the son of Sesostris, who, according to Herodotus, erected two obelisks; and the occurrence of the name of Sesostris as the father may be considered as sufficiently conformable to the testimony of Pliny. The same names are found, with a slight variation, on a small statue of basalt, very highly finished, now standing in the British Museum; and Denon has copied them from an inscription in the Memnonium.

NUNCOREUS.

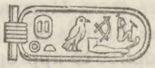


PROTEUS.

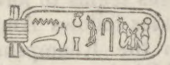


5. Nuncoreus, according to Diodorus, was another son of Sesostris; his name occurs also in Pliny, and we may consider him as the son of Sesostris mentioned in Montagu's frizes. The name is also found at Philae, and, with a slight variation, on an altar of basalt figured by Caylus (*Recueil*, tom. i. plate xix.), now in the King's Library at Paris. The remains of the same name may also be observed on a block, apparently of white sandstone, in the British Museum, which is figured by Norden, in its old situation, as a part of the foundations of Pompey's Pillar at Alexandria; and it occurs on a fragment of a statue brought by Mr Hamilton from Thebes. The name of Proteus, or Certus, otherwise Ammenephthes, is only known as the predecessor of one of the kings named Ramesses; and we may safely employ it for the father of the Ramesses of the frizes of Montagu and Ficoroni, the whole of which are remarkable for the excellence of their workmanship.

AMENOPHTHES.

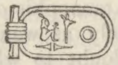


ANYSIS.

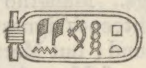


6. Until we obtain evidence of a more positive nature, we may give to the two kings mentioned on the sarcophagus of green breccia the names of Amenophthes and Anysis, supposing them to have lived about the time of Ammenephthes, or Amenophis the Fifth, and his successor Osorchon. The father's name might, without difficulty, be read Menephthah, supposing some titles to follow it. There are also two obelisks of the same king, brought from Cairo, which stand near the sarcophagus in the British Museum; and the style of the workmanship somewhat resembles that of the times of Sesostris and his immediate successors. It has been observed that neither of the names can well be Alexander's, since that of the father is repeated much more frequently than that of the son, which could not have happened if it had been meant for Philip; and Alexander had no son who could have been mentioned on his sarcophagus. Nor is it at all probable that Alexander should have erected any obelisks at Memphis or in its neighbourhood. The god Ammon is nowhere mentioned amongst the titles of the king, and holds only an inferior rank among the innumerable deities represented in the tablets. We find both the names, without any addition, on a dovetail of copper (engraved in Lord Valentia's *Travels*), which was found at Behbeit, the Atarbechis or Aphroditopolis of the ancients, situated on the branch of the Nile that runs to Damietta.

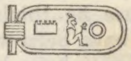
PSAMMETIUS.



NECHAO.

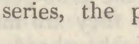


PSAMMIS.

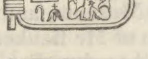


7. We learn from Pliny that the Flaminian obelisk now standing near the Porta del Popolo at Rome, which was the smaller of the two formerly in the Circus Maximus, where they were placed by Augustus, and used as the gnomon of a dial, was the work of Senneserteus or Semnesyrtæus, who reigned in Egypt at the time when Pythagoras visited it. This king seems to have been the same with Psamuthis or Psammis; and the authority of the evidence is so much the stronger, as the period in question is not extremely remote. The father of Psammis, according to Herodotus, was Necos or Nechao. The two names occur on all the middle lines of the obelisk; and that of the father on the pillar of a colossal Isis in the *Supplement* of Montfaucon. The Sallustian obelisk, which seems to have been partly copied from the Flaminian, has them both. In the middle lines of both the obelisks at Luxor we find a name much resembling that of Psammis, which we may therefore call Psammetius, conjecturing that it may have belonged to Psammetichus, who reigned a little earlier. The father's name is not unlike in its import to that of Nechao, both implying *approved by Phthah;* and it is remarkable, that in Manetho's series, the predecessor of Psammetichus is also Nechao.

MENEPHTHES.



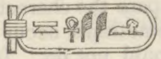
AMASIS.



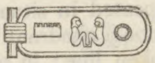
8. Amongst the most common of all the names of the kings of Egypt, on a great variety of monuments, are those which were mistaken by Kircher for a sort of amulets or charms, which he denominated the Mophthomendesian tablets. They occur alone on three small obelisks only, the Medicean, the Mahutean, and the Monticœlian of Kircher; but they are found in the external lines of the Alexandrian, the two at Luxor, the Flaminian, and the Sallustian, whilst none are ever found exterior to them. They must, therefore, necessarily be attributed to one of the latest kings of Egypt; and there is none so likely to have made such a display as Amasis, a man of considerable magnificence, and at the same time of a cautious and artful character. Indeed we have no alternative left but to choose between him and some of the kings who revolted against the Persians, and who do not appear so likely to have had

leisure or finances for public works of splendour. His father's name, like that of Nechao, contains the character denoting Vulcan, and it may be called MENEPHTHES; but he was not the son of a king. Both the names are found in one of the middle lines of the Flaminian obelisk; and on that side the king is represented in the tablet as doing homage to his predecessor, who occupies the place of honour on the other side. The father's name seems to occur on the belt of a colossal statue in the palace at Karnak. On a fragment of stone in the British Museum the names are repeated in various directions, as if it had belonged to a floor or a ceiling. They also occur on a statue, considerably mutilated, in the attitude of kneeling; and in Montfaucon's *Supplement*, on the back of a colossal Isis, which seems also to have been begun by Psammis. On the eastern colossus at Luxor there is a name which might be taken either for that of Amasis or for that of the pseudonymous Psammetius; but the sitting figure is somewhat different. The victor in the naval combat at Medinet-Habou, who appears also frequently at Ombos, considerably resembles them both. Lord Mountnorris has a rough seal with the name of Amasis only, the epithet God being prefixed in a smaller character. The names also occur on a small obelisk lying at Tsan, the ancient Tanis, of which a sketch was brought home by Dr Merion.

PTOLEBERIUS.



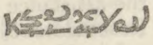
DISCOZYGUS.



9. We find at Karnak the name of a king somewhat like Psammis, that of his father resembling a compound of Ptolemy and Berenice. Perhaps they are not very correctly copied, but they may stand, under the temporary names of DISCOZYGUS and PTOLEBERIUS, as specimens, somewhat singular, of a mixture of different dynasties; and in this point of view they may be placed between the old Egyptian kings and their Grecian conquerors.

ALEXANDER.

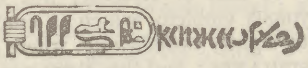
ⲁⲗⲉⲝⲁⲛⲇⲣⲟⲥ



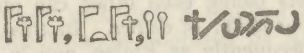
10. The name of ALEXANDER has not yet been identified in the sacred characters;[1] but it will appear hereafter that a knowledge of the enchorial form may possibly contribute very materially, at some future time, to assist us in determining it.

PTOLEMY.

ⲡⲧⲟⲗⲉⲙⲉⲟⲥ

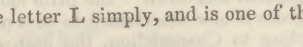


SOTERES.



11. There can be no doubt whatever respecting the signification of the name of PTOLEMY, as it occurs on the pillar of Rosetta; but it is not quite so easy to determine its identity in some other cases, where it may possibly have been modified by contraction, mutilation, or combination. In this and a few other proper names, it is extremely interesting to trace some of the steps by which alphabetical writing seems to have arisen out of hieroglyphical; a process which may indeed be in some measure illustrated by the manner in which the modern Chinese express a foreign combination of sounds, the characters being rendered simply *phonetic* by an appropriate mark, instead of retaining their natural signification, and this mark, in some modern printed books, approaching very near to the ring surrounding the hieroglyphic names. The enchorial name of Ptolemy appears at first sight to be extremely different from the hieroglyphical; and it would have been impossible to deduce the one from the other, without a knowledge of the epistolographic forms of the separate characters, as ascertained by a comparison of the manuscripts. The beginning and end are obviously parts of the ring, which, in the sacred character, surrounds every proper name, except those of the deities. The square block and the semicircle answer invariably in all the manuscripts to characters resembling the P and T of Akerblad, which are found at the beginning of the enchorial name. The next character, which seems to be a kind of knot, is not essentially necessary,[2] being often omitted in the sacred characters, and always in the enchorial. The lion corresponds to the LO of Akerblad, a lion being always expressed by a similar character in the manuscripts; an oblique line crossed standing for the body, and an erect line for the tail. This was probably read, not LO, but OLE;[3] although, in more modern Coptic, OILI is translated a *ram;* we have also EIUL, *a stag;* and the figure of the stag becomes, in the running hand, something like this of the lion. The next character is known to have some reference to *place*, in Coptic MA; and it seems to have been read either MA, or simply M.[4] This character is always expressed in the running hand by the M of Akerblad's alphabet. The two feathers, whatever their natural meaning may have been, answer to the three parallel lines of the enchorial text, and they seem in more than one instance to have been read I or E;[5] the bent line probably signified great, and was read OSH or OS;[6] for the Coptic *shei* seems to have been nearly equivalent to the Greek *sigma*. Putting all these elements together, we have precisely PTOLEMAIOS, the Greek name; or perhaps PTOLEMEOS, as it would more naturally be called in Coptic.[7] The slight variations of the word in different parts of the enchorial text may be considered as expressing something like aspirations or accentuations. The appellation SOTERES, as a dual, is well marked in the inscription of Rosetta, and the character, thus determined, explains a long name in the temple at Edfou, which must mean "the two saviour gods," with various titles of honour, such as "the agents of Phthah, the emblems of triumph, the approved of Phré, the favoured of the Nile, the venerable consorts in empire."

BERENICE.



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[1] The name of Alexander has now been several times identified in the sacred characters or hieroglyphics. It occurs on the edifices of Karnak, where it is written ΑΛΚΣΑΝΤΡΣ and ΑΛΚΣΝΡΟΣ. (Champollion, *Précis du Syst. Hiérogl.* p. 84. Paris, 1828.) We also learn from Mr Salt, that, besides the granite sanctuary at Karnak, the name of Alexander, preceded by mystic titles, is found on the granite propylon in the island of Elephantiné. In these titles the word AMUN is clearly distinguished. It likewise occurs in another place, where it is preceded by a ring containing in hieroglyphic symbols the legend, "beloved of Amun-Phre." (*Essay on the Phonet. Syst. of Hierogl.* pp. 15 and 16.) We say nothing of ALEK-AMUN, though probably a contraction of the same name.

[2] This character is put down in Champollion's phonetic alphabet as one of the homophones of O, and as sometimes representing the diphthong OU.

[3] In the hieroglyphico-phonetic alphabet the lion represents, not LO or OLE, but the letter L simply, and is one of the best ascertained of all the phonetic characters.

[4] It is now set down simply as the letter M.

[5] Champollion reads the feathers I, E, AI, in the sacred characters.

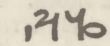
[6] The bent staff, in the sacred characters, is now held to be one of the homophones of S.

[7] Champollion, after quoting this passage, observes, "Et moi, qui ai considéré chaque caractère hieroglyphique comme une simple lettre, et non pas comme pouvant représenter chacun une ou deux syllabes, je n'ai pu et dû obtenir que ΠΤΟΛΜΗΣ, squelette du nom Grec Πτολεμαιος." (*Précis*, p. 29.)

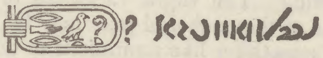
Vocabulary.

12. The wife of Ptolemy Soter, and mother of Philadelphus, was BERENICE, whose name is found on a ceiling at Karnak, in the phrase, "Ptolemy and . . Berenice, the saviour gods." In this name we appear to have another specimen of syllabic and alphabetic writing combined, in a manner not extremely unlike the ludicrous mixtures of words and things with which children are sometimes amused; for, however Warburton's indignation might be excited by such a comparison, it is perfectly true that, occasionally, the sublime differs from the ridiculous by a single step only. The first character of the hieroglyphic name is precisely of the same form with a basket represented at Biban-el-Molouk, and called, in the description, *panier à anses;* and a basket, in Coptic, is BIR.[1] The oval, which resembles an eye without the pupil, means elsewhere *to,* which in Coptic is E;[2] the waved line is *of,* and must be rendered N; the feathers I; the little footstool seems to be superfluous;[3] the goose is KE, or KEN.[4] Kircher gives us KENESOÜ for a goose, but the ESOÜ means gregarious, probably in contradistinction to the Egyptian sheldrake, and the simple etymon approaches to the name of a goose in many other languages. We have, therefore, literally BIRENICE; or, if the N must be inserted, the accusative BIRENICEN, which may easily have been confounded by the Egyptians with the nominative.[5] The final characters are merely the feminine termination. The enchorial text affords us a remarkable instance of the diversity which was allowed in the mode of representing the same name. The first character has not the least resemblance to the basket; but the first and second together are very commonly used in the manuscripts, as a coarse representation of a boat, which was called BARI, or possibly BERE; for it is doubtful whether Kircher had any other authority than that of Diodorus for BARI, and the word BEREZOUTS is used for another vehicle. The enchorial N may possibly have been derived from a horizontal line, turned up at one end. We have then the three dashes for the I, and the two angles seem to have answered to the KE, for a bird is not uncommonly scribbled in some such manner; so that we have either BARINICE or BERENICE, by a combination somewhat different from the former.[6]

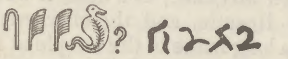
PHILADELPHUS.
ⲙⲁⲓⲥⲟⲛ



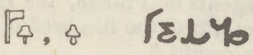
ARSINOE.



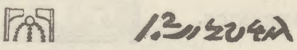
EUERGETES.



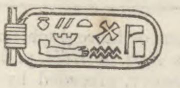
PHILOPATOR.
ⲙⲁⲓⲓⲱⲧ



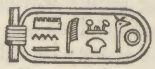
EPIPHANES.



PHILOMETOR.
ⲙⲁⲓⲙⲁⲩ



Cleopatrides.



13. The temple at Ombos was dedicated, as we find from the Greek inscription copied by Mr Hamilton, "in the name of the divine Ptolemy Philometor and Cleopatra, and their children, to Arueris Apollo, and the other gods of the temple, by the infantry and cavalry of the nome." We may therefore expect to find in it the names of these sovereigns, together with those of some or all of the earlier Ptolemies; and, accordingly, we are able to determine, without difficulty, some epithets which seem to be characteristic of this and the two preceding reigns; but hitherto nothing has been observed that can be considered as so clearly denoting either Philadelphus and his queen Arsinoe, or Euergetes and his Berenice, although some assistance might have been derived, in identifying them, from the enchorial text of Rosetta. We have, however, in the same temple, a name, evidently compound, in which a basilisk is followed by two feathers and a bent line; and to judge from a comparison of the enchorial text with the manuscripts, a basilisk ought to be the emblem of EUERGETES. The part of the name preceding it is, however, not Berenice, and must, therefore, in all probability, be ARSINOE, the daughter of Euergetes. But it seems impossible to attempt to compare the characters employed with the sounds; since they sometimes occur in an inverted order, which the sounds could not do. Indeed, the name seems to be very often repeated in situations where its most essential parts seem to be a quadrant of a circle, two feathers, and a bent or broken line; in other places, as at Denderah, the bird, the hand, and the oval, are added; and it is not impossible that the quadrant may have been meant as a representation of a lentil, which in Coptic is ARSHIN, and which alone may have been sufficient to identify the name. It occurs in the celebrated zodiac of Denderah, and very frequently at Philae, and it may possibly, hereafter, lead us very readily to discover the hieroglyphical name of Philadelphus. That of PHILOPATOR is satisfactorily ascertained by the assistance of the character employed for *father* in the Rosetta stone, though that character is much mutilated, and could not have been positively determined without this coincidence. The name is found in the temple at Edfou still more distinctly than at Ombos, and it occurs several times at Karnak. EPIPHANES is never distinguished in any other inscription by the characters appropriated to him in that of Rosetta; but we continually find a synonymous emblem, which is employed in the Rosetta stone to signify *enlightening,* where the Greek translation has EPIPHANES; and this character, placed between two hatchets facing each other, can only have meant the *illustrious deity,* or *deities.* In this form the name occurs very frequently at Philae, and in the temple at Edfou, where it seems to be the latest name. For the PHILOMETORES we have a character which occurs in some other monuments, and means apparently *mother,* the name containing it being found several times in the temple at Ombos. At Kous, or Apollinopolis Parva, there is another Greek inscription of the Philometores and their children; but in the hieroglyphics copied by Denon, the names of

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[1] This character is now considered as one of the homophones of the letter B.

[2] In Champollion's alphabet, the oval, or "mouth" as he calls it, is set down as R.

[3] Champollion sets down "the little footstool" as a phonetic symbol of the letter K.

[4] The goose is now ascertained to be a phonetic representative of the letter S.

[5] According to Champollion, the hieroglyphical name of Queen *Berenice* is written BPNHKE, and not BIPENIKE or BIPENIKEN, as Dr Young had supposed. (See *Précis*, p. 32.)

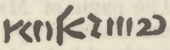
[6] "Le nom de *Berenice,*" says Champollion, "est le *seul* sur lequel M. le Docteur Young ait essayé d'appliquer les valeurs phonétiques qu'il avait voulu déduire de son analyse du nom hiéroglyphique de *Ptolmée.* Tous les autres noms propres hiéroglyphiques, en si grande abondance sur les monumens Egyptiens, ont absolument résisté à cette application." (*Précis,* ubi supra.)

the sovereigns seem to be wanting, and that of a young prince only remains, a colossal statue of whom is figured by Montfaucon in his *Supplement*, having the same name in the belt, with the addition of *the son of King Ptolemy*; it will, therefore, be justifiable to distinguish this personage by calling him *Cleopatrides.* The divine honours which are so often attributed in these inscriptions to the reigning sovereigns, afford us an explanation of the Greek inscriptions to the *Synthronous gods of Egypt*, which repeatedly occur; and of the description *Fraternal gods*, as, indeed, Philadelphus and his queen are called in the Greek inscription of Rosetta.

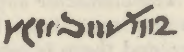
3. *Private Persons.*

We find the names of six individuals expressed in the enchorial text of the inscription of Rosetta, though they are wanting in the distinct hieroglyphics; but, as they are clearly ascertained by the context, they are of considerable value in tracing the approach of the hieroglyphic to alphabetic writing. These are, AETUS, PHILINUS, DIOGENES, PYRRHA, AREIA, and IRENE.

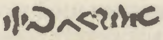
AETUS.



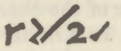
PHILINUS.



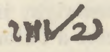
DIOGENES.



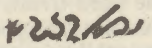
PYRRHA.



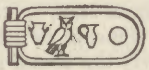
AREIA.



IRENE.



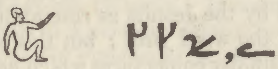
Ramuneus.



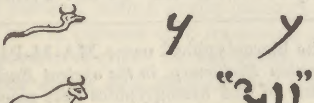
In Diogenes and Areia we discover no traces of the ring which is the usual characteristic of proper names; and, on the other hand, we find occasionally, in some of the manuscripts, the parts of the ring applied to a title of Osiris, which is more regularly written without any such distinction. A name of a private individual is inserted from a sarcophagus in the British Museum, engraved by Alexander, in his *Egyptian Monuments.* Its form is not that of a parallelopiped, but more accommodated to the shape of the body. The pseudonymous appellation *Ramuneus* has been derived from the elementary characters already observed in the names of RE and AMUN.

4. *Animals.*

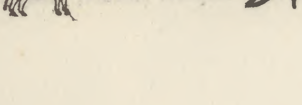
1. A MAN.
ⲣⲱⲙⲓ



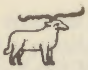
2. HIM.
ϥ,ⲙⲙⲟϥ



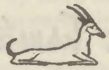
3. BULLOCK.
ⲉϩⲉ



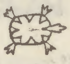
4. RAM.
ⲱⲓⲗ



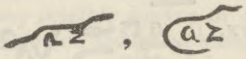
5. ANTELOPE.



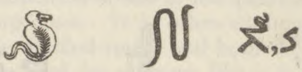
6. TORTOISE.
ⲉⲫⲱⲧ



7. CROCODILE.



8. BASILISK.
ⲟⲩⲣⲟ



1. A figure sitting on the ground, and stretching out one hand, seems to imply simply a *man* or person, which is certainly the sense of the enchorial character that commonly answers to it in the manuscripts; but in composition the figure often appears to lose this sense.

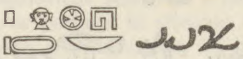
2. The horned snake, creeping along, is clearly meant, in some parts of the inscription of Rosetta, for *him* or *it*; although it has other senses in composition. It is very remarkable, that the enchorial character, and that of the manuscripts, resembling a Y, approaches extremely near to the Coptic F, which also means *him*; and HOF, or HFO, is the Coptic term for a snake; so that this coincidence seems to afford us another trace of the origin of the alphabet.

3–7. The *bullock*, the *ram*, the *antelope*, and the *tortoise*, are proved to be sometimes representations of the things which they resemble, by their occurrence in inscriptions accompanied by tablets; though some of them have probably elsewhere a metaphorical sense. The ram is often represented with two pairs of horns; the one natural, the other imaginary. The *crocodile* is identified by a very distinct drawing in a manuscript sent home by Mr Bankes, and is repeatedly designated in the text by a figure representing it. The deity with a crocodile's head is a separate personage, and is denoted by a figure of the same animal with the tail turned under it.

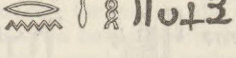
8. The asp or *basilisk* is so coarsely represented in the stone of Rosetta, that the object intended by it could not have been conjectured without a comparison with other inscriptions; the context was, however, sufficient to determine its meaning from the examination of this monument alone.

5. *Inanimate Objects.*

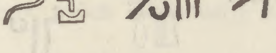
1. EGYPT.
ⲭⲏⲙⲓ



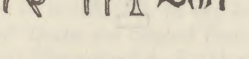
2. MEMPHIS.
ⲙⲉϥⲓ



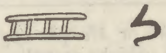
3. RIVER.
ⲓⲁⲣⲟ, ⲓⲟⲣ



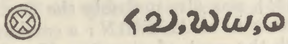
4. GREEK.
ⲟⲩⲉⲓⲛⲓⲛ



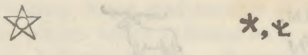
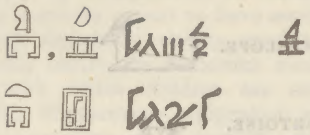
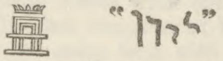
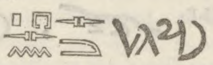
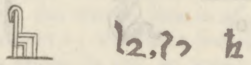
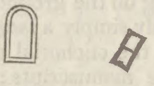
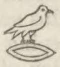
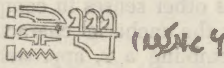
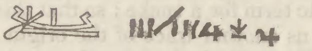
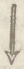
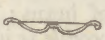
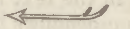
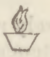
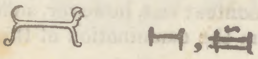
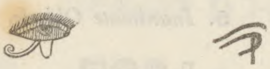
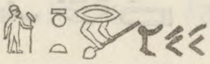
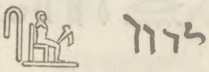
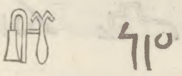
5. COUNTRY.
ⲓⲟϩⲓ, ⲕⲟⲓ



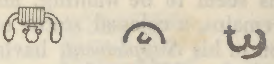
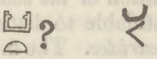
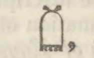
6. LAND.
ⲕⲁϩⲓ



Vocabulary.

7. STAR.	ⲥⲓⲟⲩ	
8. TEMPLE.	ⲉⲣⲫⲉⲓ	
9. SHRINE.		
10. HABITATION.	ⲏⲓ	
11. THRONE.	ϩⲉⲙⲥⲓ	
12. COLUMN.	ϫⲏⲣⲓ.ⲑⲟⲩⲟϯ	
13. DIADEM.	ϫⲗⲟⲙ	
14. ORNAMENTS.	ⲥⲉⲗⲥⲱⲗ	
15. SHIP.	ⲃⲁⲣⲓ	
16. SPEAR.	ⲛⲁⲃⲓ, ⲙⲉⲣⲉϩ	
17. BOW.	ⲡⲓⲫ	
18. ARROW.	ⲥⲟⲑⲛⲉϥ	
19. CENSER.	ⲙϣⲓⲣ	
20. BIER.	ⲥⲗⲏ	
21. TEAR.	ⲉⲣⲙⲏ	
22. IMAGE.	ⲥⲙⲟⲧ, ⲙⲟⲛⲕ	
23. STATUE.	ⲓⲛⲓ? ϣⲏⲟⲩⲓ?	
24. LETTERS.	ⲥϩⲁⲓ	
25. WEIGHT.	ϣⲓⲉ	

Vocabulary.

26. GOLD.	ⲛⲟⲩⲃ	
27. SILVER.	ϩⲁⲧ	
28. OFFERINGS.		

1. The essential parts of the name of EGYPT seem to be the square and the wheel, signifying *splendid land.* In addition to these, or their rudiments, the enchorial word has at the beginning a character which generally answers to an arm holding a feather, or to the flame of a lamp, an emblem which seems also to relate to Egypt in one of the lines of the inscription of Rosetta. A flame and a heart are mentioned by Horus Apollo and by Plutarch as employed in the name of *Egypt;* but a word occurring so frequently is very likely to have been expressed in a variety of ways. The exact combination of characters generally used on the stone has not been observed in any other inscription.

2. The name of MEMPHIS cannot be determined without some uncertainty; the line of hieroglyphics in which it is contained being in several respects obscure.[1]

3. The character supposed to denote the Nile, as a deity, must also sometimes be understood as merely meaning a *river;* and there is reason to think that the Nile itself was generally called by the Egyptians *the river* only. The enchorial character used to denote both the Nile and a river, or canal, sufficiently resembles the hieroglyphic to favour this interpretation; and it is in some degree confirmed by the occurrence of the character alone on a water jar of Pieresc, delineated in Kircher's *Œdipus*, and, together with other characters, on the five vases found by Paul Lucas at Abousir. By accident, Kircher appears, in this single instance, to have been right in one of his conjectures; for he calls this character a Nilometer, and considers it as emblematic of the Nile.

4. The word *Greek*, in Coptic UININ or OUEININ, in Thebaic OUEEIENIN, supposed to have been derived from *Ionian*, seems to exhibit in its form something like an imitation of the sound. The curve on a stem is sometimes exchanged for the term *divine*, and appears to mean *glory*, in Coptic OOU or OÜ, which is nearly the sound attributed by Akerblad to the enchorial character, a little like the Hebrew ו. The feather, as in Ptolemy and Berenice, may be read I or EI, having the three dashes to express them, as usual, in the enchorial text; the serpent is ENEH, *ever;* and the hat, which looks a little like a plough, is equivalent to the waved line, and must be read N; so that we have very accurately OUIENEHN, which seems to be near enough to OUIENIN to justify us in considering these characters as phonetic.

5. The ladder is well marked as meaning *country.* It may perhaps be intended to represent a field with its divisions; but it is uncertain whether or not it is the same symbol which enters into one of the names of Arueris, the sculptures of the Rosetta stone being by no means highly finished.

6. It is remarkable that the wheel, signifying *land*, had been noticed by the Jesuits as resembling the old Chinese character for the word *field;* but this is the only one of a multitude of similar conjectures which has been justified by more complete evidence. (*Phil. Trans.* 1769, pl. xxviii.)

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[1] The name of *Memphis* or *Memphe* appears to be a Greek abbreviation of the hieroglyphical name MA-M-PHTHAH, the *temple or sacred place of Phthah*, which, according to Dr Young (*Rudiments of an Egyptian Dictionary, in the ancient Enchorial Character*, pref. London, 1831), was also probably the first name of Cairo. The phonetic value of the hieroglyphics here placed opposite the word *Memphis* seems to be HMSRN; a combination which, though no doubt "in several respects obscure," may be resolved into HA-MISR, with the mark of plurality, N, subjoined.

7. The star is shown by inscriptions accompanying the zodiacs, to relate to a real *star*. It has also elsewhere a figurative sense, meaning an attendant or ministering spirit.

8. The open square is found in both the combinations of characters which are most commonly used for expressing a *temple;* the feather signifies ornament or consecration, and the oblong figure either the sacred inclosure or a sacred seat, the character for a god being sometimes placed within it. The feather is occasionally converted into an inclined oval, the square being at the same time a little altered; a difference which may be observed in other inscriptions as well as in the Rosetta stone.

9. The character representing a *shrine* so much resembles the object which it denotes, that it was the most readily identified of all which were found on the stone of Rosetta. The character signifying a *priest* was the second; and the combination of both afforded a full confirmation of the truth of the explanation. The enchorial character for a shrine is derived from the sitting statue which always accompanies it.

10. The open square, occurring in *habitation* as well as in *temple*, must probably have meant *house* or *building*, or possibly *stone* only.

11. The *throne*, or chair of state, occurs in a great variety of tablets. It evidently bears its most natural signification in the character denoting statue (No. 23), and in some other instances; but it appears to bear, in some inscriptions, the metaphorical sense of a residence or habitation.

12. The *column*, or pillar, is too much like the object it denotes to allow us to doubt respecting its meaning, considering the sense of that part of the inscription of Rosetta in which it occurs.

13. The characters denoting a *diadem* are sufficiently determined by the first inscription of the stone; and they so much resemble the corresponding passages of the enchorial text, that we can scarcely hesitate to admit the intimate connection of the two modes of writing without seeking for any further proofs.

14. The sacred *ornaments* are expressed by three feathers fixed to a bar, which appears to be held by two arms. The remaining part of the character occurs very frequently as a sort of termination, and seems to answer to *ments*.

15–20. The boat or *ship*, the *spear*, the *bow*, the *arrow*, the *censer*, and the *bier*, are sufficiently identified by the comparison of various tablets with their inscriptions. The *ship* occurs frequently as denoting the sacred boats, in which the representations of the deities are conveyed, though they are not always accompanied by water. But it has been observed, that the Egyptians attributed ships rather than chariots to the sun and moon as gliding smoothly through the skies. The first part of the enchorial word, which has been supposed to be a B, is evidently identical with the character always found in the manuscripts written in the running hieroglyphics as the first part of the delineation of a ship. It is remarkable, that in the inscription at Esneh, as copied by the French, the point of the arrow is turned towards the back of the bowman, instead of being directed towards the enemy.

21. The *tear*, in some of its representations, is very clearly expressive of the thing intended; and this resemblance, together with its frequent attendance on a corpse and a bier, is sufficient to explain its sense. It occurs also sometimes within a border as a peculiar deity; but it seems to be much more commonly emblematical of Osiris, of Apis, or of Mneuis. It is not unfrequently found as a detached figure, in a kind of pottery, with a green glazing, and may perhaps have been worn, instead of a mourning ring, as a memorial of a departed friend. It has most commonly been called the *equi sectio*, and supposed to represent a horse's head, or the rostrum of a ship, whilst the ingenious Kircher has made it a *phallus oculatus*. Amongst the antiquities collected by Lord Mountnorris in Egypt is an eye seen in front, and apparently shedding a tear.

22. The character for an *image* seems to mean *a wrought man;* for the hands, connected with an eye, appear to be holding an oar as an emblem of *labour*. The same character, with a slight variation in the form of the eye, means a rower.

23. The sitting statue has no character to imply wrought; but it is followed by a bent line, which seems to be a term of respect, and may possibly answer to OSH, *great*. The same bent line occurs on the great sarcophagus of green breccia as a personification of one of the qualities of Osiris, probably his *magnificence*. It is often exchanged in the manuscripts for the divided staff; and both are represented in the running hand by a figure like a 9 or a 4. In the enchorial text this character seems sometimes to be expressed by a single line, either straight, or bent sideways into an angle like part of a K. A similar *divine statue* is decreed to "King Nuncoreus, the son of Sesostris," on Mr Montagu's frize. (See *Hieroglyphics*, 7 S l.)

24. *Letters* are denoted by a character which seems to represent some of the materials employed in writing, and which is indeed not extremely unlike an inkstand figured in Caylus's *Recueil*, and consisting of two parallel tubes at some distance from each other, with a cover connected by a chain instead of a hinge. Besides the very well marked passage in the Rosetta stone, the character occurs in many manuscripts near the representation of a Thoth employed in writing; and the enchorial character corresponding to it is also found in the term *hierogrammatists* or *sacred scribes* at the beginning of the inscription.

25. In the numerical tablet of the great French work, believed to have been found at Karnak, a character may be observed which frequently precedes a numeral, and which resembles a weight with its handle. Hence we may conjecture, with considerable probability, that it represents some *weight* of unknown value.

26. The enchorial character for *gold* is perfectly well determined; and its resemblance to a little vase under a sort of arch is so strong that we may safely attribute the same sense to this hieroglyphic, although it appears to be wanting in one or two passages of the sacred inscription of Rosetta, where it ought to be found. In the great ritual we observe this character immediately preceding a shrine, as if a *golden shrine* were intended; and, in several other places, it is connected with a number, as if it meant *pieces of gold;* for instance, in the green sarcophagus, with the number 360. Sometimes, also, it appears to be used in a metaphorical sense as a complimentary epithet of a monarch, or perhaps in allusion to his riches. Thus, on the black frize of Nuncoreus, we have over the king's figure the characters, "Joy, Life, Stability, Power, *Riches*, Like the Sun, for ever." (*Hieroglyphics*, 7 p.)

27. Near to the character for gold, in the margin of the great ritual, is a sort of open box, supported on a flagstaff; and a similar box, with a semicircle under it, seems to mean *silver*, at least it considerably resembles the enchorial character for silver, which is perfectly well ascertained.

28. We find, in several inscriptions, representations of objects which are also observable in the tablets accompanying them, although it is difficult to say for what they are intended. Two of these are copied from the frize of Ficoroni and Montagu (*Hieroglyphics*, 9 OKL, RSKL, 7 LMQ). The former seems to be a sort of cloak, with a fringe at the bottom; and the latter is a little like a pear; but this character does not occur so clearly in the inscription.

6. *Attributes and Actions.*

(See Plate CCLXXIV.)

1. The *crux ansata*, sometimes called the key of the Nile, is usually employed as a symbol of divinity; but its correct meaning is *life*, as Lacroze rightly conjectured, although his opinion respecting the origin of the character is inconsistent with the form of its oldest and most accurate delineations; and there is no one instance in which it is so represented as to stand in any relation to a sluice or a watercock. According to Socrates and Rufinus, the Egyptian priests declared to their Christian conquerors under Theodosius, who were going to destroy the Serapeion at Alexandria, that the cross, so often sculptured on their temples, was an emblem of the life to come. This passage has been understood by some authors as relating rather to the cross without a handle, which is observable in some rare instances, and indeed twice on the stone of Rosetta; but this symbol appears rather to denote a protecting power than an immortal existence. It happens, perhaps altogether accidentally, that one of the contractions for the word *god*, which are commonly used in Coptic, approaches very near to this character, except that the arms of the cross are within the circle.

2. *Eternity* is represented simply by a serpent rising in an oblique arch, and without horns; the serpent devouring its tail, and forming a ring, is never found as an Egyptian emblem. Horus Apollo says that eternity was denoted by a serpent having its tail hidden under its body, and that such serpents were called *uraei*, meaning in Greek *basilisks*, which agrees very well with the sense of the Coptic URO, *king;* but this description answers better to the *asp* of the inscription of Rosetta, which has also some relation to the representations of the deities, though it does not exactly mean immortality.

3. The cross with the serpent is a very common epithet in the sense of everliving, or *immortal*, or ÆONOBIOS; the waved line is in general a preposition, or a termination, meaning *of*, *to*, or *for;* and it appears to be synonymous with the hat or head-dress. Almost all authors have very hastily taken it for granted that this character must relate immediately to water wherever it occurs, although we find it repeatedly in every line of the inscription of Rosetta, where water is not once mentioned. The fact, however, is, that its prototype seems to have been a stream of water, or of any other liquid, flowing *from* a vessel, and poured *on* some other object; and that the idea of the liquid was completely dropped in the general employment of the character, whilst that of the *connection* only was retained; the hat or cap being also similarly forgotten, whilst its connection with the head of the wearer only was suggested by its figure. In this compound character we have two particles nearly alike, the semicircle and the line; for that they cannot be very different is shown by the occasional substitution of two semicircles for the combination. One of them seems to serve for the connection between life and eternity, " life *for* ever;" and the other to make the new compound an adjective, " liv*ing* for ever."

4. The triangle or pyramid occurs very commonly amongst other emblems of prosperity and happiness; and it is found in the frize of Montagu and Ficoroni in the decided sense of an offering or a present in general, whilst in another place it is made an offering in its own form; so that we can only interpret it as signifying *joy*, or pleasure, or prosperity. (*Hieroglyphics*, 7 Mqr, Uqr; 9 Rc, Rl; 7 Uq, Urs.)

5. *Power* appears to be indicated by a sceptre having the head of an animal, which is often placed in the hands of the deities, and often stands with the cross, the pyramid, and the altar, as an emblem of the blessings attendant on the favourites of the gods. It is seldom used in the text of inscriptions, but it occurs once in that of Rosetta.

6, 7. *Stability* is denoted, on the Rosetta stone and elsewhere, by the altar, which seems to have been fixed in the ground as a column. When repeated it forms the verb *establish;* but it often occurs singly, and not uncommonly as an unconnected emblem, accompanied by other characters of similar import; and it is sometimes found as a detached figure formed of glazed porcelain. The two altars are very conspicuous objects in some of the epistolographic manuscripts, and are very useful in comparing them with the hieratic; but the word employed in the enchorial inscription of Rosetta seems to be derived from a different origin.

8. A drop or club over a basin, followed by a bent line, seems to mean *great strength*, though it is difficult to say what the character is meant to depict. In some other places it seems to resemble somewhat a kind of head-dress.

9. The bullock and the arm, which generally occur at the beginning of the inscriptions on the obelisks, agree very well with the epithet *mighty* in the translation of Hermapion. The arm is, in many other instances, used in compound characters.

10. *Victory* is denoted by a branch, perhaps by a palm branch, with a semicircle and a circle, sometimes preceded by a waved line.

11. The character signifying *fortune* somewhat resembles that which denotes *gold;* but instead of the arch we have an angular line, which seems to be intended for a pair of arms grasping the vase. The whole assemblage approaches also a little to the form of a pocket, or purse, as it is frequently delineated.

12. The open square, bent inwards, clearly means *splendour* or *glory*, though it is uncertain what object it is intended to represent. In some cases a crescent seems to be substituted for it, as if it bore some relation to the sun, and the moon afforded a parallel sense.

13, 14. *Illustrious* is expressed, in the inscription of Rosetta, by the open square, for *splendour*, the oval, which signifies addition or respect, making it a kind of superlative, and the pair of legs, which very naturally convey the idea of *bearing*, or possessing; so that the whole forms the epithet EPIPHANES. This assemblage is, in some of the manuscripts, very commonly followed by a bird, or its equivalent, a half arch, apparently serving as an intensive.

15–17. The feather, when alone, seems to imply *honour*, as well as when accompanied by a man stretching out his arm, or by a bird. The bird also frequently stands alone in similar passages, and must be translated *respect*, or *respectable*. The block with the bird has also manifestly the same sense in the great ritual, and the vase with the bowl is so nearly synonymous with it that we can only translate it *venerable;* and these characters are frequently exchanged for a sort of bench, with a dash under it, a symbol which, however, may possibly have been deduced from some different origin. The sense of the feather is peculiarly illustrated by its occurrence with a drop or club, a serpent, and a line, at the beginning of a great variety of inscriptions, apparently signifying *immortal honour to.*

18. The eye, either with or without the pupil, and either preceded or followed by the undulated line, has a sense somewhat similar to all these, and is often employed at the beginning of the honorary inscriptions. On the Rosetta stone it means distinctly *rite* or *adoration*. The enchorial character corresponding to it expresses simply *doing;* and in Greek the same word signifies *to do* and *to sacrifice.*

19. *Worship*, or the Greek *therapeia*, is denoted by a very unintelligible character, resembling a kind of cap-

stan, which is frequently delineated in the boats of the tablets, if it is not intended for some emblematical figure erected in the boats. On the great green sarcophagus, the long bent line is a snake, and the point projecting upwards from the middle is a sword. But these resemblances afford us little or no assistance in tracing the connection between the whole emblem and its sense.

20, 21. The character denoting *father* is found in some of the inscriptions of the Ptolemies in such circumstances that it might as easily be supposed to mean mother; but, by means of Mr Bullock's scarabœus, compared with some other monuments, another character having been determined for *mother*, it became easy to identify the symbol for father on the Rosetta stone, where it had been a little injured, and imperfectly copied in the engravings.

22. The frequent occurrence of the Egyptian goose or sheldrake, with a circle over it, between two proper names, sufficiently points out the meaning of these characters, which can only relate to the connection between them, and which must naturally mean *son*. The circle may perhaps be intended for an egg; but in the painted sculptures the disc is red and the circumference light. The enchorial character nearly resembles the form in which some kinds of birds are usually expressed in the manuscripts. Mr Bailey also observed the occurrence of the bird between two proper names, and identified it with the *chenalopex* mentioned by Horus Apollo as employed to signify son, on account of its courage in defending its offspring. This quality might rather have been expected to lead to its adoption as a symbol for a parent; but its existence in the bird in question is confirmed by the observations of modern naturalists respecting the sheldrake (the *tadorne* of Buffon), which has generally been considered as the chenalopex, and resembles very accurately the best of the hieroglyphical delineations of the bird, although the colours, as exhibited in the *Déscription de l'Egypte*, are not correctly natural.

23. The same bird, with a leg or a dash instead of a circle, seems to mean a *minister* or *attendant*, especially in several parts of the inscriptions on the Lover's Fountain. There are also some other characters which seem to be nearly synonymous with these; one of them may possibly be meant for a *tail*, implying a follower, as SAT and SA are nearly alike in Coptic; another is sometimes worn as a collar, perhaps implying subjection, and meaning servant.

24, 25. Instead of the usual character for *son*, we sometimes find, between two names, a serpent with a globe substituted for the bird, and an oval for the circle; and the context seems to require that the meaning of these symbols should be a *daughter*, but probably with some particular character of royalty or divinity. At Philae we find a dual, meaning *sons* or descendants, as a son and a daughter, expressed apparently by two circles only.

26. A *child*, or *infant*, is represented by a figure bent as if sitting, and putting his finger on his lip. This is sufficiently established by the triple inscription; but it is still further confirmed by a plate of the *Déscription de l'Egypte* (*Antiq.* tom. ii. pl. lxxxvi. f. 1), in which a figure of this kind is represented as immediately derived from the father, who seems to be inspired by a beetle entering his mouth. The manuscripts afford us here some valuable steps by which the enchorial character is connected with the distinct hieroglyphics. Another figure, which is elsewhere used as corresponding to a beetle, is also found in the enchorial text in the sense of son or offspring.

27, 28. A circle, with an arm holding an angular line, means a *director*. The angular line is intended for part of a rudder; and the same character, with the addition of the figure of a boat, denotes the *pilot* or *helmsman*, as is obvious from many parts of the green sarcophagus. The circle and arm are also found in the character denoting *dedicate*.

29. A pair of arms holding an oar, and connected by a sort of sector, signifies a *rower*, and possibly also a labourer, or workman in general, as in *image*.

30. A stem of a plant, perhaps a reed, followed by an insect like a wasp or ichneumon, but probably intended for a bee, and by two semicircles, is the complete emblem for a *king;* but the reed is often used alone in the same sense, and the insect sometimes occurs without the reed. Plutarch says that a king was denoted by a leaf, THRION; and Horus Apollo tells us that a bee signified a people obedient to a king; hence this symbol might be interpreted *king of men*. Ammianus Marcellinus, however, asserts, more simply, that a king was denoted by a bee. It appears from the manuscripts that the beginning of the enchorial character, which Mr Akerblad read PHU, is derived from the elementary traces representing the reed, the semicircle, a waved line, and a sitting deity, meaning *the divine king;* an assemblage which often occurs on the green sarcophagus, and elsewhere, as applied to a royal person. The remainder of the enchorial character seems to represent a termination consisting of a semicircle and a vessel, which is often added to a name, apparently as a demonstration of respect, like the vessel and the spiral in the case of the god Nilus.

31. *Condition*, or subjection, is denoted by a character which somewhat resembles an altar with an offering of flowers, but which might also be intended for the cup of a flower with an insect hovering over it.

32. In the term *kingdom*, the crown is figuratively employed for its wearer; a metaphor common in many modern languages.

33. The character denoting a *libation* is very indistinctly traced in the sacred inscription of Rosetta, so that it would have been impossible to explain its original form without the assistance of any hieroglyphical monuments. The long water jar, out of which the kneeling figure is pouring a divided stream, somewhat resembles those which a modern Egyptian woman is seen carrying in a plate of Mr Legh's second edition.

34, 35. The vase with the stream, which frequently occurs in the character for *priest*, is sometimes found alone, and must therefore probably relate to some particular *ceremony* performed by the priests, approaching to the nature of a libation. On the monument of Rosetta the line is a simple curve, not waved; nor is the vase more distinctly represented. Instead of the sitting figure, a foot is sometimes substituted, as in the word *attendant;* and the enchorial character is a more tolerable approximation to this form than to the complete figure.

36. *Priesthood* is simply the *condition* of a *priest;* the character prefixed answering to the Coptic prefix MET, and to the Greek termination EIA.

37. The ornaments of the head are very generally used as indicating the person by whom they are worn; and flowers, probably those of the lotus, are frequently found on the heads of the priests, as well as in the inscriptions which accompany them. In the inscription of Rosetta the sense *sacerdotal* agrees very well with the context where this character occurs, though it cannot be deduced with absolute certainty from the comparison with the Greek.

38. It is by no means easy to explain why the figure like a buckle should clearly mean an *assembly*. Perhaps, however, the upper part may originally have been a crescent, implying monthly; and the scale or basin below is occasionally found supporting some offerings, which are set upright in it; so that the whole may have meant *a monthly exhibition*.

39. The character *god* is made an adjective by the addition of the waved line, and of the long drop, which seem

Vocabulary.

simply to convert it into the term *sacred;* or, if the drop has any other meaning, it can only relate to worshipping or honouring, as the character prefixed to the enchorial text, which is equivalent to the scale or basin, is elsewhere employed to signify *honour* or *attention*. In some other instances, a circle and a waved line seem to be employed in a similar manner, for connecting one character with another like substantive and adjective.

40. An epithet implying *consecrated* or *dedicated* is composed of a trident, or triple branch or root, followed by a bent line. It occurs very commonly near the beginning of inscriptions, on obelisks, and elsewhere.

41. A little oblique cross, over an arm with a feather, seems to mean *to give*, and perhaps to fight and to defend, as, in Coptic, the word TI has both these senses. It is often preceded by a circle and a semicircle.

42. The hand bearing the triangle or pyramid manifestly means, in the frize of Montagu and Ficoroni, *to offer*, as an oblation to a deity.

43. In the inscription of Rosetta, we find the word *dedicate* expressed by a bent line and a sitting figure, with the circle, and the arm holding the rudder. The character already interpreted *consecrated* precedes, but it is not absolutely certain that it belongs to, the same phrase.

44. The term *lawful* is naturally enough derived from a deity in his judicial capacity; the figure is preceded by a bird, placed between two semicircles, which must here mean *according to*, answering to the termination *ful*. Sometimes a curved line, supported by a stem, is substituted as a synonym for the figure of the judge.

45–47. The character representing *good* strongly resembles the figure of a lute, depicted in the chamber of the harps, amongst the catacombs, and may have alluded to the pleasing sound of music. The plural, with the scale or basin, which implies *bestowing*, makes the epithet EUCHARISTOS, which in Greek is somewhat ambiguous, meaning either *grateful* or *munificent*. The latter, however, must be its sense in this inscription, because *good gifts* or *delights* may be plural, but *gratitude* not so easily. The lute is also found denoting good in other parts of the inscription. The enchorial character for the scale could scarcely have been suspected to be derived from it, without the assistance of the manuscripts, which constantly exhibit an intermediate form, intended, perhaps, to comprehend one of the lines supporting the scale.

48. The semicircle, with two oblique dashes, seems to mean *great* in the name of Thoth, who is called, in the Greek inscription of Rosetta, Hermes the *great and great;* whilst, in other places, this character seems almost always to convey the sense of a dual. The enchorial epithet of Thoth is a little like the crown with two semicircles, which is most frequently found amongst the titles of Osiris, especially when he sits in judgment. The two kinds of hats, worn by the different deities, seem to be intended by the characters of the Rosetta stone, which express the *upper* and *lower* regions or countries. These two characters are also found together in the green sarcophagus as the names of two goddesses; and they occur together in one or two passages of some of the manuscripts, and in an inscription at Philae, so that, although the representation is very indistinct in the particular case of the Rosetta stone, there is little doubt that the cap of Osiris meant, in this case, *superior*, and that of Hyperion and other personages *inferior*.

49. A circle and a semicircle stand, in several passages of the inscription of Rosetta, for *others*, or *remaining*.

50. Possibly the bowl and the bird together mean *say* or *call*, and the figure of a man may serve to make the passive *called*.

51. The second bowl, substituted for the bird, does not appear very essentially to alter the sense, which is still a thing *said* or proclaimed, a *declaration*, or a decree.

52. The characters denoting *manifest* seem to have some analogy to *called*, though their derivation is obscure. The first character may either be intended for the country, or for a kind of flag or banner.

53. The ring, which implies a *name*, and which elsewhere distinguishes proper names, seems to be an imitation of the label, called a phylactery in the Greek inscription of Rosetta, on which the name of a figure was usually distinguished.

54. A disc, with rays descending from it, is one of the few characters in which the form gives us some assistance towards determining the sense, which is found to be *enlightening;* though the Egyptians do not seem to have been very correct in their delineation of the motion of light, which they make to diverge in curved lines, like those described by a common projectile.

55. The square block, the semicircle, and the chain, are employed very clearly in the sense of *loving* or *beloved;* in Coptic MAI. In the enchorial character the square and semicircle seem to be sometimes transposed, and sometimes changed into an oval.

56. *Preserver*, or *saviour*, is represented by a sort of trefoil, with a long stem, which answers to a cross or obelisk in the enchorial text; but, in other passages, the character takes the form of a still simpler club; and in others, again, it has something like a bulbous root.

57, 58. A frame like a ladder, supported by a stem, occurs sometimes as a part of a head dress, but it is difficult to say if it represents any other object. Followed by an arm, and a pair of legs, it signifies *set up*, and this combination of characters is of very frequent occurrence; sometimes also the bent line or divided shaft forms a part of it. In Coptic, *set up* is expressed by *set on foot*, which seems to retain the analogy of the hieroglyphical character. The substitution of a pair of feathers for the legs, however, does not appear materially to alter the sense; the context, where it occurs, requiring the word *prepare* or *construct*.

7. *Relations.*

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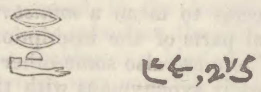

2. WHEREVER.
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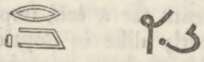

3. AND.
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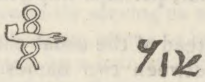

4. ALSO, WITH.
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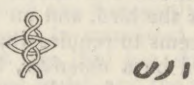

5. MOREOVER.
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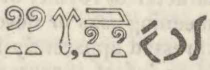
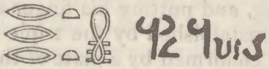
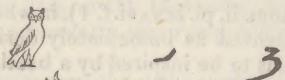


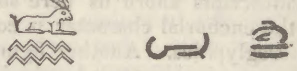
6. LIKEWISE.
ⲙⲡⲁⲓⲣⲏϯ



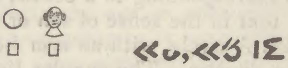
7. IN.
ϧⲉⲛ, ⲉϩⲟⲩⲛ



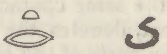
8. UPON, AT.
ϩⲓ, ⲉϩⲣⲏⲓ



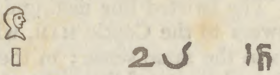
9. OVER, ON.
ⲉϫⲱ

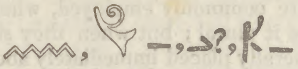


10. FOR.
ϣⲁ



Vocabulary.

11. BY THESE.
(ⲕⲁⲧⲁ),ⲛⲧⲉ?


12. OF, TO.
ⲛⲧⲉ,ⲛ


1. Two ovals, with a semicircle and an arm, very clearly signify *in order that.* The ovals seem to mean *to* or *for*, and the arm *action* or *doing;* as our own *that* seems to be allied to the German *that*, which means *deed.* The same combination of characters appears to denote, in another passage, *to add to;* and one of the ovals is sometimes omitted. The Coptic may be either HINA or ETHBE.

2. The symbols employed in the sense *wherever*, seem to mean separately, *at, in, one*, or *in, place, one;* and, transposing the two last, we may make a very good Coptic word E-U-MA.

3, 4. The arm and chain signify *and* or *also;* and the oval sometimes takes place of the arm, without much variation of the sense. This combination is also found in the sense of *with*, or *together with.* The elementary ideas seem to be *put, with*, or *add, with.* Between the names of Ptolemy and Berenice at Karnak, the arm and chain are separate.

5. The half arch, or the fork, which is perfectly equivalent to it, followed by two curls and two semicircles, mean *moreover;* the reduplication probably resembling that of many of the Coptic verbs, which generally imply a continued action.

6. The combination of the loop or sling, with two semicircles and three ovals, means very clearly *likewise.* The loop seems to represent a bucket, intended for one of a pair, to be carried on a pole, as they are frequently delineated in the tablets, so that it must mean a *companion;* and accordingly we find it in a very common epithet of a king, on obelisks and elsewhere, with a circle and a bar, denoting *the companion of the sun*, or simply *resembling the sun.* In the enchorial character for *likewise*, the symbols seem to be transposed, and the loop is doubled.

7. An owl, signifying *in*, seems to be nearly synonymous with the half arch, which is also sometimes to be understood in the sense of *all.* Both these characters occur also in many instances where they can only be considered as marks of respect, and not very essential to the sense; and in this they resemble the Coptic prefix M, which is a particle not very distinctly intelligible, nor capable of being translated. It is also not a little remarkable, that the M of Akerblad's alphabet is the enchorial character which answers to both of these symbols.

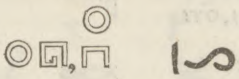
8, 9. A hare over two waved lines is employed, either alone, or together with a head, dash, circle, and dash, which have separately a similar sense, for *upon, over*, or *at;* and it is remarkable, that a similar relation exists in Coptic between EHREÏ and EJO, JO, or DCHO, also meaning a head. The enchorial character, in some of its forms, is manifestly a coarse imitation of an animal. The head is always represented in the manuscripts by a character nearly like a Greek Σ; and this may possibly have been the origin of the Coptic letter JANJIA, if it was derived from a hieroglyphic; but it is equally probable that it may have been intended for a combination of a *delta* and a *chi.*

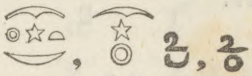
10. A semicircle and an oval signify *for*, and have a relation to time.

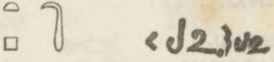
11. A ball, with two short appendages, one narrower than the other, occurs several times on the Rosetta stone, and seems to have been intended for a head seen in profile, which is often found on other monuments. This character, together with a dash, seems to signify *by the*, or *each;* for instance *every* year, or *every* month.

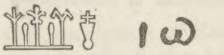
12. The hat, interposed between an image and the king, can only mean *of* or *for.* It is often substituted, in passages which are frequently repeated, for the waved line, each being probably equivalent to the Coptic NTE, or rather N; which also sometimes makes an adjective of a substantive, as NNUB, golden, from NUB, gold.

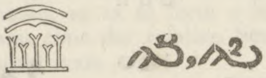
8. *Time.*

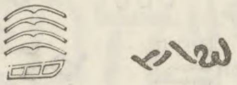
1. DAY.
ⲉϩⲟⲟⲩ.ⲙⲉⲣⲓ


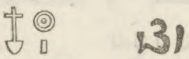
2. MONTH.
ⲁⲃⲟⲧ


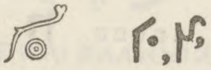
3. YEAR.
ⲣⲟⲙⲡⲓ


4. THOUTH.
ⲑⲱⲟⲩⲧ


5. MECHIR.
ⲙⲉⲭⲓⲣ


6. MESORE.
ⲙⲉⲥⲱⲣⲏ


7. FIRST DAY.
ⲥⲟⲩⲁⲓ


8. THIRTIETH.
ⲥⲟⲩ ⲙⲁⲃ


1. A *day* seems to be very naturally expressed by *splendour* of the *sun*, or sunshine.

2. A crescent turned downwards, with a star and the sun, makes up the character signifying a *month;* to which a semicircle and a scale or basin are sometimes added. Horus Apollo says that a month is denoted by a palm branch, or by an inverted crescent; but the crescent is too indistinct on the monument of Rosetta to have allowed us to recognise it without the assistance of the collateral inscriptions.

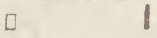
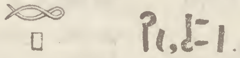
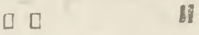
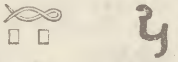
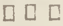
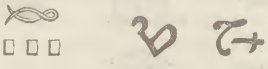
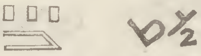
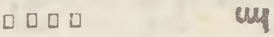
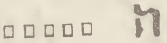
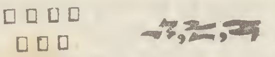
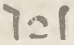
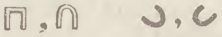
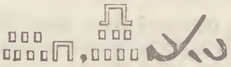
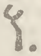
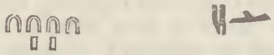
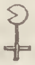
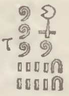
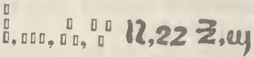
3. A *year* is denoted by a bent line with a little projection from the middle, which seems to represent a plant with an annual shoot or bud; it is commonly followed by a semicircle and a block or dash.

4. There is some little uncertainty respecting the exact limits of the characters denoting the first month, *Thouth.* The name seems to have some relation to gathering the harvest, and the emblem is probably intended for a field of corn; and, perhaps, as the year is said to have begun originally with the dogdays, the appropriation of this character to the first month may have been contemporaneous with the origin of the calendar.

5, 6. The sixth month, *Mechir*, is remarkable for having half as many crescents as the twelfth, *Mesore.* This relation would without doubt be further illustrated if we could discover any thing like a calendar among the immense mass of Egyptian literature which is still in existence. The manuscript which Montfaucon calls a calendar, merely because it is divided into twelve columns, has no pretensions to the name.

7, 8. The symbol for the sun seems to be employed in the designation both of the *first day* of the month, the NEOMENIA of the Greek inscription, and of the last, or *thirtieth day.* Of the characters following the sun, the one seems to mean good, or rather *new*, as in Thouth, the month of the new year; the other *old* or *last.* This character might be taken for a serpent, or for a branch of a tree; but it seems more probable that it is intended for the *tail* of an animal, since it occurs in several passages of the manuscripts as representing a tail; and the tail of the month is sufficiently expressive of the sense.

9. *Numbers.*

1. ONE.	ⲟⲩⲁⲓ, ⲟⲩⲓ	
2. FIRST.	ϩⲟⲩⲓⲧ	
3. TWO.	ⲥⲛⲁⲩ, ⲥⲛⲟⲩⲧ	
4. SECOND.	ⲙⲁϩⲥⲛⲁⲩ	
5. THREE.	ϣⲟⲙⲧ	
6. THIRD.	ⲙⲁϩ ϣⲟⲙⲧ	
7. THRICE.	ϣⲟⲙⲧ ⲛⲥⲟⲡ	
8. FOUR.	ϥⲧⲟ	
9. FIVE.	ϯⲟⲩ	
10. SEVEN.	ϣⲁϣϥ	
11. EIGHTH.	ⲙⲁϩ ϣⲙⲏⲛ	
12. TEN.	ⲙⲏⲧ, ⲙⲏϯ	
13. SEVENTEEN.	ⲙⲉⲧϣⲁϣϥ	
14. THIRTY.	ⲙⲁⲡ	
15. FORTY-TWO.	ϩⲙⲉⲥⲛⲁⲩ	
16. A HUNDRED.	ϣⲉ	
17. A THOUSAND.	ϣⲟ	
18. MCDXXVIII.	ϣⲟ ϥⲧⲟ ϣⲉ ϫⲟⲩⲧ ϣⲙⲟⲩⲛ	
19. SEVERAL.	ϩⲁⲛ, ..ⲟⲩⲓ	

1. *Units* are denoted by short lines, like the Roman I. Mr Akerblad first noticed the first three numerals in the last line of the sacred characters of Rosetta, where the Greek text is deficient, and the words "first and second" only remain; and this observation alone was sufficient to prove that the hieroglyphical characters related to a real language, and were not simply ornamental decorations, as some persons have imagined.

2–11. The twisted line distinguishing the *ordinal numbers* answers to the Coptic MAH, which is prefixed to the cardinals in the same sense; in the enchorial text the corresponding character follows the number. The *three* points are more commonly employed, when they follow a word, to make it plural; but when they signify a numeral, they are generally placed immediately above some other character; and, in the enchorial inscription, this numeral is distinguished by making the lines oblique, and joining them.

12. For the number *ten* we have a Greek *pi*, either square or rounded, not only in the inscription of Rosetta, but in many other places.

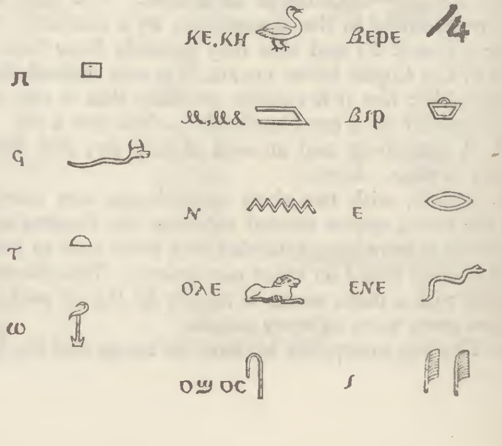
13. We find the number *seventeen* occurring twice as a date in the inscription of Rosetta; the Greek text, in another part, alluding to the same period, has *eighteen;* and the enchorial words are too indistinctly marked to allow us to judge of the identity or diversity of the two numbers; but the difference of a day is of no consequence, since the festival of the "assumption of the kingdom" may easily have begun on the 17th of Mechir, and continued till the next day, which is the date of the decree.

14, 15. The enchorial character for *thirty*, when applied to years, seems to be the same as is elsewhere used in the sense of the *thirtieth day;* but the numbers are almost always confused in the running hand, and exhibit several deviations from the regular system of the sacred characters. The number *forty*, for example, in the remarkable passage relating to the forty-two assessors of Osiris, seems to be denoted by a single line with a dash on it.

16–18. The curve, like the figure 9, meaning *a hundred*, and the notched circle, supported by a cross, denoting *a thousand*, occur, in several inscriptions, so combined with units and tens, as to leave no doubt respecting the numbers which they represent. This is particularly evident from the consideration of an inscription "believed to have been found at Karnak." (*Déscription de l'Egypte, Antiq.* tom. iii. pl. xxxviii. F. 26. . 30.)

19. *Plurals* are distinguished by writing a character three times, or by putting three dashes after it, and sometimes, perhaps, though very rarely, before it; occasionally also by repeating a part of a collection of symbols once only. In the manuscripts, the three dashes are generally joined into a crooked stroke, which, in the enchorial inscription, sometimes both precedes and follows the word; whilst, in other cases, the second stroke is converted into a single vertical line, which serves to limit the extent of the characters meant to be made plural; the representation being so imperfect, that this assistance is more required than in the sacred characters. And it may be observed, that this second mark is never wanting in the enchorial inscription, as it must frequently have been if the character had been alphabetical; since many of the Egyptian plurals end precisely as their singulars do, and even when they differ from them, it is not by the addition of any one uniform termination.

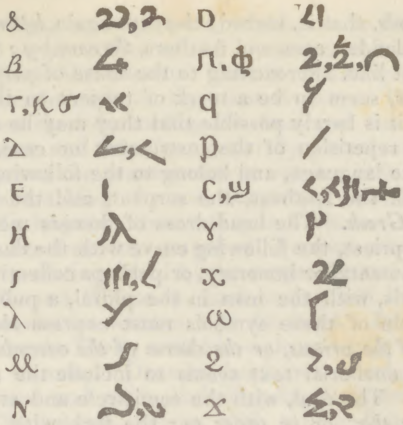
10. *Sounds.*



Specimens.

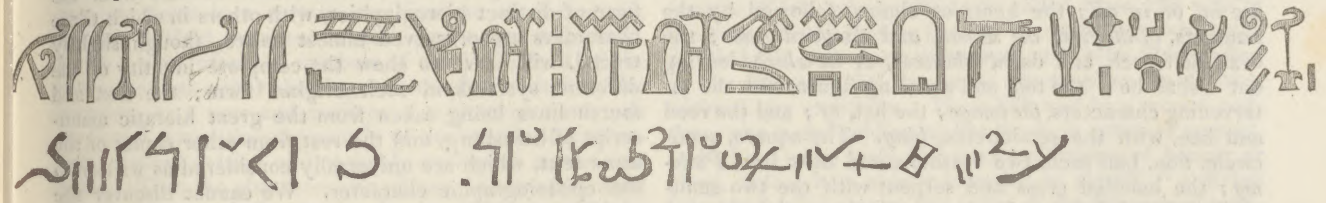
The phonetic characters, according to the traces which may be discovered in the words *Berenice*, *Ptolemy*, *Greek*, and some others, will afford something like a hieroglyphic alphabet, which, however, is merely collected as a specimen of the mode of expressing sounds in some particular cases, and not as having been universally employed where sounds were required. The SUPPOSED ENCHORIAL ALPHABET subjoined is applicable to most of the proper names in the inscription of Rosetta, and probably also to some other symbols which have been the prototypes of the characters. It is taken from the alphabet of Akerblad, but is considerably modified by the conjectures which have been published in the *Museum Criticum*.[1] M. Champollion pretends that his labours on the demotic text of the Rosetta inscription had also led him to increase, and in certain points to rectify, the alphabet of Mr Akerblad; and that the comparison of the hieratic manuscripts with a large hieroglyphical papyrus had enabled him to ascertain that the hieratic was a simple tachygraphy of the hieroglyphic writing. In this last point, however, he seems to have been anticipated by Tyschen of Göttingen, who, as early as the year 1816, announced to the world, in the *Magasin Encyclopédique*, that the hieratic was merely an abridged or simplified form of the hieroglyphical method of writing.

Specimens.

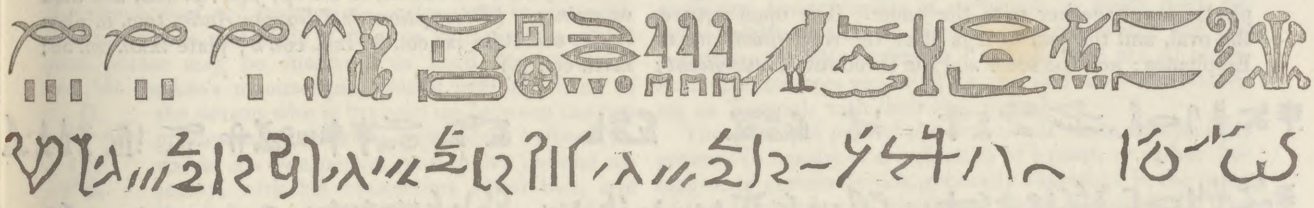

ⲁ
ⲃ
ⲅ,ⲕ,ϭ
ⲇ
ⲉ
ⲏ
ⲓ
ⲗ
ⲙ
ⲛ
ⲟ
ⲡ,ⲫ
ϥ
ⲣ
ⲥ,ϣ
ⲩ
ϫ
ⲱ
ϩ
ⲭ

11. *Specimens of Phrases.*

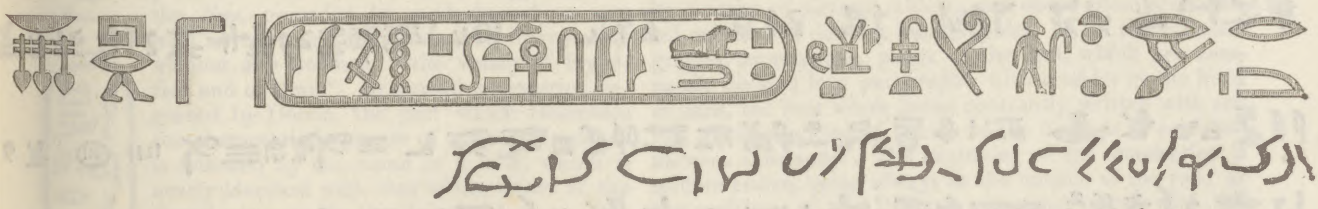
The last line of the inscription of Rosetta will serve as a specimen of the way in which the hieroglyphical characters were combined, so as to form a language; and will show at the same time the relation between the sacred and the enchorial texts.



. . . . ΣΤΕΡΕΟΥΛΙΘΟΥΤΟΙΣΤΕΙΕΡΟΙΣΚΑΙΕΓΧΩΡΙΟΙΣΚΑΙΕΛΛΗΝΙΚΟΙΣΓΡΑΜΜΑΣΙΝ



ΚΑΙΣΤΗΣΑΙΕΝΕΚΑΣΤΩΙΤΩΝΤΕΠΡΩΤΩΝΚΑΙΔΕΥΤΕΡΩΝ . . . .



At the beginning of the line we find some obscurity, and a want of perfect correspondence in the two inscriptions; but it is clear that the fork or ladder, the arm and the feathers, mean to *prepare* or procure; then follows *a column*; the wavy line, *of;* the semicircle and two dashes, with the arm, probably *strong* or hard; the block or square below, with its semicircle, *stone;* the loop or knot *wrought* or *engraven;* the half arch *in* or *with;* the instrument or case, *writing*, or letters; the wavy line, the hatchet, and drop, with the three dashes making a plural, *appropriate*

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[1] We republish this Supposed Enchorial Alphabet, as it originally appeared in the article EGYPT contained in the *Supplement* to the former editions of the *Encyclopædia Britannica*, notwithstanding one comparatively more perfect might have been copied from the *Rudiments of an Egyptian Dictionary in the ancient Enchorial Character*, a work completed by Dr Young during the progress and under the pressure of his last illness. But we confess we were anxious to preserve unaltered this astonishing effort of learning and sagacity, to show precisely what had been achieved by the first successful labourer in the obscure domain of Egyptian literature, and to draw a marked line of distinction between the discoveries of Dr Young, and the additions or improvements subsequently made by Champollion and others. In the general alphabet, subjoined to this article, will be found all the phonetic hieroglyphics which have as yet been determined with any degree of certainty. But for an alphabetical classification of all the enchorial symbols or groups which have been ascertained, either by Dr Young himself, or by others who were induced by his example to pursue the investigation which he so ably commenced, we must refer the reader to the interesting work above cited, containing his last contribution towards the advancement of Egyptian literature.

Specimens.

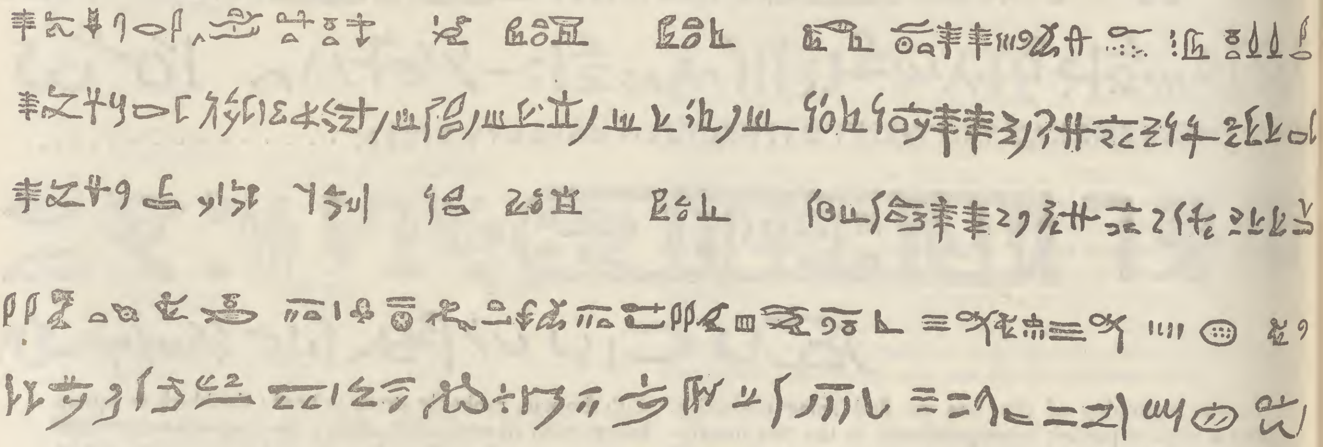
to the gods, that is, sacred ; the case again, *letters* ; the hat, *of* ; the ladder, arm, and feathers, *the country* ; the serpent and bent line, approaching to the sense of *perpetuity* and *greatness*, seem to be a mark of respect to the country, though it is barely possible that they may be substituted for the repetition of the instrument or case, and may mean the language, and belong to the following curve on the stem, the feathers, the serpent, and the hat, which signify *Greek*. The head-dress of flowers meaning probably a priest, the following curve with the dashes probably ornamental or honorary, or perhaps collective, and the two bowls, with the man in the plural, a publication ;— the whole of these symbols must express *the honorary decree of the priests, or the decree of the assembled priests* ; but the enchorial text seems to include the symbol for honour. The oval, with the semicircle and arm, implies *in order that*, or *in order to* ; the fork with cross bars, the arm, the legs, and the snake, *set it up* ; the bird, *in* ; the three broad feathers over as many open squares, *the temples*, as a plural ; the half arch and oval with the plural dashes, *all*, or *of all kinds* ; the open square, wheel, scale, head, dash, and ring, *Egypt* ; the figure with a vase on his head, *subjection* or *power* ; making the whole, belonging to Egypt, or *throughout Egypt*. The fork and dash are *in*, or *in all* ; the knots or chains, followed by the numbers, *of the first, the second, and the third order* ; the oval, half arch, and dash, *wherever*, or *in which*, leaving out " shall be ;" the tool and standing figure, with the intervening characters, *the image* ; the hat, *of* ; and the reed and bee, with the semicircles, *king*. The square, semicircle, lion, half arch, two feathers, and bent line, *Ptolemy* ; the handled cross and serpent with the two semicircles, *the everliving* ; the square block, semicircle, and chain, *dear to* ; the hieralpha and two feathers, *Phthah*, or Vulcan ; all this being included within the ring or phylactery, together with the name. The open square, the oval, and the pair of legs after the ring, *illustrious* or Epiphanes ; and the scale and the three lutes, *munificent* ; the conjunctions being often omitted, as they also are very commonly in Coptic, and even in Greek.

Comp son.

The enchorial text in many parts agrees extremely well with the hieroglyphics, according to the general style of imitation which has already been explained and exemplified, although in some passages there is a greater difference than might have been expected. The beginning of the enchorial line seems to contain the word *decree*, which cannot be found in this part of the hieroglyphics ; the character for letters occurs three times in it, as if the sacred character used in the third place meant *language* ; the sacerdotal decree of the sacred characters is omitted in the corresponding part of the enchorial ; the word *temples* is repeated before each numeral ; the term *wherever* is amplified ; the image is a very coarse imitation, and is followed by the character for a deity, meaning sacred or divine ; and, lastly, the name of Ptolemy is omitted, the word king being only followed by " whose life shall be for ever," or a phrase of similar import.

12. *Comparison of Manuscripts.*

The subjoined specimens of a comparison of the different manuscripts, which deviate more or less from the form of distinct hieroglyphics, with others in which those characters are preserved almost entire, though slightly traced, will serve to show the complete identity of the different systems in their original form ; the first and fourth lines being taken from the great hieratic manuscript of Strasburg, and the rest from other copies of the same text, which are universally considered as written in the epistolographic character. We cannot discover the entire connected sense of the whole passages, but we may easily observe the symbols for *gods, established, Osiris, Isis, Nephthe, Hieracion, to set up, four, priests*, and *child* or *prince*. (*Déscription de l'Egypte, Antiq.* tom. ii. plate lxxiv. col. 106 ; lx. col. 3 ; lxii. col. 2 ; plate lxxii. col. 38 ; lxvii. col. 2.)

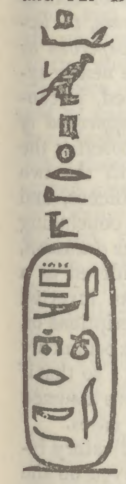


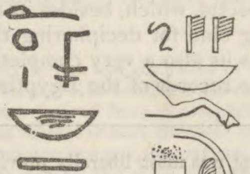
V. DR YOUNG'S OBSERVATIONS ON THE GENERAL CHARACTER OF THE EGYPTIAN MONUMENTS.

By means of the knowledge of the hieroglyphic characters which has already been obtained, we are fully competent to form a general idea of the nature of the inscriptions on the principal Egyptian monuments which are extant. Numerous as they are, there is scarcely one of them which we are not able to refer to the class either of sepulchral or of votive inscriptions ; astronomical and chronological there seem to be none, since the numerical characters, which have been perfectly ascertained, have not yet been found to occur in such a form as they necessarily must have assumed in the records of this description. Of an historical nature, we can only find the triumphal, which are often sufficiently distinguishable, but they also may always be referred to the votive; since whoever related his own exploits thought it wisest to attribute the glory of them to some deity, and whoever recorded those of another was generally disposed to intermix divine honours with his panegyric. It has, indeed, been asserted that the Egyptians were not in the habit of deifying any mortal persons ; but the inscription of Rosetta is by no means the only one in which the sovereigns of Egypt are inserted in the number of its deities. The custom is observable in monuments of a much earlier age ; indeed, in such a country it might be considered as a kind of dilemma of degradation, whether it was most ridiculous to be made a divinity, or to be excluded from so plebeian an assemblage ; but flattery is more prone to err

Monuments.

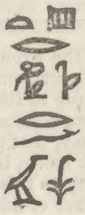
by commission than by omission, and consequently we find the terms *king* and *god* very generally inseparable. The sepulchral inscriptions, from the attention which was paid in Egypt to the obsequies of the dead, appear, upon the whole, to constitute the most considerable part of the Egyptian literature which remains; and they afford us, upon a comparative examination, some very remarkable peculiarities. The general tenor of all these inscriptions appears to be, as might have been expected from the testimony of Herodotus, the identification of the deceased with the god Osiris, and probably, if a female, with Isis; and the subject of the most usual representations seems to be the reception of this new personage by the principal deities, to whom he now stands in a relation expressed in the respective inscriptions; the honour of an apotheosis, reserved by the ancient Romans for emperors, and by the modern for saints, having been apparently extended by the old Egyptians to private individuals of all descriptions. It required an extensive comparison of these inscriptions to recognise their precise nature, since they seldom contain a name surrounded by a ring in its usual form. Sometimes, however, as on the green sarcophagus of the British Museum, a distinct name is very often repeated, and preceded by that of Osiris; whilst, in most other instances, there is a certain combination of characters, bearing evident relation to the personage delineated, which occurs, after the symbols of Osiris, instead of the name; so that either the ring was simply omitted on this occasion, or a new and perhaps a mysterious name was employed, consisting frequently of the appellations of several distinct deities, and probably analogous to the real name. That the characteristic phrase, so repeated, must have had some relation to the deceased, is proved by its scarcely ever being alike in any two monuments which have been compared; whilst almost every other part of the manuscripts and inscriptions is the same in many different instances, and some of them in almost all; and this same phrase may be observed, in Lord Mountnorris's and Mr Bankes's manuscripts, placed over the head of the person who is brought up between the two goddesses, to make his appearance before Osiris, in his own person, and in his judicial capacity, with his counsellors about him, and the balance of justice before him. (*Hieroglyphics*, 5 E F G e f.) In this instance the phrase consists of the names of *Hyperion* and the *Sun*, preceded by a block and an arm with an offering; and it may be interpreted, without any violence, "the votary of Hyperion and of Phré." In a small manuscript, engraved by Denon, the part which resembles the characteristic phrase of other manuscripts is followed by the name of a king, which is nearly identical with that of the father of the Pseudomemnon in the British Museum; the one having the hieralpha laid flat, the other the traces of the pedestal, which are equivalent to it.

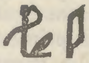




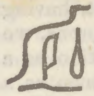
The tablet of the last judgment, which is so well illustrated by the testimony of Diodorus concerning the funerals of the Egyptians, is found near the end of almost all the manuscripts upon papyrus, which are so frequently discovered in the coffins of the mummies, and, amongst others, in Lord Mountnorris's hieratic manuscript, printed in the Collection of the Egyptian Society. The great deity sits on the left, holding the hook and the whip or fan; his name and titles are generally placed over him; but this part of the present manuscript is a little injured. Before him is a kind of mace, supporting something like the skin of a leopard; then a female Cerberus, and on a shelf over her head the tetrad of Termini, which have already been distinguished by the names Tetrarcha, Anubis, Macedo, and Hieracion, each having had his appropriate denomination written over his head. Behind the Cerberus stands Thoth, with his style and tablet, having just begun to write. Over his head, in two columns, we find his name and titles, including his designation as a scribe. The balance follows, with a little baboon as a kind of genius sitting on it. Under the beam stand Cteristes and Hyperion, who are employed in adjusting the equipoise; but their names in this manuscript are omitted. The five columns over the balance are only remarkable as containing, in this instance, the characteristic phrase, or the name of the deceased, intermixed with other characters. Beyond the balance stands a female, holding the sceptre of Isis, who seems to be called Rhea, the wife of the sun. She is looking back at the personage who holds up his hand as a mark of respect, and who is identified as the deceased by the name simply placed over him, without any exordium. He is followed by a second goddess, who is also holding up her hands in token of respect, and whose name looks like a personification of honour or glory, unless it is simply intended to signify "a divine priestess" belonging to the order of the Pterophori mentioned on the Rosetta monument. The forty-two assessors are wanting in this tablet; and, in many other manuscripts, their number is curtailed, to make room for other subjects; but, in several of those which are engraved in the *Déscription de l'Egypte*, they are all represented, sometimes as sitting figures, and sometimes standing as Termini, with their feet united.

The principal part of the text of all these manuscripts appears to consist of a collection of hymns, or rather homages, to certain deities, generally expressed in the name of the deceased, with his title of Osiris, although the true Osiris is not excluded from the groups which are introduced. The upper part of each manuscript is occupied by a series of pictural tablets; and under them are vertical columns of distinct hieroglyphics, or, in the epistolographic manuscripts, pages of the text, which are commonly divided into paragraphs, with a tablet at the head of each, the first words being constantly written with red ink, made of a kind of ochre, as the black is of a carbonaceous substance. The beginning of the manuscript is seldom entire, being always at the outside of the roll; as the *umbilicus* of the Romans was synonymous with the end. Not far from the beginning, we always find a large tablet, occupying the whole depth of the paper, representing the sun adored by his ministering spirits. In the large hieratic manuscript, which occupies four plates of the *Déscription de l'Egypte*, and which may be considered as a fine specimen of the most highly finished copies, there are at present only four columns remaining before this tablet. It is followed by a short section, with a rubric, which is not very distinctly expressed; after this are thirty-five others, beginning with a long rubric, which is usually followed by the name of a divinity, represented in a neighbouring part of the margin, and which may be supposed to mean something like "Respect and reverence be paid to each of the sacred powers." The next ten sections begin with the rubric of a feather,

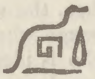


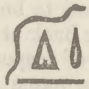


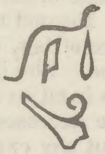
and a sitting figure raising his hand to his head, as if holding a vase on it, meaning probably "Honour is due," or belonging to; then follow the name and titles of Thoth or Hermes, and the phrase describing the deceased in the character of Osiris; and afterwards the names of each of a group of deities, which is represented in the corresponding tablet with an altar and a suppliant before them. These groups are different in the different sections, but they correspond pretty accurately with each other in the various manuscripts; and this hermetic decade is the most constant part of the manuscripts found with the mummies, though a little more extended in some than it is in others. (*Hieroglyphics*, 4.)



After these, we find thirty-five sections, beginning with a drop, a feather, a serpent, and a line; the rubric being immediately followed by the deified name peculiar to the manuscript. This exordium, from the analogy of the term sacred, we can have no hesitation in understanding as a derivative of the feather, signifying honour or ornament, and the serpent signifying perpetuity, and in translating it, "Eternal honour" or respect. A similar sense seems, in other places, to be expressed by the open square or the pyramid instead of the feather; and not uncommonly the hat is substituted for the line, without any variation of the meaning.



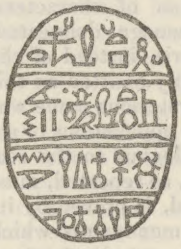




After these thirty-five sections, we have two others, of which the rubrics are less intelligible, followed by forty-two short ones, which evidently contain the names and titles of as many separate deities, whose figures are commonly represented in the great tablet, near that of Osiris. We may generally observe, amongst the epithets of each, the term *illustrious;* and each section has a second paragraph, beginning with a pair of arms extended, a character which seems occasionally to be used in reference to the equal scales of justice, though on the stone of Rosetta it appears to signify a kind of temple, so that it may possibly relate to the honours to be paid to these divine judges. With a few additional columns, and with the great tablet of the judgment, the manuscript concludes. It does not contain the figure of the sacred cow, which is the termination of most other manuscripts; nor the agricultural representations, which are frequently found in many of them, especially in that of Lord Mountnorris (*Hieroglyphics*, 3), with the three deities sitting in a grotto under it. The last of these, according to the inscriptions over the two boats, is meant for Arueris, the second apparently for the mother of the sun, and the first for Osiris; and one of the boats carries the steps, which seem to be emblematic of the solar power; the other, the throne or chair of state, which is universally appropriated to Osiris.

The coffins of the mummies, and the large sarcophagi of stone, are generally covered with representations extremely similar to some of those which are found in the manuscripts. The judicial tablet is frequently delineated on the middle of the coffins; above it are Isis and Nephthe at the sides, and in the middle apparently Rhea with outspread wings. The space below is chiefly occupied by figures of from twenty to thirty of the principal deities, to whom the deceased, in his mystical character, is doing homage; each of them being probably designated by the relationship in which he stands to the new representative of Osiris. In the sculptures, the figures are generally less numerous; the same deities are commonly represented as on the painted coffins, but without the repetition of the suppliant, and in an order subject to some little variation. The large sarcophagus of granite, in the British Museum, which was brought from Cairo, and formerly called the Lover's Fountain, has the name of Apis, as a part of the characteristic denomination. This circumstance, at first sight, seemed to make it evident that it must have been intended to contain the mummy of an Apis, for which its magnitude renders it well calculated; but when the symbols of other deities were found in the mystic names upon various other monuments, this inference could no longer be considered as absolutely conclusive.

Of the votive or dedicatory inscriptions, we find an interesting example on a small scale, in the engraving on the bottom of a scarabœus, very neatly sculptured in a softish steatite, or lapis ollaris, brought from Egypt by Mr Legh.



It is remarkable for its simplicity, and for affording an intelligible sense in all its parts. The chain, the semicircle, and the square block, mean clearly [*To*] *the beloved;* the loop supporting a wreath or crown, and the imperfect sitting figure, resemble some of the titles often given to Osiris, and, with the following oval, pretty certainly signify *of the great god;* the throne, the semicircle, and the oval, *Isis;* the sitting figure, *the goddess;* the looped wreath, perhaps *the great;* the bird and circle, *offspring of;* the hieralpha or plough, and the two feathers, *Phthah;* the pillar, perhaps *the powerful*, but it is not distinctly formed; the beetle seems to be here a synonym or epithet of Phthah, as if *the father of all;* the handled cross, *the living;* the lute, *the good;* the pyramid, *the prosperous* or glorious; the ring with the handle seems to be nearly synonymous with the chain, and may be rendered, in conjunction with the line and the hieralpha, *the approved of Phthah*, an epithet found in the inscription of Rosetta; the hatchet is *the deity;* the ring and handle, with the two lutes, approaches near to the symbol for munificent, and may be called *delighting in good gifts;* and the concluding ring and staff or hatchet may either mean, *this is dedicated*, or may, with rather more probability, be considered as a reduplication of the beginning of the line, in an inverted position. It may be remarked, that all the inscriptions on the scarabœi run from right to left, as is most commonly observed wherever the direction was indifferent; so that if they were used as seals, the impression must have assumed the form which is somewhat less usual in other cases.

We have a most valuable example of a dedicatory inscription on a larger scale in the decree preserved on the monument of Rosetta, which, besides its utility in affording the only existing clue for deciphering the hieroglyphical characters, gives us also a very complete idea of the general style of the records of the Egyptian hierarchy.[1] Of

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[1] In another place, Dr Young, after remarking that the French expedition to Egypt was most liberally provided, by the government of the day, with a select body of antiquaries, architects, surveyors, naturalists, and draughtsmen, whose business it was to investigate all that was interesting to science or to literature in that singular country, and, further, that their labours have been made public with all the advantage of chalcographical and typographical elegance in the splendid collection entitled *Déscription de l'Egypte*, proceeds to observe: "But it is scarcely too much to say, that the only real benefit conferred on Egyptian literature by that expedition, was the discovery of a huge broken block of black stone, in digging for the foundations of Fort St Julian, near Rosetta, which the British army had afterwards the honour of bringing to this country as a proud trophy of their gallantry and success. It is not to a want of ability, nor of industry, nor of accuracy, nor of fidelity, in the Egyptian Commission, that so total a failure is to be at-

the triumphal monuments, the most magnificent are the obelisks, which are reported by Pliny to have been dedicated to the sun; and there is every reason to suppose that the translation of one of these inscriptions, preserved by Ammianus Marcellinus, after Hermapion, contains a true representation of a part of its contents, more especially as "the mighty Apollo" of Hermapion agrees completely with the hawk, the bull, and the arm, which usually occupy the beginning of each inscription. These symbols are generally followed by a number of pompous titles, not always very intimately connected with each other, and amongst them we often discover that of "Lord of the asp-bearing diadems," with some other epithets immediately preceding the name and parentage of the sovereign who is the principal subject of the inscription. The obelisk at Heliopolis is without the bull; and the whole inscription may be supposed to have signified something of this kind: "This Apollinean trophy is consecrated to the honour of King Ramesses, crowned with an asp-bearing diadem; it is consecrated to the honour of the son of Heron, the ornament of his country, beloved by Phthah, living for ever; it is consecrated to the honour of the revered and beneficent deity Ramesses, great in glory, superior to his enemies; by the decree of an assembly, to the powerful and flourishing, whose life shall be without end." It is true that some parts of this interpretation are in a great measure conjectural; but none of it is altogether arbitrary, or unsupported by some probable analogy; and the spirit and tenor of the inscription are probably unimpaired by the alterations which this approximation to the sense may unavoidably have introduced.

Of the obelisks still in existence, there are perhaps about thirty larger and smaller, which may be considered as genuine. Several others are decidedly spurious, having been chiefly sculptured at Rome in imitation of the Egyptian style, but so negligently and unskilfully as to exhibit a striking difference even in the character of the workmanship. Such are the Pamphilian, in explanation of which the laborious Kircher has published a folio volume, and the Barberinian or Veranian. In both of these the emblems are put together in a manner wholly arbitrary; and where an attempt is made to imitate the appearance of a name, the characters are completely different at each repetition. The Sallustian obelisk has also been broken, and joined inaccurately, and some modern restitutions have been very awkwardly introduced, as becomes evident upon comparing with each other the figures of Kircher and of Zoega. Another very celebrated monument, the Isiac table, which has been the subject of much profound discussion, and has given birth to many refined mythological speculations, is equally incapable of supporting a minute examination upon solid grounds; for the inscriptions neither bear any relation to the figures near which they are placed, nor form any connected sense of their own; and the whole is undoubtedly the work of a Roman sculptor, imitating only the general style and the separate delineations of the Egyptian tablets; as indeed some of the most learned and acute of our critical antiquaries had already asserted, notwithstanding the contrary opinions of several foreigners, of the highest reputation for their intimate acquaintance with the works of Greek and Roman art. We may hope, however, that in future these unprofitable discussions and disputes will become less and less frequent, and that our knowledge of the antiquities of Egypt will gain as much in the solidity and sufficiency of its evidence, as it may probably lose in its hypothetical symmetry and its imaginary extent; and whilst we allow every latitude to legitimate reasoning and cautious conjecture in the search after historical truth, we must peremptorily exclude from our investigations an attachment to fanciful systems and presupposed analogies on the one hand, and a too implicit deference to traditional authority on the other.

Manuscripts.

VI. FURTHER INVESTIGATIONS OF DR YOUNG; CASATI AND TURIN MANUSCRIPTS.

The Egyptian investigations of Dr Young had been as laborious as they were unremitting; but, at this stage, they had, in his own estimation, "been so little enlivened by any fortunate coincidences or unexpected facilities," that, having occasion to adopt a motto, he chose the words *Fortunam ex aliis* as appropriate to his own history. But the result showed that, in giving way to this fretful and complaining humour, he did injustice to fortune, which had in reserve for him a most "fortunate coincidence," the occurrence of which forms an epoch in the history of these investigations. We allude to the marvellous accident of the existence of a Greek manuscript, in perfect preservation, which, upon examination, proved to be a translation of an unique Egyptian manuscript, that had been purchased by the king of France. A little previous detail is necessary to put the reader in full possession of the facts.

In 1820 or 1821, an individual of the name of Casati arrived at Paris, bringing with him a parcel of Egyptian manuscripts, amongst which M. Champollion discovered one the preamble of which bore a considerable resemblance to the enchorial text of the Rosetta inscription. This observation naturally excited considerable interest, from its immediate connection with a subject which then engrossed the attention of the learned; and accordingly, Dr Young, having procured a transcript of the papyrus in question, immediately proceeded, with his accustomed ardour, to decipher and translate it. But whilst he was engaged in this difficult and laborious undertaking, in which, by his own unaided exertions, he had made considerable progress, Mr, afterwards Sir George Francis Grey, returned from his travels in the East, bringing with him several fine specimens of writing and drawing on papyrus, which he had purchased from an Arab at Thebes in January 1820. Fortunately for the cause of Egyptian literature, Mr Grey instantly put these manuscripts into the hands of Dr Young, at the same time calling his attention to two of them in particular, which were in a high state of preservation, and contained some Greek characters, apparently written in a pretty legible hand. Upon a closer inspection,

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ributed; but partly to the real difficulty of the subject, and still more to the preconceived opinion, which was very generally entertained by their men of letters, of the exorbitant antiquity of the Egyptian works of art, which caused them to neglect the lights that might have been derived from a comparison of Greek and Roman inscriptions, with the hieroglyphics in their neighbourhood; and to suppose, that whatever bore the date of less than thirty or forty centuries, must necessarily be an interpolation, unconnected with the original architecture and decorations of the edifice to which it belonged." (*Account of some Recent Discoveries in Hieroglyphical Literature*, pp. 4, 5.) We shall hereafter find that this opinion was not confined to the members of the Egyptian Commission. Others have entertained the same extravagant notion of the antiquity of the Egyptian monuments, and, what has proved even more prejudicial, have lost sight of the important fact that, by the aid of translations alone, can we ever hope to attain the means of interpreting the inscriptions with which they are covered. It is only by pursuing analytical processes analogous to that of which Dr Young gave the first example,—by making repeated trials and comparisons with translations to guide and direct us,—by following the method of exhaustion, and at each step narrowing the limits of error,—that the truth will ultimately be attained, and a sure foundation be laid for constructing a system of interpretation alike certain in its principles and universal in its application.

however, it was found that one of these, being the *antigraph* of an Egyptian deed or conveyance, was altogether in Greek; whilst in the other, and in two more of the same kind, the *registry* was in Greek, and the *agreement*, or body of the deed, in the enchorial character.

Without losing a moment, Dr Young proceeded to examine that which was in Greek only, and, to his inexpressible surprise and delight, discovered that it was a translation of the enchorial manuscript of Casati. "I could scarcely believe," says he, "that I was awake, and in my sober senses, when I observed, among the names of the witnesses, *Antimachus*, *Antigenes*, and, a few lines further back, *Portis Apollonii*, although the last word could not have been deciphered without the assistance of the conjecture which immediately occurred to me, that this manuscript might perhaps be a translation of the enchorial manuscript of Casati. I found that its beginning was, *A Copy of an Egyptian Writing;* and I proceeded to ascertain that there were the same number of names intervening between the Greek and Egyptian signatures which I had identified, and that the same number followed the last of them; and the whole number of witnesses appeared to be sixteen in each. The last paragraph in the Greek began with the words, *Copy of the Registry;* for such must be the signification of the word ΠΤΩΜΑΤΟΣ employed in this papyrus, though it does not appear to occur anywhere else in a similar signification. I could not therefore but conclude, that a very extraordinary chance had brought into my possession a document, which was not very likely, in the first place, ever to have existed, still less to have been preserved uninjured, through a period of near two thousand years; but that this very extraordinary translation should have been brought safely to Europe, to England, and to me, at the very moment when it was most of all desirable to me to possess it, as the illustration of an original which I was then studying, but without any reasonable hope of being able fully to comprehend it—this combination would, in other times, have been considered as affording ample evidence of my having become an Egyptian sorcerer."[1]

But a still more extraordinary coincidence, connected with the revival of Egyptian literature, remains to be mentioned. Exclusively of the Greek antigraph, which relates to the sale of part of the offerings made from time to time on account of a certain number of mummies, Mr Grey's collection contained a second papyrus of considerably greater magnitude, upon which were engrossed three other deeds or conveyances, with separate registries upon the margin written in very legible Greek. In the hope of making some further progress in the study of Egyptian, Dr Young had resumed the examination of these enchorial conveyances, and, amongst other things, had observed the agreement of the numbers in the registries and in the Egyptian text; but whilst he was thus occupied, M. Peyron's account and translation of an Egyptian papyrus in the Royal Library at Turin made its appearance,[2] and proved to be the record of a law-suit, in which reference is made to three distinct title-deeds or conveyances. The following is an abstract of the contents of this singular instrument.[3]

The record begins with a date: "In the year LIV. the 22d of Athyr, at Diospolis. Before Heraclides, one of the captains of the body-guard, the commander of the Perithebaic nome, and chief officer of the customs; in the presence also of Polemo, a captain of the guard; Heraclides, of the same rank, and gymnasiarch; Apollonius, the son of Apollonius, and Hermogenes, his friends; Pancrates, a lieutenant; Comanus, a general, son of Ammonius a colonist, and several others; there appeared Hermias, the son of Ptolemy, of the Ombitic nome, as plaintiff, against the Cholchytæ[4] of the place, Horus, and Psenchonsis, and Chonapres, and their family." A memorial which had been addressed to Hermias, strategus, or commander-in-chief, and governor of the nome, was then read; in which the plaintiff, Hermias, accuses the Cholchytæ, and mentions a former memorial addressed to Demetrius, the epistrategus or high commander in the preceding year, and which had been referred by Hermias, the strategus, to the judgment of Heraclides. The cause having been pleaded by Philocles for Hermias, and by Dinon for the Cholchytæ, Heraclides summed up the evidence, discussed the arguments on both sides, and finally gave judgment for the defendants.

The claim of Hermias seems to have been founded on an alleged right of property, supported only by an admission on the part of Lobais or Lubais, one of the vendors of the house, that she had never had any right or title to the tenement in question. He had maintained in the memorial that his ancestors had held possessions in Diospolis during their lives respectively; that the defendants, whose proper habitation was confined to the Memnonia, where their ancestors had resided, knowing that he had been induced by the troubles of the times to change his residence, had seized upon his house, which was situated in the south-western part of Diospolis, to the north of the course or parade leading to the canal of the great goddess Juno, and to the south of the course leading to the temple of Ceres, the walls of which were left standing; that when they had repaired it they continued to occupy it, and, not content with simple occupation, they had received into it *dead bodies*, not considering the penalties to which they became liable from their proximity to the courses or parades of the great goddesses Juno and Ceres, which would be equally polluted by the corpses and those who had charge of them.

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[1] See *Discoveries in Hierogl. Literature* (pp. 57, 58), where the reader will find translations (pp. 69–83) of the Greek antigraph, of the Egyptian original of the Casati manuscript, and of the three other deeds of Mr Grey.

[2] *Memorie di Torino*, xxxi. 1826. Amadeus Peyron, the ingenious translator of this papyrus, is known to civilians as the learned editor of Fragments of the Theodosian Code, deciphered from a palimpsest or rescribed manuscript in the Athenæum of the Royal Library at Turin, and also as professor of oriental languages in the university of that place.

[3] This abstract is taken from Dr Young's *Letter to Count Pollon*, 1826.

[4] The *Cholchytæ* were probably so called "ab *involvendo* cadavere;" and hence the name is supposed by Dr Young to be a derivative of the Egyptian word DCHOLH or JOLH, *to dress*, *to put on*, or *to swathe*. M. Peyron indeed dissents from the opinion that they were "dressers," observing that "i Colchiti non sono piu *dressers*, sacri paratori delle divinità, come sospettò il Y." He confesses, however, that "etymon tamen acute vidit," and adds, that "dicti sunt ab *involvendo* cadavere," conformably to the Coptic etymology suggested by Dr Young. But the author of an *Essay on the Enchorial Language of Egypt*, published at Dublin, 1833, ridicules as groundless and absurd the etymology proposed by the English and approved by the Italian scholar. "The name of this profession, χοαχυτης," says he, "is not to be found in any Greek lexicon; it is, however, analogically formed, and conveys a clear meaning, 'the pourer out of libations.' Dr Young read the word χολχυτης, and supposed it to be derived from a Coptic word signifying 'to dress,' as if the mummies, *after* being buried, were every now and then taken up to be dressed. The mistake is a palpable one." We think it is, but only on the part of the Dublin critic. For, in the first place, if the name of this profession be not found in any Greek Lexicon, Dr Young and M. Peyron had surely as good a right to call it χολχυτης, as the writer in question had to call it χοαχυτης; secondly, the word read in the manuscripts is not χοαχυτης, but χολχυτης, and in such a matter their authority must certainly be preferred to a mere unsupported conjecture; thirdly, from the terms of the record contained in the Turin manuscript, it appears that it was the business of persons belonging to this profession, not to "pour out libations," but to "dress" or "swathe" dead bodies after these had been embalmed; and, lastly, although Egyptian mummies were unquestionably "dressed" or "swathed" *after* being *embalmed*, it is worse than ridiculous to allege that the existence of such a profession as that of the Colchytæ would imply that these "mummies, *after* being *buried*, were, every now and then, taken up to be *dressed*." If, then, "the Colchytæ have passed muster in many Reviews and Encyclopædias," it is probably because an ascertained reading, supported by collateral evidence, has been thought preferable to an "imaginary word" like χοαχυτης, which, though "analogically formed," would convey a meaning inconsistent with the truth.

The Cholchytæ, on the other hand, alleged, first, that Hermias had already been nonsuited in a similar action brought on the same grounds; and, secondly, that they had been in possession of the house for many generations, an averment in support of which they produced their *Egyptian title-deeds* translated into Greek. *One* of these was dated in the month of Pachon, the xxviiith of Philometor, in which Teephibis, the father of Psenchonsis, one of the defendants, and of Chonopres, bought of Elecis and Lobais, and Ibæais, and Senerieus, and Erieus, and Senosorphibis, and Sisois otherwise called Erieus (in all seven vendors), $7\frac{1}{2}$ oikopedic or house cubits of the southern part of "ten cubits" of unproductive ground which they possessed. By the *second* deed, Asos, the father of the defendants Nechutes and Asos, and a younger Nechutes, and their sister Nechuthis, bought of the same persons $2\frac{1}{2}$ cubits in the same year and month. A *third* deed, of the xxxvth year of the same Philometor, and in the month Mesore, attests the sale of a fourth part of the said house, being $3\frac{1}{2}$ cubits, to Pechytes, the father of the others, Panas, and Patus, and Pasemis, and Arpchemis, and Senamunis, by Ammonius and Zbendetis, to whom it belonged. The duties on these transactions had also been paid into the office for the purchase of the tribute; and the parties had held undisturbed possession for thirty-seven years. Some passages of the Benevolent Edict are also cited, in which it is provided that such persons as have for a length of time been in possession of property shall be continued therein even though they be unable to produce the titles by which it was originally acquired. It was added by Dinon, on the part of the defendants, that, since the plaintiff's father left Diospolis at the time of the troubles under Epiphanes, his departure must have taken place eighty-eight years[1] before the institution of the suit; that this period was much too remote to allow of the present controversy; that Hermias had produced no document in support of his claim, except a fraudulent decree obtained in collusion with Lobais, who had no interest in defending the action; that with respect to the removal of the embalmers to the Memnonia, the subject was wholly foreign to the question, as Horus and his colleagues were not embalmers, but dressers (*Cholchytæ*); that, on popular festivals and other sacred days, it was their business to bring sand or ashes, and to strew therewith the temple of Ammon and that of Juno; and that, besides, in the annual processions, when Ammon passes over to the Memnonia, it was their privilege to be the leaders of the ceremony, to act as Cholchytæ, and to be rewarded accordingly.

Such is an abstract of this extraordinary document, which, besides its general interest, embodies the most curious details illustrative of the notions entertained respecting property, and also of the mode in which justice was administered, amongst the Egyptians. But the most remarkable circumstance connected with it yet remains to be mentioned. For, if the reader turn to the *three* conveyances of Sir George Grey, as translated by Dr Young,[2] he will find, to his astonishment, that *they* are the actual title-deeds founded on in the abridgment of the record which we have here placed before him. M. Peyron, indeed, has only identified *two* of them, the purchasers mentioned in the registry of the *third* being Ammonius and Psenamunis instead of Ammonius and Zbendetis or Zthenaëtis; but it is probable that Zbendetis or Zthenaëtis had two names, as well as Sisois or Spois, who is also called Erieus; for the date of the deed coincides perfectly with the record, and the same thing may be said of all the rest of the names, as well as the measures, in which there is the most entire agreement. It would almost seem, therefore, that the age of miracles has not yet passed away. Whilst Dr Young was occupied in studying the enchorial papyrus of Casati, the Greek manuscript of Sir George Grey, being the antigraph of an Egyptian deed, arrived as if by conjuration, and proved to be a translation of the document before him; and, next, when the same learned and ingenious person had been accidentally led to resume consideration of the Egyptian deeds of Sir George Grey, the record of a lawsuit founded upon, and expressly referring to, these very deeds, arrived unexpectedly from Turin, and afforded a precise confirmation of the date which, from the Egyptian text, he had previously assigned to the *first* deed, together with an exact description of the precise spots of ground to which all the three conveyances relate. Here, then, we have a series of "fortunate coincidences," such as have seldom concurred in confirmation of a new discovery, and which, happening at the propitious instant of time, when their great importance could not fail to be at once perceived, contributed materially, not only to establish what had been previously done, but also to facilitate the prosecution of future researches in the same field of inquiry.

Champollion, &c.

VII. INVESTIGATIONS AND DISCOVERIES OF CHAMPOLLION AND OTHERS.

Although for a number of years it has been the custom to speak with enthusiasm of the discovery of the phonetic alphabet made by M. Champollion, few persons appear to have a distinct idea, either of what it really is, or of the results which have been obtained by means of it. That Dr Young was the original author of this discovery has already been shown in the preceding sections, and may be proved, independently of all that has yet been stated, by evidence of the most incontrovertible kind. As early as the year 1818, he had ascertained the alphabetical value of the greater part of the hieroglyphical signs which compose the names of *Ptolemy* and *Berenice*, amongst which he had very exactly determined seven corresponding with the results obtained by M. Champollion, viz. the phonetic signs of B, F, I, M, N, P, and T. But although the determination of these seven letters must be regarded as the basis on which M. Champollion founded his phonetic alphabet, the sagacity of the English scholar, signally displayed in the discovery itself, did not foresee the consequences to which it might lead; and it was reserved for his French competitor to reap the glory which justly attaches to the development and illustration of a principle, fertile in results of the very highest interest and importance. Dr Young had adopted the notion that the characters employed by the Egyptians were essentially ideographic or symbolical, and were only used *phonetically* in representing *foreign* combinations of sound; but this idea, though it led him to neglect the prosecution of his own discovery, did not prevent him from laying the foundation of the hieroglyphico-phonetic alphabet, afterwards improved and extended by M. Champollion, and from presenting an enchorial alphabet comparatively so complete that but few additions of any importance have since been made to it by his successors. In short, to use the words of Mr Salt, Dr Young seems to us to stand alone with regard to the progress made by him in the enchorial, as well as for having led the way to the true knowledge of hieroglyphics.[1]

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[1] This is chronologically exact; for, adding to the 24 years of Epiphanes, 35 of Philometor, and 29 of Euergetes, we have the precise number stated in the text. Thus, Epiphanes 24, Philometor 35, Euergetes 29; in all 88.

[2] *Discoveries in Hieroglyphical Literature*, pp. 76–83.

A considerable time previous to the date of this discovery, however, M. Champollion had applied himself to the interpretation of hieroglyphics; indeed, from the period of his quitting the Lyceum, he had begun to devote himself with ardour to this study. Jablonski, Zoega, and the authors of the *Déscription de l'Egypte*, then exercised a sort of dominion over the different branches of Egyptian antiquities. The mythology of Egypt was exclusively explained by relative passages in the ancient writers, and vain theories, which could never lead to any positive results, were applied to the hieroglyphical inscriptions. M. Champollion devoted himself entirely to the examination and study of every monument of this kind to which he could obtain access. Of these he made numerous copies, and, as it were, engraved on his memory all that he could find either in public or private collections; he also exercised himself in reproducing texts from recollection, and in this acquired astonishing dexterity. But, during many long years, the hieroglyphical inscriptions remained as great a mystery to him as to the rest of the learned. He pored over them without intermission, and he attempted a hundred systems of interpretation; but the time had not yet arrived when the secret of ancient Egypt was to be revealed. Nevertheless, more accurate notions as to the true nature of hieroglyphical writing had already begun to be entertained.

Zoega had suspected that several of the hieroglyphics might have been employed as *signs of sounds*, and for that reason he had denominated them *phonetic*. This conjecture, however, had at first made no impression upon those persons who were occupied with the study of the ancient Egyptian writings. On the contrary, in all their labours they followed the ancient system, regarding the mass of the hieroglyphics as composed of ideographic or symbolic signs; nor was it until some time after the discovery of the Rosetta inscription that the *only method* by which the Egyptians could possibly have expressed either foreign or national proper names, that is, by means of phonetic signs, forced itself on the attention of the learned. In this inscription everybody at once recognised the position of the name of *Ptolemy*, when Dr Young had, by a happy artifice of collocation, pointed it out; and on other monuments the ovals or scrolls containing the names of *Berenice* and *Arsinoe*, as well as those of several kings belonging to the old Egyptian dynasties, were likewise indicated with tolerable certainty. At this period, the current or enchorial writing engaged the attention of several learned and ingenious men, such as Baron de Sacy and Mr Akerblad in France, and Dr Young in England, and considerable progress was made, particularly by the latter, not only in determining the equivalents of groups, but even in ascertaining the values of individual characters. M. Champollion, however, continued to labour in a different direction, the idea that the hieroglyphics might contain a portion of characters purely alphabetical not having taken root in his mind. This is established beyond dispute by a passage in his work entitled *De l'Ecriture Hiératique des Anciens Egyptiens*, published at Grenoble in 1821, little more than a year before the appearance of his *Lettre à M. Dacier*. In this production, after stating that "long study, and, above all, an attentive comparison of the *hieroglyphic* texts with those of the second order, regarded as *alphabetical*, had conducted him to a contrary conclusion," he proceeds to lay down the following general principles, viz. 1*st*, That the writing of the Egyptian manuscripts of the second order is *not* alphabetical; 2*dly*, That this second system is only a simple modification of the hieroglyphical system, from which it differs merely in the form of the signs; 3*dly*, That this second species of writing is the *hieratic* of the Greek authors, and may be regarded as a hieroglyphic tachygraphy, or abbreviated mode of writing; 4*thly*, That the hieratic characters, and consequently those also from which they are derived, namely, the *hieroglyphic*, are signs of *things*, and not signs of *sounds* (" sont des signes de *choses*, et non des signes de *sons*"). It follows, then, that in 1821, M. Champollion did not believe in the existence of alphabetical signs amongst the hieroglyphics; although Dr Young had communicated his discovery to the learned of Europe in a memoir printed in 1818, and incorporated it in the article EGYPT, published the following year in the Supplement to the former editions of the present work, and although the ingenious conjecture of Zoega had been partially verified both by M. de Sacy and by Mr Akerblad.[2]

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[1] *Essay on the Phonetic System of Hieroglyphics*, p. 1, note. London, 1825, in 8vo.

[2] Klaproth, *Examen Critique des Travaux de feu M. Champollion sur les Hiéroglyphes*, p. 3, et seqq. In the preface to the French translation of two articles on Hieroglyphics, which appeared in the *Edinburgh Review* (vol. xlv. pp. 96 and 528), some curious particulars are mentioned respecting the treatise *De l'Ecriture Hiératique des Anciens Egyptiens*, referred to in the text. This little work, which is in folio, has now become extremely scarce. " L'auteur a fait tout son possible pour soustraire cet ouvrage aux yeux du public, en retirant du commerce et des mains de ses amis le peu d'exemplaires qu'il avoit d'abord répandus. La raison qu'on a mise en avant étoit, ' *la crainte de blesser les scrupules de quelques personnes pieuses ;*' mais il ne se trouve dans le livre absolument rien qui ait trait à la haute antiquité de l'empire des Pharaons, et il est permis de penser que le véritable motif qui a determiné M. Champollion à supprimer ce livre, a été de ne pas donner une mésure trop précise des progrès qu'il avait fait jusqu'en 1821, un an avant sa fameuse *Lettre à M. Dacier*. Cette mésure existe dans l'assertion ' *que les signes hiéroglyphes sont des signes de* CHOSES, *et non des signes de* SONS.' Certes, celui qui, depuis dix ans, avoit travaillé sur les hiéroglyphes sans les déchiffrer, et qui faisoit, en 1821, imprimer un axiome pareil, avoit grand besoin d'être guidé dans ses nouvelles recherches de 1822, par les découvertes de M. Young, publiées en 1819, dans le *Supplement de l'Encyclopédie Britannique*. On ne doit donc plus douter, que la prétendue découverte de M. Champollion ne soit entée sur celle du Docteur Young, auquel appartient le mérite d'avoir le premier démontré qu'on s'est servi, en Egypte, de signes hiéroglyphes pour exprimer alphabétiquement les sons des noms propres. Disputér à ce savant la priorité de cette découverte, seroit aussi absurde que de vouloir soutenir, que celui qui le premier mêla du salpêtre avec du soufre et du charbon, n'a pas été l'inventeur de la poudre, mais bien celui qui s'est servi pour la première fois de ce mélange comme moteur pour les projectiles." (*Aperçus sur les Hiéroglyphes d'Egypte, et les Progrès faits jusqu'à présent dans leur Déchiffrement*, par M. Browne, Paris, 1827, in 8vo.) The disingenuousness and want of fairness which marked the commencement of M. Champollion's career as a claimant for the honour of discovery continued to distinguish it throughout. Of this we have an instance connected with the subject now under consideration. A pretended translation of the first of the two articles on hieroglyphical literature, which appeared in the *Edinburgh Review*, was inserted in the 22d number of the *Revue Britannique* (April 1827), then published at Paris. This translation, which was generally attributed to M. Champollion, scarcely represents the half of the original, although it is passed off on the public as complete. Several important passages are expunged, especially from the historical part of the article; others are altered so as to suit the views of the translator; and notes are added which clearly indicate the source whence they emanated. " Ces suppressions et ces additions, *n'ont evidemment d'autre but, que de faire prendre le change* au plus grand nombre des lecteurs, *sur la nature et le véritable importance de cet article,*

Champollion, &c.

It is no doubt true that M. Champollion afterwards attempted to give currency to a different story, and to lay claim to the merit of independent discovery. Having, on a frivolous pretence, endeavoured to suppress the work to which we just referred, by calling in all the copies in the hands of the booksellers, "de ne pas donner une mésure trop précise des progrès qu'il avait fait jusqu'en 1821," he ventured to assert that, without having any knowledge of the opinions of Dr Young, he had, about the same period, arrived at very nearly similar results. "Je dois dire," says he, "qu' *à la même epoque*, et *sans avoir aucune connaissance des opinions de M. le docteur Young, je croyais être parvenu*, d'une manière assez sûre, *à des résultats à-peu-près semblables*."[1] But there are several circumstances which render it impossible to give credit to this statement. In the first place, it is wholly irreconcilable with the doctrine laid down in his work on the Hieratic Writing of the ancient Egyptians, published in 1821, in which it is formally stated that both the hieratic and hieroglyphic characters are signs of *things*, and *not* signs of *sounds*. Secondly, it is contradicted by the direct testimony of Dr Young. "At the beginning of my Egyptian researches," says he, "I had accidentally received a letter from Mr Champollion, which accompanied a copy of his work on the state of Egypt under the Pharaohs, sent as a present to the Royal Society; and *as he requested some particular information respecting several parts of the enchorial inscription of Rosetta*, which were imperfectly represented in the engraved copies, I readily answered his inquiries, from a reference to the original monument in the British Museum, and a short time afterwards *sent him a copy of my conjectural translation of the inscriptions*, as it was inserted in the *Archæologia*." Dr Young then adds, that with regard to the enchorial inscription, M. Champollion appeared to him to have at that time done but little, and that the few references he made to it seemed to depend entirely on the investigations of Mr Akerblad, whose conclusions he had *tacitly* adopted. It is not easy to imagine how M. Champollion, with the knowledge of these facts in his mind, could venture to affirm that he had commenced his hieroglyphical researches at the same time with Dr Young; and that, without any knowledge of the opinions of the latter, he had arrived at nearly the same results. Thirdly, it is evident from the respective dates of M. Champollion's publications, that nearly six years must have elapsed between the date of the above communication and that of his *Lettre à M. Dacier;* and it also appears, that when Dr Young published his "conjectural translation" in 1815, M. Champollion had done nothing beyond tacitly adopting the conclusions of Mr Akerblad. The priority of publication cannot, therefore, be disputed. But as M. Champollion has not contradicted the statement of Dr Young regarding the communication above mentioned, and as it is undeniable that he saw the article EGYPT nearly two years before he published his *Lettre à M. Dacier*, containing the first statement of his discoveries in hieroglyphics, it is evident that he was in the full knowledge of Dr Young's "opinions" at every stage of his progress, and that the question of *originality* may be as easily settled as that of priority of publication. A sense of justice alone compels us to make these remarks, impeaching, as they do, the literary honesty of M. Champollion; and although it may appear an ungracious office, now that he is no more, to detract from his fame, yet flattery as well as obloquy should be silent over his grave. The merits of Champollion will not be the less fully appreciated if they are fairly estimated: it is exaggeration alone that can inflict any permanent injury on his reputation.

We have seen that, in 1821, M. Champollion did not believe in the existence of alphabetic signs amongst the hieroglyphics, although Dr Young had published his discovery nearly three years before. At this period, however, Mr Bankes made known a Greek inscription which he had discovered upon an obelisk in the island of Philae, and which mentioned the erection of a monument in honour of King Ptolemy. The discovery of the English traveller attracted the attention of scholars, and M. Letronne, in some learned observations on the text of the inscription, stated it as his opinion that the monument in question would be found to contain, in hieroglyphical characters, the same sense as the Greek inscription, or, in other words, that the one would prove to be a version of the other. Mr Bankes, having learned the opinion expressed by this distinguished scholar, and being anxious to afford every means in his power for verifying its accuracy, transmitted to the Academy of Inscriptions, in the month of January 1822, a lithographed copy of the hieroglyphics covering the four faces of the obelisk of Philae, upon the base of which he had discovered the Greek inscription already mentioned. And it was this lithograph which, having been communicated to M. Champollion, enabled him to make those observations and comparisons the results of which he published in his *Lettre à M. Dacier*, dated the 22d of September 1822. Then, indeed, but not before, did he recognise the name of *Cleopatra*, and the use of alphabetical characters amongst the hieroglyphics; then only it was that he abandoned the notions which he had hitherto entertained respecting the nature of the Egyptian writing, and which, as already shown, had at first led him to reject the discoveries of Dr Young.[2]

Having entered upon this new career, M. Champollion pushed on with irrepressible boldness, and devoted himself with more ardour than ever to the study of the Egyptian monuments. He applied his alphabet to deciphering the names of the Roman emperors and those of the Greek and Egyptian kings; and finding his observations not only multiply, but likewise extend to objects which had not been touched on in his *Lettre à M. Dacier*, he embodied the results, modified in some points and verified in others, into a more extended work, which appeared at Paris in 1824, under the title of *Précis du Système Hiéroglyphique des Anciens Egyptiens.* We must, however, guard the reader against the misconception which this title is calculated to produce respecting the extent and results of M. Champollion's labours. From it he may perhaps expect to find the exposition of a "system," and a summary of the principles by means of which the hieroglyphic texts can be read and interpreted; whilst, in reality, the book only contains a more ample and extensive application of the ideas explained in the *Lettre à M. Dacier.* It embraces a great number of proper names belonging to persons of all ranks, accompanied with observations and conjectures as to the meaning of certain concomitant signs, to which the author attributes a grammatical value, but without having sufficiently established the point by induction. This, however, did not prevent him from proceeding to generalise; and,

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et d'accrediter davantage les erreurs répandues en France sur les premières tentatives faites pour déchiffrer les hiéroglyphes Egyptiens." (*Aperçus sur les Hiéroglyphes*, pref. p. viii.) But by this unceremonious and dishonest proceeding the translator overshot his mark. The garbled and mutilated translation was soon followed by one of the principal article, "rétabli dans son integrité," and the claims of Dr Young were thus brought fully and fairly before the literary public of France.

[1] *Précis du Système Hiéroglyphique des Anciens Egyptiens*, p. 18. Paris, 1828, in 8vo, 2d edition.

[2] Nevertheless he appears to have been of opinion at this period, that the employment of alphabetical characters was confined to the transcription of Greek and Roman proper names, and that the greater part of the other hieroglyphics were ideographic; one more proof how closely he had followed the footsteps of Dr Young.

as he had formerly maintained that the greater part, if not the whole, of the hieroglyphic texts were ideographic, so now he passed to the opposite extreme, and concluded that alphabetical signs predominated in the monumental inscriptions, all of which might, in a great measure, be interpreted by means of the phonetic method. Such a conclusion, if it had been sufficiently established, would no doubt have proved of the highest importance; but, instead of applying his new system to the inscription of Rosetta, of which the import was known from the accompanying Greek version, or to other texts of still more considerable extent, M. Champollion confined himself to the interpretation of detached phrases, which of themselves were not sufficient to establish the certainty of his system; and hence his work, important and interesting as it unquestionably is, has still left much to be desired by the friends of archæological science.

But although the ardour of his mind had, at first, hurried him away, M. Champollion appears soon to have become sensible that he had advanced too rapidly; indeed he could not but feel an urgent necessity for augmenting the mass of materials at his disposal, and multiplying more and more the points of comparison indispensable to the progress of his studies. Accordingly he undertook a journey to Italy to explore the treasures contained in the rich collections of that country, and spent much time in the museum of Turin, then recently enriched with the noble collection of Drovetti, containing a great number of papyri, pillars, and inscriptions of every kind. From this museum were written the *Lettres* addressed to the Duc de Blacas, in which the author began to make more numerous applications of his system, particularly to all that concerned the ancient Egyptian dynasties; and he even hazarded more extensive interpretations, comprehending not only simple proper names, but names preceded or followed by titles, or by certain portions of phrases. These readings, however, were not accompanied with the requisite explanatory details, which alone could give them authority; and, with reference to the Egyptian system of writing, the *Lettres à M. de Blacas* seem not to have produced any change of importance in the theory of the author. When, on his return from Italy, he published a second edition of his *Précis du Système Hiéroglyphique*, Paris, 1828, he accordingly introduced but few modifications of the statements contained in the first, and saw no reason to alter the opinion which he had therein expressed as to the phonetic value of the great mass of the hieroglyphics. On the contrary, he formally repeated his fundamental proposition, "That the figurative and symbolical characters are employed in the Egyptian texts in a smaller proportion than the phonetic characters; that the latter are the true alphabetical signs which express the sounds of words in the spoken language of ancient Egypt; and that every phonetic hieroglyph is the image of a physical object, the name of which, in the spoken language of Egypt, commenced with the sound or articulation which the sign itself is employed to express."

Such were the general views entertained by M. Champollion before setting out for Egypt with the intention of examining the monuments themselves, and of seeking on the spot the confirmation of his discoveries. In his *Panthéon Egyptien*, the publication of which commenced in 1824, he had given representations of the Egyptian divinities, accompanied with hieroglyphic legends, to which explanatory notices were subjoined; and he had made frequent use of notions borrowed from the Greek and the Latin authors, and already classed in the Egyptian Pantheon of Jablonski. Yet he laid it down as a principle, "que c'était de préférence dans les monumens Egyptiens qu'il fallait chercher les noms d'une foule de divinités et de personages mythologiques, qu'on chercherait en vain dans les auteurs classiques;" a proposition which, according to Klaproth, is only admissible upon the supposition that we have already arrived at a complete intelligence of the graphic monuments of Egypt; and until such knowledge has been attained, no one has any right to found new theories on their alleged contents. The proposition, however, is admissible upon a much more limited supposition, namely, that we have attained the means of deciphering with tolerable certainty names, titles, and legends; and the result has accordingly been, that "the names of a crowd of divinities and mythological personages, which would be sought for in vain in the classical authors," have been ascertained by Wilkinson, Rosellini, Burton, Felix, and others, not to mention M. Champollion himself. We ought to add also, that, at the period of his departure for Egypt, M. Champollion held as demonstrated the existence of a considerable number of signs employed phonetically, that is, used to represent the sounds of the Egyptian language, each sign standing for the initial sound of the name of the physical or other object of which it was the image or picture;[1] and that, entertaining this view, he departed from the common opinion, which attached a symbolical value to the greater number of the hieroglyphics. Such being the doctrine maintained by him, we shall now proceed to place before the reader a short abstract of the investigations and discoveries of M. Champollion, reserving for the conclusion of this section some general observations and criticisms of his labours.

The conditions of the problem which M. Champollion undertook to resolve may be very briefly explained. Every body has seen Egyptian monuments, and every body knows in a general way the form and disposition of the characters called *hieroglyphics;* but few persons, perhaps, have reflected on the nature of these characters, and still fewer know wherein consists the real difficulty of interpreting them. The passages of ancient authors being for the most part vague and incoherent, afforded no explanation of this system of writing; even the celebrated text of Clemens Alexandrinus, so far from serving as a guide to direct inquiry, has only received an approximate interpretation by means of knowledge otherwise acquired of the subject to which it relates; and we cannot be absolutely certain that all the difficulties which this passage presents have as yet been overcome. But the main point for determination was, whether the hieroglyphics were destined to represent ideas *directly*, or by the *intervention of the sounds of the spoken language;* whether they were the symbols of *things*, or the signs of vocal articulations; whether, in short, they were to be considered as *ideographic* or as *phonetic*. In the one case, that is, supposing the signs ideographic, it must be evident that we could never hope, by any effort, to attain a complete intelligence of such characters; because, to attempt to divine the sense of ancient symbols is to expose ourselves at every step to fall into the very errors which now appear so ludicrous or extravagant in Pierius, Kircher, Palin, and Pluche. But, on the other hand, supposing the hieroglyphics were regarded as in a great measure composed of phonetic signs, the interpretation of these characters would, on such a supposition, be not only possible, but, under certain conditions and in certain circumstances, might be easy. This accordingly was the doctrine espoused by M. Champollion in its utmost latitude. The analysis given by Dr Young of the names of *Ptolemy* and *Berenice* had proved beyond dispute that these were expressed phonetically; but as it was not unreasonable to conclude that the method employed in representing graphically two proper names might be applied to all, or perhaps even extended to common words and phrases in the language, M. Champollion was led to conceive, that if an alphabet of phonetic characters could be constructed, it would probably furnish a key to hieroglyphical writing in general, and produce new and unexpected results of the utmost importance to history. The first and great object, therefore, was, if possible, to obtain an alphabet; and to the accomplishment of this M. Champollion primarily directed his attention.

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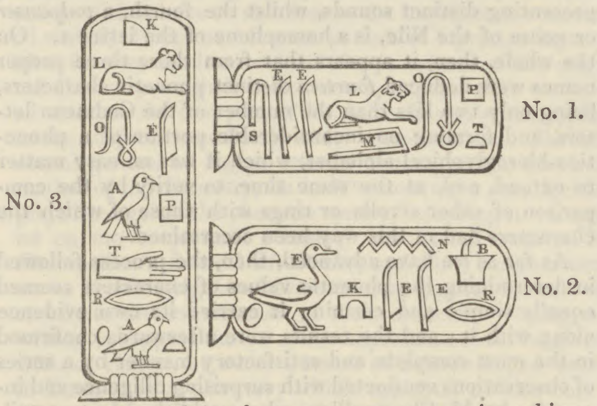
[1] On a reconsideration of the subject, Dr Young regarded this notion as altogether fallacious. "Mr Champollion," says he, "has never been led, *in any one instance*, from the Egyptian name of an object, to infer the phonetic interpretation, that is, the alphabetical power of its symbol; but the letters having once been ascertained, he has ransacked his memory or his dictionary for some name that he thought capable of being applied to the symbol, and not always, as it appears to me, in the most natural manner. I should prefer, for instance, the word HPEPI, a *flower*, as making the R, to the name of *pomegranate*, which, it seems, was sometimes called ROMAN or ERMAN." (*Discoveries in Hieroglyphical Literature*, p. 48.)

But the task which he had to perform was, comparatively speaking, an easy one. Dr Young, as we have already seen, had not only demonstrated the practicability of constructing such an alphabet, but, by his analysis of the names *Ptolemy* and *Berenice*, he had assigned phonetic values to *nine* distinct characters, the greater number of which corresponded with the results which were afterwards obtained by M. Champollion. The first step had therefore been made, and it only required perseverance and good fortune to ensure success. We say "good fortune," because Dr Young had already done all that was possible with his materials. If the hieroglyphical inscription of Rosetta had come to Europe entire, a tolerably complete alphabet of phonetic hieroglyphics would in all probability have been formed before M. Champollion was heard of as a labourer in this interesting field of inquiry. But unfortunately the pillar contains only the last fourteen lines of the hieroglyphic text, and even these are so much mutilated, that the name of *Ptolemy*, enclosed in an oval or cartouche, is the only one of all those mentioned in the Greek text which has escaped destruction. This name is represented by eight hieroglyphic characters, one of them (the feather, E) being repeated; but, as the Greek name, ΠΤΟΛΕΜΑΙΟΣ, consists of *ten* letters, it was of course impossible, without further materials, to fix with certainty the relation between the seven or eight hieroglyphical signs and the ten letters of the Greek name. But the discovery of a new monument (and in this consisted M. Champollion's good fortune) at length removed all uncertainty in this respect, and led directly and easily to the formation of the alphabet required. The obelisk discovered by Mr Bankes in the island of Philae was found to contain the hieroglyphic name of one of the Ptolemies, expressed by the same characters which occur in the inscription of Rosetta, surrounded by a ring or border; and this was followed by a second ring or scroll which obviously contained the proper name of a woman, and a queen of the family of the Lagidæ, inasmuch as the group was terminated by the hieroglyphics expressive of the feminine gender, which had been previously determined by Dr Young. The obelisk in question was fixed on a basis or pedestal containing a Greek inscription, which proved to be a petition of the priests of Isis, addressed to King Ptolemy, to Cleopatra his sister, and to Cleopatra his wife. But if, as M. Letronne ingeniously conjectured, this obelisk, and the hieroglyphical inscription engraved upon it, were the result of this petition, which in fact adverts to the consecration of a monument of the kind, the border with the feminine proper name could only be that of one of the *Cleopatras* mentioned in the petition. This name, therefore, and that of *Ptolemy*, which in the Greek *have several letters in common*, were capable of being employed for a comparison of the hieroglyphical characters composing them; and if the similar characters in these names were found to express in both the same sounds, it would follow demonstratively that the nature of these characters must be entirely phonetic.

The course of investigation here indicated appears sufficiently simple and conclusive; but as the development of a hieroglyphical alphabet has been mainly effected by a comparison of the characters which enter respectively into the composition of the names *Ptolemy* and *Cleopatra*, we shall endeavour to exemplify the process by means of which the phonetic values of individual signs were determined.



This figure exhibits three proper names written hieroglyphically, each of them enclosed within an elliptical ring or cartouche, viz. the name of *Ptolemy*, No. 1, taken from the hieroglyphical branch of the triple inscription of Rosetta; that of *Berenice*, No. 2, copied from a ceiling of the great temple at Karnak; and that of *Cleopatra*, No. 3, as furnished by the obelisk of Philae. Of the first and second, viz. *Ptolemy* and *Berenice*, the reader has already seen Dr Young's analysis, deduced with singular ingenuity from the enchorial text of the Rosetta inscription. At present, however, we have only to do with the first and third, or with the names of *Ptolemy* and *Cleopatra*. And, on referring to the ovals or rings, Nos. 1 and 3, containing these names, the reader will at once perceive that, in the scroll of *Ptolemy*, ΠΤΟΛΜΗΣ, the fourth, sixth, third, and first characters are identical with the second, third, fourth, and fifth characters in the scroll of *Cleopatra*, and that these characters must therefore correspond respectively to the Greek letters Λ, E or H, O, and Π. Their relative positions remove all doubt as to their respective values; and the evidence afforded by this comparison is strengthened by the circumstance that, contrary to the common usage, the name of *Cleopatra* is spelled fully out, leaving none of the vowels to be supplied. Here, then, we have the values of four characters (the lion, the feather, the flower with the recurved stem, and the square) determined by a sort of *instantia crucis*, and at the same time a striking confirmation of the soundness of the original hypothesis, which, of course, becomes absolute certainty by the repetition of such comparisons. But the same process which enables us to ascertain the values of the characters *common* to both names, equally enables us to infer the values of those in which they *differ*. The name ΚΛΕΟΠΑΤΡΑ, for instance, is spelled hieroglyphically by *nine* phonetic characters or signs, together with the symbols (a semicircle and oval) of the feminine termination; in other words, there is a phonetic character corresponding to every letter in the Greek name. But *four* of these characters consecutively Λ, E, O, Π, have been determined by the direct method of comparison; and as the name is, by the supposition, known, it follows that the values of the remaining *five* may be inferred without almost the possibility of error. Having ascertained the values of the second, third, fourth, and fifth, we necessarily obtain, at the same instant, the true values of the first, sixth, seventh, eighth, and ninth. The same thing precisely is applicable to the name of *Ptolemy*. But as the name of *Cleopatra* contains *eight* distinct characters (one, the phonetic sign of A, being repeated), and as the name of *Ptolemy*, deducting the four letters which it has in common with that of Cleopatra, supplies *three* more, we thus obtain, from the analysis of these two names, *eleven* distinct characters representing as many distinct sounds; and if the same indirect method of comparison be applied to the name of *Berenice*, it will furnish other *four* signs, three of them representing distinct sounds, whilst the fourth, a *vulpanser* or goose of the Nile, is a homophone of the letter A. On the whole, then, it appears that from these three proper names were deduced *fourteen* distinct phonetic characters, being only two less than the number of the Cadmean letters, and forming no inconsiderable portion of a phonetico-hieroglyphical alphabet, which it was an easy matter to extend, and, at the same time, to verify by the comparison of other scrolls or rings with those of which the characters had in this way been ascertained.

As far as we have advanced, then, the process followed in determining the phonetic values of characters seemed equally simple and certain; it carried its own evidence along with it; and the results were afterwards confirmed in the most complete and satisfactory manner by a series of observations conducted with surprising diligence and ingenuity by M. Champollion, who established by unassailable evidence that all proper names were written alphabetically. But, not content with a mere induction of *facts*, the French archæologist attempted to discover the *principle* which regulated the phonetic application of certain characters or signs, and at length came to the conclusion that every *phonetic hieroglyphic* is the image of a physical object, the name of which, in the spoken language of Egypt, commenced with the *sound* or *articulation* which the sign itself is destined to represent. Thus, according to him, the image of an eagle, which, in Coptic, is *Ahôm* or *Achôm*, became the sign of A; that of a small vase or censer, in Coptic *Berbé*, a sign of B; that of a hand, *Tot*, a sign of T; that of a hatchet, *Kelebin*, a sign of K; that of a lion or lioness, *Labo* or *Laboi*, a sign of L; that of a nycticorax or owl, *Mouladj*, a sign of M; that of a flute, *Sebiandjo*, a sign of S; that of a mouth, *Rô*, a sign of R; the abridged image of a garden, *Schné*, a sign of SH; and so on. But this hypothesis, which reduces the phonetic hieroglyphics to a species of calembourgs, and leaves, in the greater part of the inscriptions, only a writing in *rebuses*, seems obnoxious to insuperable objections. In the first place, as Dr Young remarked, M. Champollion was never, in any one instance, led, from the Egyptian name of an object, to infer the phonetic interpretation or alphabetical power of its symbol; but the letters having been ascertained by other means, he ransacked his memory or his dictionary for some name which he thought capable of being applied to the symbol, though not always in the most natural manner. Secondly, as the same letter is represented by a diversity of characters, it would be necessary to show, which M. Champollion has not attempted to do, that all these homophonous characters are employed on the principle above enunciated, or, in other words, that every one of them is the image of a physical object, the name of which, in the spoken language of Egypt, began with the sound which the sign itself was intended to represent. Thirdly, the Coptic language, which was undoubtedly formed from that of ancient Egypt, of which it may in one sense be considered as a precious remnant, nevertheless represents the latter in a very incomplete and imperfect manner; many Coptic words are not Egyptian; many Egyptian words are no longer to be found in the Coptic; the latter, as it now exists, is merely a mutilated and imperfect fragment, through which some traces and lineaments of an elder form of speech are faintly reflected; and even with the Coptic, as we now have it, M. Champollion was but indifferently acquainted. It is obvious, therefore, that no reliance whatever can be placed on any theory connected with hieroglyphics which professes to depend exclusively upon Coptic, although, as in this instance, it be propounded with as much confidence as if the language of Egypt had descended unaltered from the days of Ramesses, or the author had possessed a glossary composed under the reign of Sesostris.

Having constructed a phonetico-hieroglyphic alphabet in the manner above described, M. Champollion proceeded to apply it in deciphering the proper names inscribed on the temples and other edifices of Egypt; and in his *Lettre à M. Dacier*, which is embodied in his larger work, he exhibited the results obtained from the inscriptions on the monuments of Denderah (*Tentyris*), Thebes, Esneh (*Latopolis*), Edfou (*Apollonopolis Magna*), Ombos, and Philae, relative to the Greek and Roman periods of the history of Egypt. Of these, however, we can only afford to give a very condensed abstract. And,

First, connected with the Greek period we read, 1. the name of *Alexander the Great*, which is sculptured twice on the edifices of Karnak, and written ΑΛΚΣΝΤΡΣ and ΑΛΚΣΝΤΡΕΣ. This name Dr Young had previously deciphered from the enchorial text of the Rosetta inscription.[1] 2. The name of *Ptolemy*, common to all the Lagidæ, or sovereigns of the Macedonian dynasty. It is commonly written ΠΤΟΛΜΗΣ, sometimes ΠΤΛΟΜΗΣ; it occurs in the hieroglyphic text of the Rosetta inscription, at Denderah, on the monolith of Kous, and on other monuments; it is preceded by the particular surnames of Ptolemy, and followed by one or other of the legends, *always living, beloved of Phtha; always living, beloved of Isis; always living, beloved of Phtha and of Isis*. 3. The name of *Berenice*, written ΒΡΝΗΚΣ, which occurs twice on the ceiling of the triumphal arch or gate on the south of Karnak. 4. The name of *Cleopatra*, written ΚΛΕΟΠΑΤΡΑ on the obelisk of Philae already mentioned, and ΚΛΑΟΠΑΤΡΑ and ΚΛΟΠΤΡΑ on the edifices of Ombos, Thebes, and Denderah. 5. The name of *Ptolemy* surnamed *Alexander*, and accompanied with the legend, *always living, beloved of Phtha*. The name is written ΠΤΟΛΜΗΣ, and this is separated from ΑΡΚΣΝΤΡΣ by a group corresponding to the Greek word ἐπικαλουμενος, *surnamed*. 6. The name of another *Ptolemy*, scarcely known in history, the son of Julius Cæsar by the same Cleopatra for whom Antony gave up the empire of the world. This boy, according to Plutarch, bore the name of *Cæsarion;* Dion Cassius calls him *Ptolemy-Cæsarion;* and his scroll, sculptured at Denderah, next to that of his mother, contains the name ΠΤΟΛΜΗΣ *surnamed* ΝΗΟΚΗΣΡΣ, *Ptolemy the young Cæsar*, followed by the ideographic symbols for *always living*, and the title *beloved of Isis* spelled phonetically.

Secondly, the phonetic alphabet was found to apply, without modification either in the values or the arrangement of the signs, to a much more numerous class of hieroglyphic names of sovereigns sculptured on the monuments of Egypt; we mean to those of the Roman emperors: But, contrary to all expectation, it was found that their titles, names, and surnames, on the bas-reliefs of the temples, were expressed in hieroglyphical characters, suggesting not Latin, but *Greek* words; a circumstance which seems to prove, what indeed is otherwise pretty well established, that latterly these sacred sculptures were executed by Greek workmen, or at least under the direction of Greek artists. Thus, connected with the Roman period, we read, 1. the imperial title Αυτοκϱατωϱ, spelled ΑΟΤΟΚΡΤΡ, ΑΟΤΚΡΤΟΡ, ΑΟΤΑΚΡΤΡ, and ΑΟΤΟΚΑΤΛ, "le Λ étant employé *baschmouriquement* pour le Ρ," according to M. Champollion. This title usually occupies an entire cartouche, and is followed by the ideographic symbols for *always living*. 2. The title of Καισαϱ or Καισαϱος, written indifferently ΚΗΣΡΣ or ΚΗΣΛΣ. It occupies an entire scroll, is followed by the epithets *always living*, *beloved of Isis*, and occurs on the edifices of Philae and of Denderah. 3. The legend ΑΟΤΚΡΤΡ ΚΗΣΡΣ, the *Emperor Cæsar*, *always living*, *beloved of Isis*, which, Champollion conceives, can only apply to Augustus, whose Greek medals struck in Egypt commonly contain only the two words of this legend which are spelled phonetically. It is repeated six times on the cornice of the posterior part of the western temple at Philae. 4. The name of the *Emperor Tiberius*, which occurs several times on the walls of the western temple at Philae. Two scrolls joined together contain the legend ΑΟΤΚΡΤΡ-ΤΒΡΗΣ-ΚΗΣΡΣ, the *Emperor Tiberius Cæsar*, *always living*. 5. The titles and name of *Domitian*, contained in conjoined scrolls, and written ΑΟΤΚΡΤΡ ΤΟΜΗΝΣ ΣΒΣΤΣ, the *Emperor Domitian Augustus*. This occurs on the monuments of Philae; but a more extensive legend of this emperor is found on the edifices of Denderah, where the hieroglyphic scrolls give the *Emperor Cæsar Domitian* surnamed *Germanicus*. 6. The name of the same emperor on the Pamphilian obelisk at Rome; but this monument, in explanation of which Kircher published a folio volume, is believed, on good grounds, to be spurious.

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[1] See *Supplement* to the fifth and sixth editions of this work, vol. iv. plate lxxv.; also section iv. of this treatise.

The name of the *Emperor Trajan* occurs on the walls of the intercolumniation of the eastern edifice at Philae. The image of this good prince, presenting an offering to Isis and to *Arsiêsi* or *Hôrsiêsi*, Horus, the son of Isis, is accompanied by two cartouches or scrolls containing the words ΑΟΤΚΡΤΡ ΚΗΣΡΣ ΝΡΟ ΤΡΗΝΣ, the *Emperor Cæsar Nerva Trajan*; and the legend, *Trajan Cæsar*, *ever-living*, contained in a scroll, terminates the perpendicular column of hieroglyphics sculptured to the right of the bas-relief. The frize of the same intercolumniation is decorated with nine small scrolls. That of the centre, supported by two *uræi* or royal asps, contains the name of *Trajan*, ΤΡΗΝΣ, with the ideographic epithet *ever-living*; and, combined with the scroll on the right and that on the left, it produces the legend, *The Emperor always living*, *Trajan ever-living*, *Cæsar*, *eternal germ of Isis*. The three cartouches placed to the right of these last produce the words, *Trajan ever-living*, *Cæsar*, *Germanicus*, *Dacicus*, *always living*. And, lastly, the three cartouches on the left give the legend, *Nerva Trajan always living*, *Emperor Cæsar always living*, *Augustus ever-living beloved of Isis*. The name of Trajan is also read on the great temple of Ombos, where two scrolls found amidst the ruins of that monument form together the legend, ΑΟΤΟΚΡΤΡ ΚΗΣΡ ΝΡΟΑ ΤΡΗΝΣ ἐπικαλουμενος ΚΡΜΝΗΚΣ ΤΗΚΚΣ, *The Emperor Cæsar Nerva Trajan*, *surnamed Germanicus*, *Dacicus*; which is, word for word, the legend of the Greek medals of this emperor struck in Egypt. The name of the *Emperor Hadrian* is found on the pyramidion of the fourth face of the Barberini obelisk, which now stands in the new promenade of the Monte Pincio at Rome; the cartouche containing it being placed before a figure of the emperor on foot, presenting an offering to *Phré* or the Sun. This monument, however, like the Pamphilian obelisk, is supposed to be, not an Egyptian original, but a Roman copy, executed by Roman workmen. The name of the Empress *Sabina*, the wife of Hadrian, written in phonetic hieroglyphics, is likewise found upon this obelisk. Finally, on the Typhonium at Denderah, two scrolls joined together contain the legend ΑΟΤΚΡΤΡ ΚΣΡΣ ΑΝΤΟΝΗΝΣ, *The Emperor Cæsar Antoninus*, with the ideographic epithet *always living* subjoined; and this is several times repeated on the monuments.

Such is an abstract of the results obtained by the application of the phonetic alphabet to the inscriptions connected with the Greek and Roman periods of Egyptian history. How far they tend to establish the soundness of the original discovery we shall endeavour to explain after we have adverted to the first part of Mr Salt's *Essay*, which applies to the subject immediately under consideration. The late consul-general of Egypt informs us that, on the first intimation of the discovery, he had "conceived a very decided prejudice against the phonetic system," thinking it "founded on too conjectural a basis;" but having received M. Champollion's *Lettre à M. Dacier*, and Dr Young's *Discoveries in Hieroglyphical Literature*, he applied himself seriously to the examination of their contents, "being unwilling to suppose that so much importance could be given, without reason, by many persons of acknowledged talent in Europe, to a discovery which appeared to him only a very vague and conjectural hypothesis."[1] This led to a complete conviction of his error, and enabled him not only to confirm the truth of the "hypothesis" from his own investigations on the spot, but also to add several new phonetic homophones, as well as the names of a number of kings and gods; in regard to which, however, he had, without his knowledge, been anticipated by Champollion. We shall here state as briefly as possible a few of the more remarkable results obtained by Mr Salt in the course of his researches amongst the monuments themselves.

Of names connected with the Greek and Roman periods, Mr Salt was enabled to add to the list of those previously deciphered, 1. that of *Arsinoë*, which was found by him at Gau-Kibeer, Edfou, and Dakké, with a figure of Isis, and the symbols of the female termination subjoined;[2] 2. the name of *Philip*, the father of Alexander, which occurs on the granite sanctuary at Karnak, and on the same building is sculptured the name of his son, who is designated as *Mai-Amun*, or *beloved of Ammon*;[3] 3. a correction of the reading of the name *Berenice*, the final character of which Mr Salt considered as a hawk, a crow, or an eagle, instead of a *vulpanser*, as Dr Young and M. Champollion had concurred in representing it; 4. the names of the Roman emperors *Nero*, *Commodus*, *Hadrian*, *Antoninus*, and one which appeared to be *Marcus Verus Antoninus Augustus*, forming the ornaments of a cornice in the anterior of a small propylon on the west of the island of Philae. The name of Domitian Mr Salt copied from the Beneventine obelisk as delineated by Zoega; and from the whole of these readings he deduced about twenty homophones, in the greater part of which, however, he was, as already mentioned, anticipated by Champollion.

Before proceeding to give the phonetic names of the Egyptian deities, from which, as Dr Murray remarked,[4] after Jablonski, the names of the Egyptian kings are almost all derived, Mr Salt stops to mention an intermediate discovery of no inconsiderable interest. It struck him forcibly, that as the phonetic characters had been applied to the names of stranger kings, the Ptolemies and Roman emperors, so they must likewise, if known, have in all probability been employed in expressing the names of the Ethiopian sovereigns who had previously held Egypt in subjection. And the result proved the soundness of this conjecture. From some sketches made at Abydos, Mr Salt was enabled to decipher the name of ΣΑΒΑΚΟ or ΣΑΒΑΚΟΦΘ, with the same termination as was afterwards found in ΑΜΕΝΟΦΘ; and in a sketch taken from the back of a small portico at Medinet-Habou he discovered the name of ΤΙΡΑΚΑ, whom he conceives to be the same with "*Tirhakah*, king of Ethiopia, who came out to make war against Sennacherib, king of Assyria," as mentioned in the second book of Kings.[1] If this supposed identity be admitted, and if the inscription of these Ethiopian names on the Egyptian monuments be allowed, as we think it must, to have been contemporaneous with the age of the invaders, then it would follow that the phonetic characters were in use about seven centuries before the Christian era, that is, as far back as the reign of Psammeticus and the time of the prophet Isaiah; and a sovereign named in the Bible, of whose existence learned men had entertained doubts, would be restored to history. Further, upon the high granite rocks at Elephantiné, and also beneath the intrusive name of a Ptolemy, Mr Salt deciphered, with the utmost ease, the name ΠΣΑΜΙΤΙΚ, *Psammiticus*, or *Psammeticus*, written phonetically; a name which he also found sculptured on one of the small temples of Elethyas, on the Campensian obelisk, and also on that in Monte Clitorio, of which engravings are given by Zoega at the end of his learned and valuable work on the origin and use of the obelisks.

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[1] *Essay on the Phonetic System of Hieroglyphics*, pp. 3, 4. London, 1825, in 8vo.

[2] On the noble propylon at Karnak, the finest remaining specimen of Egyptian architecture, this name is also found in conjunction with that of Ptolemy, who is designated as the "father" of Ptolemy, who had for his wife Berenice.

[3] The phonetic hieroglyphics representing the name of *Philip* evolve ΦΛΕΕΠΟΣ, which approaches as near to the sound of the Greek as any other name that has yet been discovered, excepting that of ΚΛΕΟΠΑΤΡΑ, which coincides with it, letter for letter.

[4] See *Summary of Egyptian Mythology*, in Appendix to Bruce's *Travels*, vol. ii.

Mr Salt then proceeds to give an account of some of the principal Egyptian divinities, and the images under which they are represented, together with their hieroglyphic and phonetic names, wherever these were deciphered. He commences with the eight more ancient divinities mentioned by Herodotus, whose names he determines to have been, 1. *Knuph* or *Ich-Neuphi*, or *Kneuph*, represented symbolically by a chicken watching an ostrich feather, or by the feather alone with a crouching figure, or by the flag indicating god, or as the agathodaemon, or by the image of the sacred serpent, which enters into the celebrated union of the globe, wings, and serpent, placed over the entrance of all the temples of Egypt, the phonetic name being uncertain; 2. *Neith*, phonetic name ΝΕΕΤ or ΝΘ, expressed by a zigzag or broken line, two feathers, and a pair of tongs, one of the great goddesses of the firmament, represented as a human figure with the head of a lion; 3. *Phtha*, phonetically ΦΘΑ, having for his emblem a scarabœus,[2] and represented on the temples under the form of a human figure with a scarabœus over its head, sometimes encircled by the globe and serpent; 4. *Amun*, *Amoun*, *Ammon*, commonly represented by a human form of a black colour, with the head of a ram, surmounted by the globe and serpent, and written phonetically ΑΜΝ; 5. *Phré*, the sun, represented generally by a globe or disc, encircled by a serpent, and hieroglyphically designated by the same emblem; 6. *Athor* or *Hathor*, phonetic name ΑΘΡ, represented under the form of a female, with a peculiar head-dress, composed of a globe, encompassed by two slender horns, and surmounted by two long feathers, and symbolized by the figure of a hawk enclosed in a square, with a smaller square at one of its corners; 7. *Buto* or *Maut*, phonetic name ΜΤ, representing the lower firmament, and designated, like Neith, by an outstretched female figure, which is also found sometimes as her symbolical characteristic; 8. *Mendes*, or the generative power of nature, represented under the form of a human figure, with the head of a goat advanced in front of the forehead, and designated by a square, a dot, and a chicken, the phonetic name being unknown.

Of the minor divinities of the Egyptian Pantheon, Mr Salt explains the phonetic names and symbols of, 1. ΕΡΜΣ, *Hermes*; 2. ΤΤ or ΘΘ, *Taut* or *Thoth*, represented by a human figure, with the head of an ibis; 3. ΟΥΣΙΡΕ or ΟΥΣΙΡΙ, *Osiris*, designated, as is well known, by an eye, and a chair or throne; 4. ΑΝΕΦΘΕ, *Anephthe* or *Nephthe*; 5. ΟΡΣ, *Horus*, designated by a hawk, or the figure of a child with one hand pointing to the lips, the emblem of silence; 6. ΑΝΦ, *Anubis*, designated by the head of a shakal or Egyptian fox, commonly mistaken for a dog; 7. ΣΘ, *Seth* or *Sothis*, symbol unknown; 8. ΣΑΡΠΙ, *Serapi*; and, 9. ΙΜΟΥΘΦ, *Imouth*, the Egyptian Æsculapius, the reading of whose name is confirmed by a papyrus containing the expression, ʼΑσκληπιου ὁ ἐστι Ιμουθου ὑιος ʼΗφαιστου, "Asclepius (or Æsculapius), also called *Imouth*, the son of Phtha." Mr Salt then subjoins a tabular list of Egyptian kings and queens whose names are all written phonetically, and concludes with expressing an opinion, that, as the fact of phonetic hieroglyphics having been in use in the earlier periods of the Egyptian monarchy seems to be clearly established, so their application will be found not to have been confined to the names of gods and kings or queens; an opinion the truth of which M. Champollion had already, unknown to Mr Salt, produced a pretty extensive series of readings to confirm. That the reader, however, may not be bewildered by details, but may be enabled to comprehend the true nature and bearing of these investigations, it may be proper to pause a little in our exposition, and to take a retrospect, not merely of the results obtained, but of the principles which have guided inquiry, and of the evidence by which the different readings are supported.

The phonetic system of the ancient Egyptians, as revealed by the discoveries of Young and Champollion, differs so greatly from every mode of writing known or practised amongst Europeans, that a little scepticism at the outset of our acquaintance with it is perhaps unavoidable. But we are much mistaken if the evidence which prevailed over the early incredulity of Mr Salt will not prove sufficient to convince the intelligent reader that, however anomalous this system may appear, it was in reality employed by the Egyptians as an instrument of communication, though most probably not to the extent which some contended for. And, first, the fact of characters being used in a similar manner, in a living language which upon the whole is not written phonetically, shows that the system in question is not so contrary to analogy as might at first be imagined. The Chinese, for instance, is a syllabico-ideographic language, consisting of diversified combinations of certain elements or *keys*, two hundred and fourteen in number; but, in order to express *foreign* sounds, or combinations of sounds, the characters of that language, instead of retaining their ordinary values, are rendered simply *phonetic* by an appropriate mark, and thus represent merely the initial or predominant sound of the name or word of which they are the common and recognised signs. Of this M. Klaproth has given an example in the Chinese method of transcribing the name of *Maria*, which is represented by three characters, *Ma-li-ya*, rendered phonetic; the first signifying *jasper*, the second *gain*, and the third *second in rank*.[3] The same author also informs us that the ordinary system of Japanese writing resembles, more perhaps than any other, that employed by the ancient Egyptians. "Les Japonais," says he, "mêlent leurs signes syllabiques, *exprimant des sons*, aux caractères idéographiques des Chinois, exactement comme les Egyptiens, dont l'écriture se composait à-la-fois de signes phonétiques et de symboliques." Lastly, on this point, M. Saint-Martin, who has succeeded in deciphering an inscription in the cuneiform characters, makes it evident by the word *Khchearcha, Xerxes*, which is written phonetically, that, in representing proper names, these characters were employed on the same principle as the phonetic hieroglyphics; and it is a singular enough coincidence that M. Champollion recognised the same proper name, spelled in the very same manner, in a cartouche engraved on a beautiful vase of oriental alabaster in the cabinet of the king at Paris.

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[1] *Second Kings*, chap. xix. v. 9.

[2] See Horus Apollo, *Hieroglyphica*, voce *Phtha*.

[3] *Examen Critique des Travaux de Champollion*, p. 25.

In the second place, the progress of the discovery, and the facts connected with it, seem to demonstrate its general truth and certainty. The name of *Ptolemy*, taken from the Rosetta inscription, rests upon the basis of an accompanying translation; the same thing may be said of the name *Cleopatra*, obtained from the obelisk of Philae; and from these two have the elements of the phonetic alphabet been derived. But the strongest evidence, perhaps, in support of this alphabet, is the perfect agreement of the results obtained by means of it with known facts in the history of the individuals whose names have been deciphered, with the dates of the edifices on which these names are sculptured, or with other circumstances of a personal or general nature, the combination of which it is impossible to ascribe to accident, or to account for in any way except by admitting the truth and certainty of the discovery. Thus, the name of Ptolemy is found only upon buildings which, in the style of their architecture, are evidently of a date posterior to the older monuments of Egyptian art. The name of Cleopatra is found, *as mother of a Ptolemy*, at Ernent and at Kous, where there is also a Greek inscription, in which Cleopatra is represented as reigning *with her son;* and a queen of the same name is represented as the wife of a Ptolemy at Gau-Kibeer, at Dakké, in a temple of Philae dedicated to Aphrodite, and in another discovered by Mr Salt, dedicated to Æsculapius, in all of which it corresponds with the Greek inscriptions found there; whilst, upon many other temples, a Cleopatra is constantly associated with a Ptolemy. On the magnificent propylon at Karak, one of the wonders of Egyptian architecture, the name of a Ptolemy accompanies, as usual, that of Cleopatra; the name of Alexander, called the son of Ammon, is found in juxtaposition with that of his father Philip; but at Edfou, the name of Ptolemy is followed by the title of Alexander, and by the name of Berenice his wife. Again, the titles of *Autokrator, Sebastos, Eusebes, Kaisar*, are continually found in conjunction with the names of Roman emperors, but never with those of the Ptolemies; the titles of *Germanicus, Dacicus*, are found annexed only to the names of those sovereigns who bear these titles on their medals; the name of Hadrian is prefixed, as it ought to be, to that of the Emperor Trajan; and the greater part of the names of the emperors from Augustus to Commodus are found upon temples and edifices, the style of which indicates that they are of more modern date than those which belong to the age of the Ptolemies. Nor are these names and titles, which have all been interpreted by means of the phonetic alphabet, confined to a few insulated scrolls. On the contrary, they are sculptured by hundreds throughout the different edifices in which there are no scrolls that do not apply to those who were concerned in their construction. The oval or ring containing the name of Hadrian is sculptured on a column the hieroglyphics of which are known by a Greek inscription to have been executed immediately after his reign; the name of *Soter* repeatedly occurs, in phonetic characters, amongst the hieroglyphics upon the *soros* or mummy-case of a person whose name was Soter, as appears by the Greek inscription upon the same coffin; and this name is also found, in the Greek, immediately after that of *Osiris*, exactly as Dr Young had before stated, that the names of persons deceased were found in the hieroglyphics on the body. Here, then, we have a mass of concurring evidence, a series of corroborative circumstances, the coincidence and harmony of which amount to a demonstration of the truth of the principles on which the phonetic alphabet is founded, and of the certainty of its application, in as far at least as regards proper names. True results can never be obtained from false assumptions.

Thirdly, it is greatly in favour of the phonetic system of interpretation that the same lax and uncertain use of the vowels, which is observed in the hieroglyphic writing, prevails also in the Coptic,[1] where one vowel is constantly put for another, and there is the same confusion between the L and the R. The mixture of symbolic and phonetic signs seems likewise a necessary consequence of the process by which, it may reasonably be supposed, the transition from ideographic to phonetic writing was produced. In this, as in so many other things, necessity was the mother of invention. The impossibility of representing or discriminating by symbols the proper names of individuals, led, as in the Chinese, to the employment of phonetic characters, or, in other words, to the separate indication of each letter or sound in the name by means of an appropriate sign used phonetically; but as the names of the kings, which were probably the first they desired to record, were usually formed from those of the gods, as *Thoth*-mes, *Thoth*-mosis, *Amun*-mai (Mai-*amun*, Memnon), *Amun*-ophth, *Ra*-m-ses, *Osir*-tesen, the sign which represented the name of the god would still indicate, in a compendious and intelligible manner, the syllable itself, instead of being composed into separate letters, each with a separate representative. Thus, in the phonetic name of Rameses or Ramses, the emblem or symbol of the sun stands for the syllable RA. M. Klaproth has not, we think, allowed sufficient weight to these considerations, in some of his strictures on M. Champollion. It is obvious, however, that, as the Coptic is the descendant of the ancient Egyptian, and as a knowledge of the latter can only be obtained by means of the former, our confidence in the phonetic interpretation must be increased when we find that it evolves the very same peculiarities observed in that language which embodies all that remains of the idiom of the Pharaohs.

But it is time to return to M. Champollion. We have already seen, that the primary idea developed in his *Lettre à M. Dacier* received a more ample and extended application in his *Précis du Systême Hiéroglyphique des Anciens Egyptiens*, the first edition of which appeared in 1824; that in his *Lettres à M. de Blacas*, written from Turin, he made numerous applications of his system, particularly to the ancient dynasties of Egypt; and that, on his return from Italy, he published a second edition of his *Précis*, in which, however, he introduced but few modifications of the statements and assertions contained in the first, and in no degree altered or modified the opinion which he had therein expressed as to the phonetic nature of the great mass of the hieroglyphics. This work, which

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[1] This has been very clearly shown by Mr Tattam in his excellent *Grammar*, and by Professor Kosegarten in his very learned work *De Prisca Ægyptiorum Litteratura*, Vimariæ, 1828, in 4to. See also *Quarterly Review*, vol. liii. p. 110.

Champollion, &c.

is written with admirable clearness, and often displays great ingenuity, has for its object to demonstrate, by inductive interpretations, 1. That the phonetico-hieroglyphic alphabet is applicable to the royal legends of every epoch in the history of Egypt; 2. that this alphabet is the true key to the whole hieroglyphical system; 3. that the ancient Egyptians constantly employed hieroglyphics to represent alphabetically the sounds of words in their spoken language; 4. that all the hieroglyphical inscriptions are, to a certain extent, alphabetical; 5. that different kinds of characters, the nature of which respectively he endeavours to define, were simultaneously employed in the hieroglyphical texts; and, lastly, from all these propositions, each of which is supported by a great variety of readings and examples, he attempted to deduce a general theory of the graphic system of the ancient Egyptians, generalising with a premature boldness, which afterwards exposed him to the merciless severity of M. Klaproth's criticism. With all its errors, contradictions, and inconsistencies, however, this work displays extreme ingenuity, infinite acuteness, and often rare felicity in the development of views, suggested, perhaps, by an incidental analogy, which would have escaped a less ardent and penetrating observer. This will be sufficiently evinced by the following brief abstract of its contents.

Neglecting the purely controversial, which is the least interesting part of the work, and also omitting that portion in which he retraces the results already obtained, we proceed at once to the application which he makes of the phonetic alphabet to different hieroglyphical groups and grammatical forms of constant recurrence in the inscriptions. The hieroglyphical groups of most frequent occurrence in the texts are those which correspond to *son, daughter, child* or *nursling, offspring, father, mother, sister, king,* and *place* or *locality*. 1. The idea of *son* is expressed by three different hieroglyphic groups, which are often employed upon the same monument. The most common is a goose SH or SCH, and a small perpendicular line A or E, forming the word SHA, SHE, or SHI, connected with the Sahidic SHA, *oriri, nasci*, and the Memphitic SHAI of the same import, and involved in the compounds SHENIOT, *son of father*, or brother consanguinean; SHENMAU, *son of mother*, or brother uterine; SHENSON, *son of brother*, or cousin. The second group is formed of an oval or ellipse S, and a small perpendicular line E, making SE or SI, which appears in the composite Coptic name HÔR-SI-ÊSE or HÔR-SI-ÊSI, *Horus the son of Isis.*[1] The third is composed of the figure of a child with its hand at its mouth, representing Σ in the title Σεβαστος of the Pamphilian obelisk, and the small perpendicular line, which, as before, give the word SE or SI. A fourth group, which in the hieroglyphical inscriptions expresses *filiation*, is written MS, equivalent to the Coptic MES, *enasci, gignere*, whence MAS and MISE, *natus, infans, pullus.*[2] But this group is generally employed to indicate maternal descent, whilst the group SHE or SI commonly expresses paternal descent. Thus, HÔR SE Ñ OUSIRE MES Ñ ESE, *Horus, son of Osiris, born of Isis.* 2. The group expressing *father*, formed of the segment of the sphere T, the horned snake OU, and the small perpendicular line E, reads TOUE, which is traceable to the Coptic root TAOUE, *producere, proferre*, probably derived from TA, *dare*, and OUÔ, *germen*. 3. In the hieroglyphical texts, a vulture represents symbolically the idea of *mother*,[3] in Coptic MEOU, MAAU, and MAU, according to the dialects; and this character is accompanied with another, the segment of a sphere T, which gives MAUT or MOUT; a reading the more remarkable, as the word Μουθ has been transmitted to us by Plutarch as pure Egyptian for *mother*, and as one of the surnames of Isis.[4] 4. The group expressing king is composed of a plant S, a segment of a sphere T, and a zigzag or horizontal line N, forming STN, the skeleton of the Coptic word SOUTEN, *regere, dirigere*. 5. The word τοπος, *place*, in the Greek text of the Rosetta inscription, is expressed in the hieroglyphical text by an owl M, and an extended arm A, thus giving the Coptic word MA, *place*, which Dr Young erroneously supposed to signify *father*.

We come next to the signs or groups in the hieroglyphical texts which perform certain grammatical functions, and express genders, numbers, persons, and times or tenses. And, 1. The ordinary mark of feminine groups is, the segment of a sphere T, answering to the Coptic article T', which also characterises the feminine gender. Thus, SI, *son*, TSI, *the daughter;* SN, *brother*, TSN, *the sister;* and TMAU, *the mother*. But, in the hieroglyphical inscriptions, the feminine article is sometimes placed at the end of a group, which accounts for our meeting sometimes with MAU, *mother*, and MAUT, *the mother;* although the Coptic presents no example of this species of inversion in the use of the article. The masculine definite article in Coptic is P, the equivalent of which is the striated square, the constant sign of the same letter in all the Greek and Roman inscriptions. The plural articles are two in number; first, the zigzag, or the simple horizontal line N; and, secondly, the vase, which is also N; both being followed by the small perpendicular line E, so that we have the Coptic articles NE, NI, and NA, of all which the Rosetta inscription presents several examples. 2. The plural of nouns is expressed either by prefixes or by terminations. The prefixes are the broken or horizontal line N, which is the determinate plural article, and the vase, also N, followed in both cases by the small perpendicular line E, and equivalent to NE or NI. The terminations are either two small perpendicular lines indicating duality, or three such lines indicating indefinite plurality, as Dr Young originally remarked. The two small lines, taken phonetically, are in proper names and others equivalent to the E or I; the three lines, preceded by the crooked staff (*lituus*), or by the quail, represent the Coptic plural termination OUE or OUI. 3. As in the Sahidic or Theban dialect of the Coptic certain qualifying words are formed by the conjunctive NT, *qui*, so in the hieroglyphical texts a number of groups expressing qualifications, or employed adjectively, commence with the vase and the segment of the sphere, the phonetic signs of NT. 4. In the hieroglyphical texts there has only been recognized one distinct group representing a pronoun, the subject of a proposition: it is the pronoun of the third person singular masculine, which is written phonetically NTOPH, being letter for letter Coptic. But numerous examples occur of pronouns of the second, and particularly of the third person, combined with nouns and verbs, sometimes as prefixes, though more commonly as affixes. Thus, keeping in view that NPH, or simply PH, equivalent

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[1] Mr Akerblad was the first who gave the true import of this composite Egyptian proper name.

[2] In the Rosetta inscription, this word, combined with the two characters which express *day*, corresponds to τα γενεθλια of the Greek text, where the celebration of Ptolemy's birthday is mentioned.

[3] Horus Apollo informs us (*Hieroglyphica*, i. No. 12), that to denote *mother* the Egyptians painted a vulture, ἐπειδη ἀρρεν ἐν τουτῳ τῳ γενει των ζωων ὀυχ' ὑπαρχει.

[4] Ἡ δ' Ἰσις ἐστιν ὁτε και ΜΟΥΘ και παλιν Ἀθυρι. . . Σημαινουσι δε τῳ μεν πρωτῳ των ὀνοματων ΜΗΤΕΡΑ, τῳ δε δευτερῳ, κ. τ. λ. (*De Iside et Osiride.*) The statement of Plutarch is confirmed by the fact that, wherever the representation of Isis occurs on the monuments, it is accompanied by the legend ESE DJER-MOUT, *Isis, powerful mother*.

Champollion, &c.

to the Coptic NAPH or NEPH, is the masculine, and S, equivalent to the Coptic NES, the feminine affix of the third person, we have TOUEPH, *father of him*, TOUES, *father of her;* MOUTPH or TMOUPH, *the mother of him*, MOUTS, *the mother of her;* SEPH, *the son of him*, SES, *the son of her;* TSEPH or SETPH, *the daughter of him*, TSES or SETS, *the daughter of her;* SNPH, *the brother of him*, SNS, *the brother of her;* TSNPH or SNTPH, *the sister of him*, SNTS, *the sister of her.* 6. In Coptic the preposition N, prefixed to a noun, indicates the genitive case; and in hieroglyphics the broken line N performs the same function. Thus, in all the hieroglyphical legends placed beside the representation of the god Horus, we read either HÔR SHE′ N OUSIRE′, *Horus, the son of Osiris*, or HÔR SHE′ N OUSIRE′ MS N ESE, *Horus, son of Osiris, born of Isis.*

In the hieroglyphical branch of the Rosetta inscription we meet with verbs in three distinct tenses, present, past, and future, but only in the third person. The characteristic signs of these tenses, taken phonetically, are however nothing more than Coptic prefixes and affixes. Thus the third person plural of the present is indicated in the hieroglyphical texts by a phonetic sign of S, prefixed to the group representing the verb, and equivalent to the Coptic prefix SE. Next, the third person of what seems to be a past tense is indicated by the affix of the horned snake PH if the subject be masculine, and by that of the two sceptres S, if the subject be feminine. Of these verbal forms distinct traces appear in one of the past tenses of the verb DJÔ, *dicere*, as PEDJAI, PEDJAK, PEDJE, PEDJAPH, PEDJAS, in the Sahidic, and PEDJEI, PEDJEK, PEDJE, PEDJEPH, in the Memphitic dialect. Lastly, the third person plural of the future, in which form appear all the verbs in the last nine lines of the hieroglyphical text of Rosetta, is marked by a group of three characters, the recurved stem S, the broken line N, and the three small perpendicular lines I or E, from which we obtain SNE, equivalent to SENE or SENA, the characteristic mark of the third person plural of the Coptic future definite. So much, then, for the application of the phonetic alphabet to different hieroglyphical groups of frequent occurrence, and also to certain grammatical forms; an application which, in Champollion's estimation, goes far to prove his general position, that a great part of every hieroglyphical text is written alphabetically.

The next subject of investigation, viz. deciphering the hieroglyphical names of the Egyptian divinities, is one of equal interest and importance; but after the notice which has already been taken of Mr Salt's readings, and the publication of Dr Young's catalogue at the end of the article EGYPT in the present work, it will only be necessary to advert to the additional results obtained, and the corrections applied by M. Champollion. And here it may be observed generally, that the images of the gods and goddesses with which the Egyptian monuments of all orders abound, are preceded by hieroglyphical legends, invariably commencing with three or four characters, importing, *This is the aspect*, the *mode of existence*, the *presence*, or the *resemblance;* and this formula is succeeded by the preposition N, *of*, expressed by the broken or horizontal line, after which comes the proper name of the god or goddess, which is always written in the same phonetic characters with those of individuals. But there is this difference observable, that instead of the figurative character *man*, which is found at the end of the latter, the names of divinities are constantly terminated by the ideographic sign of *god* or *goddess*, as the case may be; a sign the import of which was determined by a comparison of the Greek with the hieroglyphical and enchorial texts of the Rosetta inscription. By this initial formula, and this terminal character, the names of the Egyptian divinities may easily be recognised on the monuments.

From the testimony of the Greek writers, there can be no doubt that the god represented on the monuments by a human figure with the head of a hawk, surmounted by a globe or disc, is the Egyptian Ἡλιος, *Sun*, denominated RA, RE′, and PHRE′. This name, which is of very frequent occurrence, enters into the composition of Rameses or Ramses, written *Ra-m-ss.*[1] *Ammon, Amoun*, or *Amun*, the principal deity of Thebes, represented with the head of a ram, and assimilated by the Greeks to their own Ζευς, is read AMN by M. Champollion as well as by Mr Salt. On the paintings and bas-reliefs, however, the former discovered a second divinity with a ram's head, but distinguished from the first either by an *uræus* or asp placed between his horns, or by a complicated and peculiar head-dress, containing a solar disc and one or more *uræi.* This divinity, like the preceding, bears the name of AMN, sometimes that of AMON-RA or AMON-RE′, but more frequently a third name, in the orthography of which there are four distinct varieties, viz. NB, NOUB, NM, and NOUM. Now, if the B of the name NB be pronounced in the Coptic manner, like a V or an F, we shall obtain NEV or NEF, the god Κνὴφ, who, according to Plutarch, was the principal divinity of the Thebaid; and, in like manner, if NOUB be pronounced NOUF, the latter will at once suggest the ΚΝΟΥΦ-ις of Strabo, identical with the Κνηφ of Plutarch and Eusebius. On the other hand, if NOUB be pronounced in the ordinary way, we shall obtain the ΧΝΟΥΒ-ις of the inscription at the Cataracts, Αμμωνι ὁ και Χνουβει, and of the Gnostic or Basilidian Stones, and also the *Ammon-Chnubis* of the Latin inscription discovered by Belzoni in the quarries of Syene. Lastly, in the variation NOUM we discover the ΧΝΟΥΜ-ις of the Basilidian Stones, which bear indifferently Χνουφις, Χνουβις, and Χνουμις, thus showing that these various names are applied to one and the same divine being represented under the form of a serpent.[2]

According to Eusebius, *Phthah* or *Phtha*, one of the prin-

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[1] From the name of this divinity was also derived that of PHRA, or, by inserting (*more orientali*) a vowel, PHARAH, identical with PHARAOH, the denomination common to all the monarchs of Egypt. Josephus informs us (*Antiq. Jud.* lib. viii. cap. 6, § 2) that amongst the Egyptians *Pharaoh* signified RE′;—and that to each king they gave the title of *Sun*, that is, called him PHRE′ or PHRA, is demonstrated by all the royal legends, and even by the cartouches themselves, where this title is often expressed, not with the symbolical disc, as when applied to the divinity himself, but with an equivalent character, the figurative image of the sun, that is, a human figure with the head of a hawk surmounted by a disc. This idea, which was originally suggested by Mr Wilkinson, has been fully developed and illustrated by Signor Rosellini. "Il titolo di Faraone," says the latter, "dobbiamo prenderlo dal testo originale della Bibbia, ove sta scritto פרעה, *Phrah:* che tale è la sua naturale pronunzia un poco alterata dai Masoreti, forse non a capriccio, ma per rendere il suono Egiziano della voce ΦPH, *Phré*, il quale noi non conosciamo, e che potè probabilmente conservarsi nella tradizone degli Ebrei. Or dunque tra il *Phré* o *Phra* Egizio, ed il *Phrah* biblico è tanta l'analogia, che non mi sembra lasciar luogo al dubbio sulla identità delle due voci. Ma parrà forse strano che Mosè rendesse colla lettera *Ain*, appoggiato anche dalla *He* finale, un semplice suono vocale Egizio, che risponde alla *Heta* de caratteri Copti. Alla qual cosa rispondo, che la *He* finale può essere enfatica, completiva, o espletiva, come vuol dirsi; e tale rimane nella stessa pronuzia dei Masoreti. Ma che la *Ain* sia la lettera usata costantemente dagli Ebrei per esprimere l'elemento E O A del Egizia voce *Phra* o *Phré*, Mosè medesimo ce ne assicura. Trascrivendo egli il nome della città Egiziana fabbricata dagli Ebrei e chiamata con Egizio nome *Ramesses*, scrisse Ebraicamente רעמסס, *Rhamses.*" (See *I Monumenti dell' Egitto e della Nubia, parte prima*, tom. i. pp. 116, 117.)

[2] All the details transmitted by the Greek writers concerning the mode in which the Egyptians represented *Ammon-Kneph, Ammon-Knuphis*, or *Ammon-Chnoumis*, are perfectly applicable to the images of the god whose hieroglyphical names have been found to be

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cipal Egyptian divinities, chiefly adored at Memphis (MA-M-PHTHA), and assimilated by the Greeks to their Ἡφαιστος, was believed to be the son of the god Knêph or Ammon-Chnuphis or Chnubis. In constant juxtaposition with the images of the *demiurgos*, or creator (celui qui dispose la matière) sculptured on the bas-reliefs of Ibsambul, Philae, Edfou, Ombos, and Thebes, is the figure of a second divinity (συνναος θεος), distinguished either by a solar disc and crescent surmounting his head-dress, or by the ordinary sceptre of the gods, combined with a nilometer, a handled cross, a lash, and a balance, or enveloped from neck to heel in a close tight vestment, leaving at liberty only the hands which hold the sceptre; and there can be no doubt that this figure was intended to represent Phtha, because the adjacent hieroglyphical group contains the name of Phtha expressed in phonetic characters. These readings, then, serve to confirm the statement of Eusebius, that Phtha was believed to be the son of Knêph or Ammon-Chnuphis, the demiurgos of the Egyptian mythology. Amongst the titles which the decree of Rosetta applies to Ptolemy Epiphanes is *Mai-Phtha*, ἠγαπημενος ὑπο του Φθα, *beloved of Phtha*. *Petbe*, whom the Greeks call Kronos and the Latins Saturn, was deciphered from a Coptic manuscript in the Borgian Museum. In a Greek inscription discovered by Ruppel at Schélé, between Elephantiné and Philae, and containing the names of different Egyptian divinities, is that of the goddess ΣΑΤΗ-Σ, or ΣΑΤΙ-Σ, which occurs immediately after Ammon-Chnoubis, and corresponds to the Ἡρη of the Greeks and the *Juno* of the Romans. But on the bas-reliefs the figure of Ammon is always accompanied by that of a goddess, whose distinctive emblem is a large feather stuck in her head-dress, and whose hieroglyphical name expressed phonetically is *Sate* or *Sati*, identical with the Σατης or Σατις of the Greek inscription above mentioned. Of the divinities better known, the names deciphered by M. Champollion are, 1. *Anubis*, son of Osiris and Nephthé, written ANB and ANBÔ, in Greek ANου-B-ις, and distinguished by the head of a shakal or fox, which the Greeks mistook for that of a dog; 2. *Osiris*, the husband-brother of Isis, written OUSRE′ and OUSRI, or OUSIRE′ and OUSIRI; 3. *Arueris*, the twin-brother of Osiris, written AROERI, HAROERI, or HAROUERI; 4. *Anucis*, assimilated to the Ἑστια or *Vesta* of the Greeks, and written ANK, *Anouk* or *Anouké*, in Greek Ανουκης or Ανουκις; together with *Horus*, *Apis*, *Mnevis*, *Besa*, *Socharis*, *Thermouthis*, and the names of the greater part of the Decans represented on the circular zodiac or planisphere of Denderah. From all this, then, the inference deduced by Champollion is, that the Egyptians employed phonetic hieroglyphics in writing the names of the different members of their populous Pantheon.

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Results at once curious and interesting were likewise obtained by the application of the phonetic alphabet to the names of private persons of both sexes. Of these the Greek writers have preserved a considerable number, all of them composed of the proper names of divinities, with the addition of some distinctive epithet, and easily explicable with the aid of the Coptic. Thus Αμυνταιος signifies given by Ammon; Νιτωκρις, victorious Neith; Ἀθωθις, engendered of Thoth; Μαρις or Μοιρις, gift of Ré, or the Sun; Σεμφουκρατης, Hercules-Harpocrates; Θομαεφθα, the world friend of Phtha; Πανσις, the consecrated to Isis; Πανουφις, the consecrated to Chnuphis; Παθερμουτ, the consecrated to Thermuthis; Πετησις, he who belongs to Isis; Πετοσιρις, he who belongs to Osiris; Μανσις, gift of Isis, or loving Isis; Ψεναμουν, the child of Ammon; Σενοσορ, the child of Osiris; Πετεαρποκρατης, he who belongs to Harpocrates; Πετεαρωηρις, he who belongs to Aroueris; and so of the rest. The same observation may be applied to the names deciphered by Champollion; they are all formed on the analogy indicated by those which the Greek writers have preserved, and by their composition they show that the mythological system of Egypt, like that of India, had become interwoven with the whole texture of society, and with every circumstance of life and manners. Religion, indeed, like a subtile spirit, insinuated itself into every thing; and even the names of private individuals contain evidence of its universal predominance. Thus we find *Petamun*, he who belongs to Ammon; *Petamura*, he who belongs to Ammon-Ra; *Amenoph*, Αμενωφις, an abbreviation of *Amenoftep*, Αμενωφθης, approved of Ammon; *Amontet*, obedient to Ammon; *Phtaftep* or *Ptahtefp*, approved of Phtha; *Ftep-an-Ptah* or *Ftep-Ptah*, the approved of Phtha; *Ptahdjer* or *Ptahdjor*, Phtha the powerful, or the powerful by Phtha; *Pethôrpré*, he who belongs to Horus and the Sun; *Petepré* or *Petephré*, the same with the *Putiphar* or rather *Putiphrah* of Scripture, and in the Coptic text of Genesis regularly written *Petephré*, he who belongs to *Ré* or the Sun (priest of the Sun); *Isidjer* or *Isidjor*, Isis the great or powerful; *Hatôrshé* and *Hatôrshet*, child (male or female) of *Hathôr*; *Hôr-amun*, Horus-Ammon; *Hôrsiêsi*, Horus, son of Isis; and *Amun-Hôrsiêsi*, Ammon-Horus, son of Isis. It is to be observed, however, that the Egyptian proper names of private individuals are never included in an elliptical ring or cartouche, which is the distinctive mark of the proper names of sovereigns alone; they are written like the ordinary current text of the hieroglyphics, but are constantly terminated either by the figurative emblem of *man*, or by the sign of the feminine gender, as the case may be. From this branch of his analysis Champollion concludes that the proper names of individuals were written phonetically; and consequently that the opi-

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AMN, NB, NOUB, and NOUM. Eusebius informs us that the Egyptians represented the *demiurgos*, or creator of the world, under a human form, covered with blue flesh, encircled by a zone or girdle, holding a sceptre, and having on the head a royal ornamented head-dress of feathers. Porphyry gives us the same information. "Hujus porro Κνὴφ imaginem, inquit, humana forma depingunt, colore cæruleo, zonam tenentem et sceptrum, pennam gerentem in capite; ovum ab ore producit, a quo nascitur deus quem Ægyptii Phtha, Græci Vulcanum vocant." On all the monuments the god called alternately AMUN and NOUB accordingly appears under a human form, with flesh painted blue, encircled with a zone, and having his head-dress surmounted by two enormous feathers of different colours. Eusebius further informs us (*Præparatio Evangelii*, lib. iii. cap. 9, p. 115, Paris, 1628) that *Knaph* was emblematically represented under the form of a serpent; and we have already seen that, on the Basilidian Stones, the names Χνουφις, Χνουβις, and Χνουμις, are accompanied by the image of a serpent. On the monuments in the elder style of Egyptian art, this divinity is sometimes found with an *uræus* on his head; but he is more frequently preceded or followed by a huge serpent nearly covering his visible image with its voluminous coils. Knêph was regarded by the Egyptians as the Ἀγαθοδαιμων, or good genius, and, in this character, he was also represented by a serpent. Nor is it undeserving of notice, in considering his distinctive attributes or emblems, that the surname of Νεοαγαθοδαιμων, given by flattery to Nero upon those of his medals which were struck in Egypt, is combined with the image of an enormous bearded serpent having its head ornamented with a symbolical head-dress. Lastly, the Greek and Latin inscriptions, in which *Ammon-Chnoubis* is mentioned, were found, the one in the isle of Schélé, near Syene, and the other at Syene itself; in short, at a small distance from the isle of Elephantiné, where Strabo places the temple of Κνουφις, and where, according to Eusebius, the divinity worshipped was represented under a human form with the head of a ram surmounted by a solar disc, and had the flesh painted blue. There can be little doubt, then, that the god who, in the hieroglyphical text, bears the name of NEB or NEF, NOUB or NOUF, and NOUM, is identical with Ammon, and the divinity whom the Greeks called *Knêph*, *Chnuphis*, and *Chnumis*. (See *Précis du Système Hiéroglyphique*, pp. 143, 144, 145, 146.)

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nion originally expressed by Dr Young, and repeated by himself in his *Lettre à M. Dacier*, that the phonetic hieroglyphics were confined to the transcription of words, and *foreign* to the Egyptian language, is erroneous.

The next subject which engaged the attention of Champollion was the analysis of the royal titles and qualifications inscribed on the more ancient Egyptian monuments; an analysis the object of which is to show that, even anterior to the Persian invasion, the Egyptians employed in their hieroglyphical texts characters representing the sounds of the spoken language; and that these words are expressed by signs similar in form and in value to those which were afterwards used for transcribing the proper names and titles of the Greek kings and Roman emperors. In his *Lettre à M. Dacier*, M. Champollion proved by an unbroken series of facts that the Egyptians wrote phonetically, or employed the figures of objects to express sounds, from the conquest of Egypt by Alexander the Great (A. C. 332) till the close of the reign of Antoninus (A. D. 161), a period of about five centuries. But as the Persian conquest preceded the Macedonian by nearly two hundred years (193), the question which next arose was, whether, in the interval between these two conquests, and still more in the periods of the Egyptian monarchy anterior to the first or Persian, any traces of the same system of writing could be discovered. If this point were determined in the affirmative, M. Champollion conceived that the chain of evidence would thus be rendered complete. His reasoning, however, involves several elements of uncertainty. In the first place, the period at which any given name was inscribed on a monument may not have been contemporary either with the erection of the monument itself, or with the age of the individual whose name has been so inscribed. Secondly, the style of the architecture of the monuments is by no means an infallible indication of the epoch to which their construction should be referred, inasmuch as the rise and decline of the art must necessarily exhibit many points in common, and show nearly the same relative imperfection, and as the more ancient are consequently in danger of being confounded with the more modern edifices. Thirdly, though the dates of the monuments may be ascertained from these dedications, or from independent historical authority, the time when any given name was inscribed thereon is not determinable by the same evidence, and can only be inferred from accessory circumstances, which seldom amount to more than a probability, the value of which, in ordinary circumstances, cannot exceed that of a reasonable conjecture.

But, however this may be, we shall complete our abstract of M. Champollion's investigations by exhibiting a few of the results which he obtained by deciphering hieroglyphic names sculptured on the monuments supposed to belong to the early age of Egyptian art. And, 1. In a cartouche engraved on a vase of oriental alabaster, preserved in the cabinet of the king at Paris, M. Champollion, as already mentioned, deciphered the name of *Xerxes*, written KHSCHEARSCHA, which is the Persian name of that monarch, without any other omission than that of a sort of medial vowel; and this hieroglyphic name is accompanied by five characters, the phonetic values of which give the word IERINA or IRIENA, the same with IERE, *Iranian* or *Persian*. 2. In the twenty-ninth or Mendesian dynasty Manetho places a king whose name is written 'Αχωϱις, probably the 'Ακοϱις of Diodorus Siculus; and this king had for his immediate predecessor and immediate successor two princes of the name of Νεφεϱιτης, as written by Manetho, or Νεφεϱευς, as written by Diodorus. But on two sphinxes, the style of which approaches that of the sculptures executed under the Greek kings of Egypt, were found the hieroglyphical name of a king HAKR, 'AKOP-ις, and that of a king NAIFROUE' or NAIFROUI, supposed to be identical with *Nephereus* or *Nepherites*. 3. On the Campensian obelisk, which Augustus caused to be transported from Egypt to Rome, and placed as a gnomon in the Campus Martius, may be read PSMT or PSMTK, the skeleton of the name of Psammetichus,[1] one of the most enlightened kings of Egypt, who opened the ports of that kingdom to the Greeks, encouraged commerce, patronised the arts, and sought to revive the maritime power of his country. 4. According to Manetho, the second king of the twenty-third or Tanite dynasty bore the name of 'Οσοϱθος or 'Οσοϱθων. But on a granite obelisk amidst the ruins of Heliopolis is sculptured the name of a prince called OUSORTASEN or OSORTASEN, which also occurs on a small statue of carnelian in the cabinet of M. Durand, accompanied by the legend, "the son of the Sun, beloved of Phtha."[2] This Pharaoh must not however be confounded with the OSIRTESEN of Mr Wilkinson, the last monarch but one of the sixteenth dynasty, and he with whom the monumental history of Egypt is supposed to commence. 5. From the same monuments have been obtained the names of several other kings and queens belonging to the twenty-third dynasty, particularly those of PTAHAFTEP, the Petubastes of the Greeks, and father of Osorthos; RAN, his queen; PSJAM or PSDJAM, *Psammus*, ὀν 'Ηϱακλεα 'Αιγυπτιοι 'εκαλεσαν, the son and successor of Osorthos; AMONSCHET, daughter of Osorthos, and sister of Psammus; BEBA or BEBO, queen of Psammus; and AMONRAOU, his son, probably the last scion of the Tanites. 6. The head of the twenty-second or Bubastite dynasty is denominated by Manetho Σεσογχις or Σεσογχωσις, being the Pharaoh who in Scripture is called *Sesak*, *Shishak*, *Shushak*, and who, in the reign of Rehoboam the grandson of David, pillaged Jerusalem, and carried off "all the shields of gold which Solomon had made."[3] Upon one of the colonnades which decorate the court of the grand palace at Karnak are two royal legends, the prænomen in the first of which contains the title "approved of the Sun," followed by "the beloved of *Ammon*, *Scheschonk*," apparently identical with the *Sesonchis* of Manetho; but, in the second legend, we read "the beloved of Ammon, *Osorkon*," and the king called 'Οσοϱχον, who has sometimes been confounded with 'Οσοϱθων, was the immediate successor of Sesonchis. A variety of other legends serve to confirm this conclusion. 7. The next Pharaonic name deciphered by Champollion is that of the head of the nineteenth dynasty, which was one of the Diospolitan. It occurs on almost every monument executed in the ancient style of art; it is written REMSES, RAMSES, AMUN-MAI-RAMSES, AMUN-RAMSES-MAI; and, according to Champollion, it is that of Rameses the Great, the same sovereign who is called *Sethosis* by Manetho, *Sesoosis* by Diodorus Siculus, and *Sesostris* by Herodotus and Strabo. This conclusion is not hypothetical or conjectural; it has been established by a very elaborate historical investigation, in which, as appears to us, the identity of these various names has been made out in a very satisfactory manner. 8. Lastly, of the sovereigns belonging to the eighteenth dynasty, which was also Diospolitan, Champollion deciphered those of Meiamoun-Ramses, Ramses I., Amenophis II. whom the Greeks, mistaking a title (Meiamoun) for a name, called *Memnon*, Amenophis I., and, finally, that of Thouthmosis, the founder.

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[1] See the engraving given by Zoega of this obelisk, which was from the first believed to be the work of a Pharaoh. (Plin. *Historia Natural.* lib. xxxvi. c. 8, 9, 10.) The name on this obelisk is, according to Champollion, that of Psammetichus I. who flourished about 120 years before the Persian conquest.

[2] Two coloured pillars, transported from Egypt to France, confirm the above reading, and increase the probability that the king mentioned by Manetho is identical with the Pharaoh whose monumental name is *Osortasen*. (*Précis du Syst. Hiérogl.* p. 197, et seqq.)

[3] See First Kings, chap. xiv. ver. 25, 26.

These results are supposed to have received a remarkable confirmation from the Genealogical Table of Abydos. This interesting monument was disinterred by Mr Bankes in 1818, while excavating for the purpose of obtaining an accurate ground plan of the extensive ruins of Abydos; and, soon after his return to England, he caused it to be lithographed, and copies to be distributed to different persons both in this country and in France.[1] One of these accompanies Mr Salt's *Essay*, which, in fact, was edited by Mr Bankes. A design of the Tablet was also made by Caillaud, but it is exceedingly ill executed, and, in the first or uppermost row of royal names, a cartouche is wanting. This important and interesting monument is composed of three rows of royal names, each row containing twenty-six; and the two upper rows exhibit the names of kings, arranged in the order of immediate succession, to perform a propitiatory act in favour of Ramses III. whose name and prænomen repeated occupy the whole of the last row. That the names in the two upper compartments present an immediate succession of kings, is rendered certain by other monuments which are particularly referred to by Rosellini. The names in this tablet are arranged in retrograde order from the right to the left, so that the fifty-first scroll, reckoning from the commencement, is the last of the series, whilst the fifty-second contains the proper name of that king whose prænomen is included in the scroll immediately preceding; and the first of the upper compartment on the right is of course the most ancient of all these kings. With the forty-first scroll commences the series of kings belonging to the eighteenth dynasty; the six preceding rings to number thirty-five contain the seventeenth dynasty of Theban Pharaohs, which was composed of the same number of kings; and in the five scrolls to thirty we should have read the names of the five kings who composed the sixteenth dynasty, if the characters had not been obliterated by time; but two of these have fortunately been preserved by other monuments. In the second compartment there still remain three scrolls (the 29th, 28th, and 27th), which, with the twenty-six of the first or uppermost row, form the names of twenty-nine kings, who must have preceded the accession of the sixteenth dynasty. The chronological Canon of Manetho does not give the number of kings who belonged to the fifteenth dynasty; it merely informs us that this dynasty was Theban, and lasted two hundred and fifty years. "Nel silenzio delle liste (di Manetone)," says Rosellini, "viene opportunissima la Tavola di Abydos, la quale io credo fuor d'ogni dubbio darci, in questi ventinove cartelli, l'esatto numero dei re che formarono la dinastia xv."[2] The learned Italian then states the grounds on which he was led to form this opinion; but if he be right in ascribing all these twenty-nine names to the fifteenth dynasty, it will follow that the average duration of each reign of that dynasty was only about eighty years and a half, which is considerably below the average duration of a reign in other dynasties of which complete lists have been given. This monument has suffered severe injury from time. In the first or uppermost compartment, twelve scrolls have been entirely and two of them partially effaced; in the second, eight have been totally obliterated; and in the third, three have been destroyed, four rendered illegible, and one partially injured. M. Klaproth has given it as his opinion that the Table of Abydos, instead of being read horizontally from right to left, should be read perpendicularly from right to left, in columns of two lines;[3] but although he has marked his copy of the monument, so as to indicate such a mode of interpretation, he has not ventured to exemplify his suggestion; and a very careful examination of the tablet has convinced us that this idea is erroneous. The repetition of the name and prænomen of Ramses (*Amun-mai-Ramses*), each thirteen times, in the third row or compartment, excludes such a supposition. But there can be no doubt whatever that the ordinary hieroglyphics in the two vertical columns on the left, containing the propitiatory act, are to be read perpendicularly, from the top to the bottom, beginning with the column towards the right.

Hasty, premature generalization formed the prominent defect of M. Champollion's mind. The importance of the monument discovered by Mr Bankes cannot well be estimated too highly; but we are not yet perhaps in a condition to appreciate its full value. M. Champollion, however, assuming a tone of confidence, which, on a subject of this nature, is worse than ludicrous, boldly laid it down, first, that his investigations had been confirmed, in the most remarkable manner, by the monument of Abydos; secondly, that, as far as these proceeded, they had established the accuracy of the royal chronological Canon of Manetho, preserved by Julius Africanus, Josephus, and Eusebius, a record which the learned in their ignorance had contemned as unworthy of credit; and, thirdly, that by his researches, taken in conjunction with the Table of Abydos, the Canon of the high-priest of Heliopolis[4] had

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[1] Well might Mr Bankes take as a motto the words of Iamblichus, Και το ἐν Αβυδῳ ἀποῤῥητον δειξοι, "And he will publish the secret of Abydos."

[2] "E del mio credo ecco le prove," says the learned Italian. "La dinastia xiv. comprende settantasei re di origine *Choiti*. Dico pertanto non esser probabile che, nei rimanenti ventinove cartelli del quadro di Abydos, consumato il numero, taciuto da Eusebio, dei re della dinastia xv., si possano comprendere ancora alcuni re della xiv. Poichè esprimendo questo quadro una specie di prighiera in favore di Ramses III. per ordine, o ad onoranza del quale fu scolpito un tal monumento, trovasi convenientissimo che a pregar s'introducano i soli re delle familie Tebane, che con lui ebber commune la patria e verisimilmente la discendenza. Nè sarebbe credibile che sovrani di una altra famiglia, qual fu la Choite, la quale lungamente interruppe il regno delle familie Tebane, cominciato fino dalla dinastia decimaprima, fossero ammessi in comunione di prece a favore di un re Tebano. Imperocchè il cangiamento delle dinastie fu quasi sempre operato, in tutti i tempi e presso tutti i popoli, per civili discordie e per violenze; e sempre partorì negli offesi, odj implacabili e lunghi. I re poi della dinastia xv. regnarono dugento e cinquant'anni. Dato pertanto un numero approssimativo di re per riempier questo spazio, non resterebbero, dei ventinove nomi della Tavola di Abydos, altro che pochi da ascriversi alla dinastia xiv. la quale ebbe settantasei sovrani. E perchè poi se qualcuno di loro in questo quadro fu ammesso, sarebbero tutti gli altri rimasti esclusi? I limiti della Tavola di Abydos non erano fissati da alcuna legge. La ragione pertanto non consente, o che i Choiti vi avessero parte, o che della lor numerosa famiglia alcuni pochi soltanto si ammettessero." (*I Monumenti dell' Egitto*, tom. i. part i. pp. 152, 153.)

[3] "Au lieu de lire ce monument horizontalement de droite à gauche, comme M. Champollion l'a fait, il ne nous paraît donc nullement douteux que ses lignes doivent se suivre perpendiculairement, et aussi de droite à gauche; c'est-à-dire, par colonnes de deux lignes." (*Examen Critique*, p. 173.) M. Klaproth adds, "Mon intention n'est pas de donner ici *une plus ample explication du monument d'Abydos*, mais je crois que *l'examen le plus leger* suffit pour démontrer que M. Champollion *s'est complètement trompé sur la direction dans laquelle ces lignes doivent être lues.*" (P. 174.) This is a great deal too *tranchant*, especially considering that it is not accompanied with a single example of the method of reading proposed, which, in fact, will on trial be found to be an entire delusion.

[4] This celebrated Egyptian priest, who was a native of Sebennytus, flourished in the reign of Ptolemy Philadelphus, about 260 years before our era. He discharged the functions of sacrificer, and keeper of the sacred animals, in the temple of Heliopolis, where

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been verified in almost every particular. But there are several weighty considerations, which render it impossible for us to acquiesce implicitly in these conclusions.

And, first of all, the Table of Abydos differs in many most essential particulars from the royal Canon of Manetho. In the eighteenth dynasty, for instance, Manetho has *three* queens, whilst the Table of Abydos has *not one*;[1] and other discrepancies of equal magnitude might easily be pointed out. But our objections strike deeper, and apply much more to principles than to details. The Table of Abydos, with which M. Champollion began his defence of the chronology of Manetho, is the foundation upon which his disciples and followers, including Rosellini, still in a great measure build. We do not object to Manetho, that if his chronology be right, that of Herodotus, Diodorus, and Eratosthenes must be wrong. Neither would we reject it because, if all his dynasties existed, and if he were accurate in every point, as M. Champollion contended, we might give the chronology of Moses to the winds. Truth is our first object; and if it had been proved to be on the side of the high priest of Phtha, we should not have hesitated a moment to join his standard. But the inconsistencies, not to say contradictions, of which this high priest has been guilty, and the improbable, nay incredible, stories which he relates, render his honesty questionable, and accuse his judgment of positive imbecility. Manetho, however, has had his supporters amongst chronologers. If the system of collateral dynasties, so ingeniously and at the same time so erroneously imagined by Marsham, should be revived, the assistance of Manetho might again be required. Even Fréret, whilst he contended against Newton, where Newton was not in his strength, did not disdain to invoke that assistance. It is not the less true, that the learned in general have condemned the chronology of Manetho as erroneous and untenable. But in M. Champollion's speculations we have all at once a new defence set up for the high priest of Phtha. By the results of a double discovery, that of the long-lost key of the Egyptian hieroglyphics, and the disinterment of a new monument containing a catalogue of the Egyptian kings, predecessors of Ramses III. the royal Canon has been replaced within the pale of history, and Manetho proved to have been accurate in all his statements.

But this assertion, though very confidently made, has not served to overcome our incredulity. Our objections to Manetho's chronology are numerous. It would be nothing to us if M. Champollion had found the Hermetic books from which Manetho affirmed that he had made his extracts. We do not deny that the latter copied documents which existed in his time, and which the zeal and success of future inquirers may, perhaps, prove to exist at present. We allow that he quoted from the records of the priests; but we dispute the authenticity of those records. We hesitate not to believe Herodotus when he tells us that the priests of Egypt communicated to him their archives. We doubt not the word of this honest, though somewhat credulous historian, when he says that the wooden images of three hundred and forty-one pontiffs, who had succeeded each other, from father to son, had been exhibited to him by the priests. We only contend that the archives were forgeries, and that the images, like some other images, were the fabrications of fraud and imposture. Three hundred and forty-one descents, in unbroken succession, would be nearly as great a miracle as any of those which the legislator of the Jews, in preparing the deliverance of his countrymen, performed in Egypt; and, even if this difficulty were overcome, all chronology would be disturbed by an hypothesis which, taking the ordinary average of human life, and allowing thirty-three years for a generation, involves a period of rather more than eleven thousand years. Nor is this all. It would seem that, in every separate district of Egypt, the priests had distinct and totally different records. How shall we account otherwise for the very different statements of Herodotus, of Manetho, of Eratosthenes, of the author of the Old Chronicle, and of Diodorus Siculus? The Greeks were clearly made the dupes of these falsified archives, and now the moderns are to be duped by them in their turn. But if the archives of the Egyptians plainly and positively contradict each other, as it is manifest from the testimony of the Greeks that they do; if the internal evidence of these records show that one is not more worthy of belief than another, as Sir William Drummond has most conclusively proved in the second volume of his *Origines;* to what purpose, unless it be to gratify curiosity, can they be reproduced at the present time? It would be no answer to this that M. Champollion had found the very records themselves which Manetho copied, and in which a lamb is said to have spoken in the time of Busiris; for we should still contend that these records, like those shown to Herodotus, and those explained to Diodorus Siculus, were mere fabrications forged by the priests of Egypt.

But whilst we distrust the authority of Manetho as founded on documents unworthy of credit, and contend that the coincidences discovered in the Table of Abydos cannot make that authority either better or worse than it was before, we are at the same time prepared to admit that M. Champollion has done much to prepare the way for a more extensive acquaintance with the monumental records of ancient Egypt. That he has pushed his conclusions a great deal too far, is undeniable; that when he adopted new opinions he seldom or never took the trouble to retract his old ones, or explain why he had abandoned them, is certain; that, in his interpretations, a sign sometimes represented one letter, sometimes another, has been indisputably established by M. Klaproth; and that too much still rests on his unsupported authority, is unfortu-

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he officiated as high priest of Phtha. Of his history of Egypt, which was written in Greek, some fragments only are extant. M. Klaproth seems to think that he has given the true names of the Egyptian monarchs, and that the series of Egyptian kings extracted from the monuments should generally be conformable to the catalogue given by Manetho. "On ne peut donc pas douter," says he, "qu'il ne nous ait conservé les véritables noms des monarques Egyptiens, et non pas, comme M. Champollion le dit, par simple hypothèse, des noms en partie vulgaires. Toute série des rois d' Egypte, qu'on parviendrait à extraire des monumens, à l'aide de l'alphabet phonétique, doit être généralement conforme à celles que donne Manéthon, au risque de paraître conjecturale à la critique. Les décisions arbitraires ne sont pas des preuves en matière d'histoire; ce qu'on y avance doit être démontré." (*Examen Critique*, pp. 171, 172.) This must not be mistaken. Manetho can only be considered as a standard in regard to what was believed or represented by the priests; in other respects, his statements must be liable to every objection which can be competently urged against the records from which he copied, or the authorities upon which he relied.

[1] "Allowing to M. Champollion," says Sir William Drummond, in a letter dated Naples, 27th April 1827, addressed to the author of this article, "that he reads and comprehends the hieroglyphical monuments of the Egyptians as well and as accurately as he does the *Moniteur*, or the *Gazette de Paris*, I should still hesitate before I admitted his testimony in favour of Manetho. I have not seen his book on the chronology of Egypt; but I have had in my possession a very accurate copy of the Table of Abydos, and I have examined it with the assistance of one of the most devoted of M. Champollion's admirers. That gentleman pointed out to me several names, which, he said, were those of kings of the eighteenth dynasty. But I inquired in vain for dates. Perhaps M. Champollion has since discovered them, and can tell us whether Josephus, or Julius Africanus, or Eusebius, be right, or whether all three are wrong." We suspect M. Champollion never made such a discovery.

Champollion, &c.

Champollion, &c.

nately beyond dispute. Considered in one point of view, he was little better than a brilliant empiric. Instead of cautiously working out his conclusions from fixed and settled premises, he dashed off conjectures which sometimes dazzled by their ingenuity, and at other times overcame all objections by their extreme felicity, but which, upon many occasions, were extravagant and empirical in the highest degree. In a subject beset with difficulties of the most formidable kind, he refused to admit that to him any obstacles were insuperable. Signs at one moment assumed a phonetic, at another a symbolic or ideographic power, as the occasion seemed to require, at the fiat of this hieroglyphical conjuror; when he happened not to find a Coptic word suited to his purpose, he scrupled not to invent one; and, with the strongest adverse facts staring him in the face, he persisted to the last in asserting the almost unlimited applicability of his alphabet. On several occasions, indeed, he acted as if he wished it to be believed that he read and comprehended hieroglyphical inscriptions, and even enchorial texts, with as much facility and accuracy as he did the *Moniteur* or the *Gazette de Paris.* Of this he gave a striking but most unfortunate exemplification in the affair of the papyrus in the collection of M. Sallier at Aix; an affair which, very soon after its occurrence, was placed in its true light before the public by the author of this article, in a journal which he then conducted. M. Champollion remained two days at Aix;[1] but it was not until the evening of the second day that a packet of papyri was placed in his hands. No matter for this; time and labour, which are so necessary to other men, the intuitive penetration of M. Champollion enabled him to dispense withal. In a single evening he ascertained the contents of all these manuscripts, and decided off-hand that the third, of which the first pages were wanting, was "a real historical treasure," containing the praises and exploits of Rameses the Great, or Sesostris, in the form of a kind of dithyrambic dialogue between the gods and the king. He also read, or rather pretended to read, the names of fifteen conquered nations, amongst which were mentioned the Ionians (*Iouni* or *Iavani*), the Lycians (*Louka* or *Louki*), and also the Ethiopians and Arabs; and he further informed us that the manuscript spoke of the chiefs of these nations, "led into captivity, and the tributes imposed upon their countries." All this was the work of one evening; all this, if M. Champollion may be in aught believed, was deciphered from a manuscript papyrus written in a character the signs of which are but imperfectly ascertained, in a language of which it is only known that the Coptic, in its various forms or dialects, bears to it nearly the same relation as the Italian or Spanish does to the Latin, or the modern to the ancient Greek.[2] Empirical pretension like this was surely more than sufficient to alarm the most credulous believer, and to excite suspicion and distrust in regard to all that he had actually accomplished.

In contradistinction to all this haste and empiricism, we shall here introduce the deliberately-expressed opinion of a sober and patient inquirer, formed after twelve years' laborious practice in the application of the phonetic system. "With regard to the translation of hieroglyphics," says Mr Wilkinson, "M. Champollion must allow, no one is yet sufficiently advanced in the language of ancient Egypt to enable him literally to translate an inscription of any length, or moderately complicated, though a general meaning may frequently be obtained. Time will no doubt do more, and we may hope to see this language interpreted with the same facility as many with which we have long been acquainted. But the steps must be slow and cautious; and the only mode of convincing those who still adhere to a contrary opinion, is to trust little to conjecture, or at least to state an uncertainty, whenever it exists; to admit and correct errors when discovered; and to settle a fixed rather than a temporary interpretation to the groups which will answer to their meaning whenever they occur."[3] These are the words of truth and soberness, and, we may also add, of honesty.

Much of this extravagance and folly, however, is to be attributed to M. Champollion's unlimited confidence in his alphabet, enchorial as well as hieroglyphical, and his consequent adoption of the principle that the Egyptian system of writing hitherto regarded as almost wholly consisting of symbols or emblems of ideas, was, on the contrary, composed of signs, a large proportion of which expressed merely the sounds of words in the spoken language of ancient Egypt. The consequence was, that he disregarded the tentative or experimental method of investigation, to which Dr Young was mainly indebted for the discoveries which have given such lustre to his name; believing his alphabet an instrument of general if not universal applicability, he shrunk from the labour of the exhaustive process of hypothetical induction, by which the values of entire *groups* may be determined, notwithstanding their constituent elements remain unknown; and to this unfortunate misconception, or rather limitation, may be attributed all the inconsistencies into which he was betrayed in endeavouring, by means of his alphabet, to interpret signs which are not alphabetical. It was not by the enchorial alphabet, for example, that Dr Young was enabled to translate enchorial manuscripts, which, in fact, are not reducible to any alphabet, except in proper names; it was the *words* or groups themselves which he translated, with now and then only a hint from a letter or two. In regard to the sacred characters, M. Champollion has no doubt rendered it highly probable that the phonetic signs were much more extensively employed than Dr Young had at first imagined; but, on the other hand, he pushed his system to an extravagant length, and neglected that method of investigation so successfully exemplified by Dr Young, which, when systematically applied, must ultimately lead to certain results, because it is founded on the principle of a constant correction of errors and accumulation of evidence.

Even in deciphering proper names, which are incontestably written phonetically, the difficulty experienced is great, and the risk of error often incalculable. This arises from the capricious and arbitrary manner in which they are written; sometimes from the left to the right, at other times from the right to the left, most frequently up and down; whilst the elements of one word are often thrown together pell-mell, in such a way that unless the sound of the word were somehow known beforehand, it would be absolutely impossible to dispose or arrange the characters representing it in correct order; and where this previous knowledge is wanting, the chance of error must be very

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[1] *Lettres écrites d'Egypte et de Nubie, en* 1828 *et* 1829, p. 21. "Cette trouvaille est immense," says he, "et ce manuscrit hiératique (the third) porte sa date à la dernière page. Il a été écrit, dit le texte, *l'an ix. au mois de Paôni*, du règne de Ramsès-le-Grand."

[2] No sooner did M. Champollion arrive in Egypt than he gave a fresh proof of his unhesitating decision. At eight o'clock in the evening he had an interview with the viceroy, who requested a translation of the inscription on the obelisks of Alexandria, which have three columns of characters on each face. The Frenchman at once undertook to gratify the viceroy's curiosity, and the whole, translated into Turkish, was delivered to him *next morning*.

[3] Wilkinson, *Topography of Thebes*, p. 57.

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great, and the probability will therefore be, either that a barbarous word will be involuntarily formed, or that one very different from that which is actually formed will be evolved. This observation applies rigorously to all the words of the Egyptian language, and even extends to such proper names of gods and kings as are not derived from the Greek or Latin, and the exact forms of which have not been transmitted to us by the ancient authors. Let us suppose, for example, that, by means of the phonetic alphabet, the following groups of literal characters are recognised in an inscription :

(1.) $A_{P}E^{K}_{L}$ (2.) $S^{T}_{M}T$

A person skilled in the interpretation of hieroglyphics would readily discover that No. 1 is the name of *Cleopatra*, which, in fact, is so written in a ring or cartouche contained in an inscription of Philae, published by Mr Salt; and that No. 2 is the name of *Toutmosis*, which is otherwise well known. But if this were not so, and if we were devoid of all extrinsic information or assistance, the doctrine of probabilities has no formula to exhaust the number of combinations amongst which an interpreter might fluctuate before discovering the true collocation; and, what is more, he could never be absolutely certain that he had discovered it at all.

Another and still more formidable obstacle to be surmounted, is the incomplete and imperfect manner in which the Coptic represents the ancient Egyptian, notwithstanding it may, in one sense (as we have already shown), be considered as a precious remnant of that language. Hence, supposing that the forms and values of the letters were perfectly determined, that their arrangement was well understood, that, in a word, we could spell syllables and distinguish words with as much certainty and precision as in the improved alphabets of the West, there would yet always remain one difficulty, over which genius itself could not triumph, namely, to discover the signification of the words, when it is not known by tradition or otherwise. Some of the misjudging admirers of M. Champollion have talked of his labours in deciphering the hieroglyphical inscriptions, as if he had been accustomed to read the most ancient legends with the greatest facility and certainty; and, from a number of circumstances, it is but too obvious that he himself evinced no disposition whatever to disturb this belief in the omniscience of his genius for interpretation. But the interests of truth require that so gross a delusion should be dissipated; and this cannot be better accomplished than by stating, as M. Klaproth has done, the real difficulties of the problem which he undertook to resolve, and tracing a clear line of demarcation between the province of rational inquiry, and the fantastical domain of archæological empiricism.[1]

In fact, the discoveries of M. Champollion apply only to a limited number of the hieroglyphical signs; that is, to proper names, and some other words incapable of symbolization, which are expressed by means of an alphabet in some measure resembling that of the Semitic languages, in which the consonants of words are written sometimes with only part of the vowels, and frequently without any vowel whatever. But in deciphering these names and epithets M. Champollion had an excellent guide in the lists supplied by the tables contained in the Egyptian Dynasties of Manetho and other ancient authors; he knew beforehand what he had to seek for, and he was not a person to be long in finding the precise thing which he wanted. But, notwithstanding this, he is by no means at one with himself as to the extent of his discovery. In the introduction to his *Précis*, he affirms "that his hieroglyphic alphabet applies to the royal hieroglyphic legends of *every epoch*, that the discovery of the phonetic alphabet is the true key to the whole hieroglyphic system, and that *at all epochs* the ancient Egyptians employed it to represent alphabetically the sounds of their spoken language." (P. 11.) But at the commencement of the eighth chapter of the work, he contradicts this dogma in the most explicit manner. "I admit," says he, "that we do not yet know *with any degree of certainty* whether the inscriptions and hieroglyphic texts, in which are found Egyptian words expressed phonetically, belong to the times of the Pharaohs (*remontent aux temps des Pharaons*), kings of the Egyptian race; or only to the Greek period, as the inscription of Rosetta, the obelisk of Philae, and the temples of Ombos and Edfou; or merely to the Roman period, as the obelisks of Albani, Borgia, Pamphilius, Barberini, that of Benevento, part of the edifices of Philae, and the temples of Esneh and Denderah." With respect to the alleged universality of the phonetic mode of writing "at *all* epochs," it is therefore evident, first, that M. Champollion flatly contradicts his own fundamental proposition; secondly, that this proposition being at variance with all that the ancient authors, particularly Clemens Alexandrinus, have stated respecting the different kinds of Egyptian writing, it cannot be established by their authority; and, thirdly, that M. Champollion has not only not demonstrated its truth, but that, in the actual state of our knowledge, such demonstration appears to be impossible.[1]

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[1] "L'intelligence que nous avons des monumens littéraires des Grecs et des Romains est venue jusqu'à nous par une tradition non interrompue ; nous possédons la plus grande partie des livres de ces peuples avec une suite d'explications et de commentaires destinés à en dissiper les obscurités, et pourtant à l'époque de la renaissance des lettres, que d'immenses travaux n'a-t-il pas fallu faire ? combien d'hommes patiens et laborieux ont usé leur vie pour achever d'éclaircir ce que les anciens textes présentaient à chaque pas d'embarrassant, d'obscur ou d'inintelligible pour les modernes ? Quand une inscription grecque se présente à nous pour la première fois, quelle habitude ne faut-il pas pour la lire ; la restituer, en expliquer le contenu, développer les circonstances auxquelles elle se rapporte ? La langue que de profonds philologues ont si bien approfondie est ici la moindre difficulté, mais les choses, les faits, les particularités de date ou de localité, les institutions, les titres des magistrats, les usages, les préjugés, les opinions religieuses ; tout enfin n'exige-t-il pas de la part de nos savans une rare application et une sagacité merveilleuse ? Cependant que de travaux préparatoires n'a-t-on pas faits pour diminuer leur peine ? que de recherches, de tables, de dictionnaires n'a-t-on pas accumulés depuis trois siècles pour éclairer tout ce qui fait partie du domaine de l'archéologie ? En Egypte, au contraire, une vaste solution de continuité, un abîme immense sépare les événemens d'autrefois de la critique des tems modernes. *Toute la littérature a disparu avec la religion, la philosophie, et le système entier de la civilisation ; les livres, s'il y en eut jamais, ont été complètement anéantis ; les papyrus, que quelques personnes peu éclairées prcnnent pour des livres, n'offrent qu'une perpetuelle répétition des mêmes formules toujours relatives au même sujet, la mort et ses consequences.* Les inscriptions hiéroglyphiques sont les seuls livres que nous aient légués les Pharaons ; mais là se présente à l'instant cette double difficulté, insoluble si l'on ne parvient à la diviner ; *tout est inconnu dans ces inscriptions la langue et les faits, l'écriture et le fond des choses.* On arriverait à l'intelligence du contenu si l'on avait à sa disposition l'explication des mots, et *vice versa* on reconnaîtrait aisément la valeur des signes si l'on savait d'avance le sens qu'ils représentent. Mais pour opérer ce dernier prodige, il faudrait recréer à-la-fois l'Egypte des Pharaons avec son système idolatrique, les noms des dieux et de toutes les choses sacrées, les détails du culte et toute la série des opinions philosophiques, la vie civile avec ses innombrables particularités, et, par-dessus tout cela, la prononciation matérielle de tous les mots qui s'y appliquaient, leur synonymie et leurs nuances, et la valeur spéciale d'une foule d'expressions, de figures, de métaphores, d'emblêmes, d'attributs, que l'usage chez une nation vivante introduit, renouvelle et modifie sans cesse. Ce n'est pas la critique humaine, *c'est l'intuition de la divinité* qui pourrait opérer un tel miracle ; et l'on voudrait qu'un savant, de quelques facultés qu'on le supposât doué, eût fait seul, en peu d'années, ce que la raison et le bon sens démontrent impossible à des générationes littéraires qui se succéderaient pendant des siècles."

We could have wished to follow up these observations by stating concisely the results of the searching analysis by means of which M. Klaproth has reduced to their real dimensions the discoveries of M. Champollion. But after what has already been said, we must content ourselves with stating generally, that different and often incongruous values are arbitrarily assigned by him to the same character, without any previous notice or explanation; that the image of an *eye*, for instance, which was originally set down as a phonetic sign of S, has been successively employed to represent A, E, and O; that, in numerous other instances, changes still more arbitrary have been made; that we are left in equal ignorance of the process by which the original values were pretended to have been ascertained, and of the reasons which induced the author to abandon them; that he attributes values to signs which are not contained in his alphabet, and of which no account or explanation is given anywhere else; that he is frequently betrayed into incongruities and inconsistencies which impeach his judgment, and would even warrant a suspicion of bad faith; that in the interpretation of ideographical characters or symbols, he adopted conjectures and fancies of his own, which, however ingenious, are wholly unsupported by evidence, or even by probability; that, for instance, the symbolical group which, as far as page 265 of his second edition, is rendered "the goddess *Saté*," becomes suddenly converted into *Tmé*, and this name continues to the end of the work, though, in the plates, the goddess appears under the name of *Smé;* that changes of a similar description occur in many other words, and almost invariably without any previous intimation; and, lastly, that not a few of his pretended discoveries are mere conjectures and imaginations, sometimes exceedingly ingenious, seldom altogether extravagant, but, in as far as evidence is concerned, not more rational nor better founded than the cabbalistical reveries of Kircher or the fanciful vagaries of Palin. For the details and demonstrations of these anomalies, however, we must refer to the *Examen Critique* itself, one of the most masterly works of criticism that has yet appeared on the subject of which it treats, and which is well deserving of the most attentive perusal.

It now only remains, under this head, to notice the French and Tuscan expeditions to Egypt; the former undertaken at the urgent solicitation of M. Champollion, who, as early as the month of April 1827, had digested the plan of such an enterprise, and both having for their common object a re-examination of the monuments, as well as a more extended application of that method of interpretation which had originally been divined in this country, but which was subsequently enlarged and improved in France. The discovery of the phonetic alphabet, generally regarded on the Continent as the basis of the graphic system of Egypt, promised to the historical sciences an ample harvest of new facts, the more interesting and important, as these might perhaps fill up with some degree of certainty the large blanks in the first pages of human annals. But, to answer this expectation, it became indispensable that the new lights which had been acquired on the subject of hieroglyphical writing should be applied to the innumerable inscriptions engraved on all the monuments, public and private, of Egypt and Nubia; and it was with this special object that the governments of France and Tuscany appointed each a commission, the former directed by M. Champollion, and the latter by Signor Rosellini, professor of history and antiquities in the university of Pisa. With M. Champollion were associated A. Bibent, architect, and Nestor l'Hôte, Salvador Cherubini, Alexander Duchesne, Bertin the younger, and Lehoux, as draughtsmen; with Professor Rosellini, Gaetano Rosellini, architect, Dr Ricci, Giuseppe Angelelli, and Raddi, professor of natural history, with an assistant. M. Champollion set out from Paris on the 16th of July 1828, reached Toulon on the 24th, and set sail for Egypt on the 31st of that month, accompanied by the members of the Italian commission. During the remainder of 1828, and the whole of 1829, the members of both commissions were unremittingly occupied in exploring the antiquities scattered along the valley of the Nile, from the Mediterranean as far as the second cataract, and in accumulating those treasures which, now that Champollion is no more, Signor Rosellini is giving to the world in his splendid work, entitled *I Monumenti dell' Egitto et della Nubia*, of which a considerable portion has already (1835) appeared, accompanied with engravings equally remarkable for their accuracy and beauty.

The indefatigable travellers, never once losing sight of the determinate object of their enterprise, and exploring, one by one, the monuments still extant on both banks of the river, or on the different points of the valley of the Nile, transferred to their portfolios all kinds of positive documents furnished by each ruin. Every bas-relief and every inscription, whether establishing an historical fact, a point of religious belief, or a usage of ordinary life, was designed or copied with the most scrupulous care; and in the work of Signor Rosellini these bas-reliefs have been reproduced by faithful designs, with all the details and colours exhibited by the originals, as often as this appeared necessary either to illustrate the subject, or to convey a just idea of the compositions of art which adorn the monumental remains of ancient Egypt. The result has been an accumulation of not less than fifteen hundred designs, together with a particular description, drawn out on the spot, of every monument in Egypt and in Nubia, containing the subject of each bas-relief, the detail of the decorations, which are always significant, and copies of the accompanying inscriptions, whenever the texts presented any subject of historical interest.

In a climate like that of Egypt, the fatigue incident to such an undertaking must have been trying even to the most robust constitutions; and it is not to be wondered therefore that some of the travellers should have sunk under it.[2] M. Champollion died soon after his return to

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[1] It may be proper to state here a fact, which seems to be decisive of the question. The phonetic alphabet consists of about *a hundred and thirty-four* characters, more than the half of which are purely conjectural. But supposing the whole to have been completely ascertained, the absolute number of distinct hieroglyphics on the monuments is, according to Champollion's computation, 864, whilst Zoega makes it 958; and if from the former we deduct 134, there will remain 730 signs, the greater part of which, it is certain, *are not employed phonetically*, and their real values as yet altogether unknown. With this fact before him, it is not easy to conceive how M. Champollion could venture to affirm that his phonetic alphabet applied to the royal hieroglyphical legends of *all periods;* that it was the *true key* to the *whole* hieroglyphical system; and that the ancient Egyptians employed it, *at all epochs*, to represent alphabetically the sounds of their spoken language.

[2] M. Bibent, the architect, was obliged, from bad health, to take leave of his associates amidst the ruins of Memphis, and to return to France, where he soon afterwards died. Professor Raddi died at Rhodes, when on his way back to Europe. The assistant of the latter had sailed for Leghorn some months before, but sunk during the voyage under the effects of the fatigue and labour to which he had been exposed. Lastly, Dr Ricci had the left side of his body paralysed in consequence of the bite of a scorpion at Thebes.

France, though not until he had prepared a Hieroglyphic Grammar, which will doubtless contain the ultimate conclusions established by himself and his learned associates; and it is to Signor Rosellini that we must now look for the exposition and illustration of all that was collected during the time that the commissions were occupied in exploring, designing, and describing the monuments of Egypt and of Nubia. Nor, judging from the portion which has already appeared, could the work of digesting and arranging the materials thus accumulated have fallen into abler or more competent hands. The designs are in every view worthy of the subject, and will not suffer much by a comparison with those contained in the French national work, in point of execution, whilst in all other respects they are greatly superior. As to the literary part of his undertaking, it is composed in a spirit of perfect candour and liberality, evincing not only the acquirements, but also the accuracy, of an accomplished scholar, and uniting to great erudition the utmost anxiety to render justice towards all his colleagues in this branch of inquiry. With regard to M. Champollion's *Lettres écrites d'Egypte et de Nubie en* 1828 *et* 1829, it would have been better for his fame perhaps had these hasty productions never appeared. Signor Rosellini attributes the publication and reprint of the *Lettres* to a speculating bookseller in Paris; and states, what is no doubt the truth, that M. Champollion, if he had lived, would have altered and retracted much that is contained in them. But it is nevertheless obvious that they were originally intended for publication; they were evidently written for effect, to keep up the excitement in favour of his project; in short, they were calculated for the meridian of Paris.

VIII. SYSTEM OF SPOHN AND SEYFARTH.

The conflicting results at which both ancient and modern writers had arrived respecting the contents of the Egyptian texts, as well as the kind and description of characters in which these had been expressed, were well calculated to stagger an ordinary reader, and to seduce him into complete scepticism as to the possibility of the hieroglyphical inscriptions being ever deciphered and interpreted. According to Horus Apollo, these mysterious writings contained obscure indications of things sacred and profane; according to Clemens and Plutarch, moral sentences; according to Hermapion, as quoted by Ammianus Marcellinus, the praises of kings; according to Kircher, cabbalistic, metaphysical, and theosophistical dogmas; according to Pluche, matter connected with meteorology, astronomy, and the division of time; according to Denon, the rules of husbandry; and, according to the author of the work *De l'Etude des Hiéroglyphes*, a version of the psalms of David. Prior to the researches of Dr Young, nothing deserving the name of investigation had been attempted, and one bold or fanciful conjecture was merely displaced by another perhaps still more extravagant. It was therefore high time that the subject should be either abandoned as hopeless, or that conjecture and hypothesis should give place to rational inquiry conducted on ascertained or demonstrable principles. Dr Young felt this, and, starting from a point entirely new, succeeded, by means of collocation, comparison, and tentative or experimental investigation, in fixing the values of certain characters and groups, and, generally, in tracing out the line or direction which inquiry ought to pursue. M. Champollion followed close in his footsteps, and, enlightened even by the errors of his predecessor, unfolded a method of interpretation, the soundness of which, at least within certain limits, has been established by the truth of the results it has evolved.

But not long after these interesting discoveries had been made known to the world, a system was imagined in Germany which, as far as we are able to comprehend it, seems to proceed on assumptions at once ingeniously original and demonstrably unsound. This system was first obscurely revealed in the work of Spohn *De Lingua et Litteratura Veteris Ægypti*, and afterwards more fully expounded in the splendid work of Professor Seyfarth, entitled *Rudimenta Hieroglyphices*,[1] which appears to have been favourably received by his countrymen. Spohn died young, without completing his investigations or maturing his system; but Seyfarth undertook to do both, and, if we may credit a writer in the Leipsic Journal, he has succeeded so well that, besides establishing the truth of his own method of interpretation, he has demonstrated the utter fallacy of the *pretended* discoveries of Dr Young and M. Champollion. The investigations begun in England, and so successfully prosecuted in France, were by no means calculated to find favour with the Germans, who seem to have a natural distaste for what may be acquired without labour or understood without effort; and hence the very simplicity of the principles upon which these inquiries were conducted, served to confirm their habitual prejudices, and to fortify their understandings against the conviction naturally arising from the results actually obtained. Dr Young's researches had no flavour of mystery about them; and those of M. Champollion were communicated in language singularly remarkable for the most transparent perspicuity. The lovers of the profound, therefore, saw to the bottom at once, and because they did so, they concluded that the waters were shallow. The question at issue, however, is not so much one of erudition as of evidence, of which the German scholars and orientalists are not the only competent judges; and we think we shall be able to show that if Young, Champollion, and others who have followed in their footsteps, have done but little, Spohn, Seyfarth, and their disciples, have literally done nothing at all.

M. Seyfarth modestly professes himself to be a mere expounder of the doctrines of Spohn, and candidly admits his obligations to the work of that distinguished scholar, not only for the theory proposed, but for the greater part of the materials by which it is illustrated. "Quod sibi videtur hic libellus rationem tradere, qua hieroglyphica scripta legenda sint; id cujus nomine adscribi debeat, tacere, maxime impium et invidiosum esset. Scilicet Spohnius, vir immortalis meriti, *omnia præparavit*, quæ ducunt ad intelligentiam etiam hieroglyphicorum. Quodsi concessum ei fuisset, pergere in vita, quam ingressus erat, plura Ægyptiorum scripta, inspicere, perlegere, inter se comparare, quod mihi contigit, non potuisset, sed debuisset leges etiam invenire, quibus hieroglyphica scriptura constat. Quæ quum ita sint, *velim hæ schedæ accipiantur, tamquam placita Spohnii*, vel tamquam fructus, qui ex segete ejus prodierunt, quem instauratorem litterarum Ægyptiarum veneramur."[2] The learned professor deserves credit for the manly candour of this avowal, as well as for the methodical distinctness with which he has stated the principles and doctrines of his master; and all those who take any interest in Egyptian literature can scarcely fail to be pleased with the very beautiful lithographic tables which adorn his *Rudimenta Hieroglyphices.* But here, unfortunately, our commendation must stop. The theory invented by Spohn and expounded by Seyfarth appears to us to proceed upon an erroneous assumption, to involve in its explication glaring absurdities, and to be incapable of ever leading to any true results.

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[1] Gustavi Seyfarthi Prof. Lips. Rudimenta Hieroglyphices. Accedunt Explicationes Speciminum Hieroglyphicorum, Glossarium, atque Alphabeta; cum xxxvi. tabulis lithographicis. Lipsiæ, cIↄIↄcccxxv. in 4to.

[2] *Rudimenta Hierogl.* Introduct. § 2. In a note to the following section the author says, "Porro *integras inscriptiones demoticas* primus (Spohnius) interpretatus est." But of this bold assertion no proof whatever is produced; and even if Spohn had interpreted, in his own way, entire demotic inscriptions, his system is so groundless and untenable, not to say visionary, that a question of *priority* could not possibly be raised between him and Dr Young. The tentative method of interpretation so successfully exemplified by the latter has nothing in common with the imaginative transcendentalism of Spohn, and the methodical absurdity of Seyfarth.

The fundamental principles of the Spohnian theory are, *first*, that the hieroglyphical language is a *sacred dialect*;[1] and, *secondly*, that the hieroglyphical characters are not *letters*, but only *symbols* of letters.[2]

The first of these propositions, which is professedly founded on a statement of Manetho, quoted by Syncellus, is thus explained by Professor Seyfarth: " E verbo *dialecti*, quo linguam hieroglyphicam veteres insigniverunt, satis clarum est, hanc neque convenisse cum vulgari, neque diversam plane fuisse a Coptica. Differt autem *dialectus sacra* a Coptica, partim elementis seu *verbis*, partim *legibus grammaticis*. Inter dialectum autem *sacram et profanam* veterem Ægypti omnia intersunt, *quibus differt recentior oratio a veteri*, nationis cujusque magis subinde artium et litterarum humanitate eruditæ." Now, according to this definition, the language of Chaucer should be denominated the " sacred dialect" of English, in contradistinction to the " profane" dialect by which it has, in the progress of improvement, been displaced; and a similar title of honour should be conferred on the antiquated phraseology of our venerable countryman Gawin Douglas. But how, we would ask, are we to detect the existence of this " sacred dialect," or elder form of the Egyptian? All that remains of the ancient language of Egypt is preserved in the Coptic, of which there are still extant two dialects, the Memphitic and Sahidic, with a few words belonging to a third, called the Bashmouric. But of these three dialects the *most ancient* is undoubtedly the Bashmouric, of which scarcely a vestige can now be discovered; and hence the " hieroglyphical language" or " sacred dialect" of Spohn and of Seyfarth is a perfect nonentity. Not to dwell upon this, however, we may observe, that there is no such thing known as a " hieroglyphical *language*," the term " hieroglyphical" being applied only to a particular *method* of writing, and never to the *thing written.* The proposition of Seyfarth, therefore, involves an assumption which is contrary to the fact, and at the same time amounts nearly to a contradiction in terms. Secondly, since hieroglyphical inscriptions continued to be executed as late as the reign of Antoninus,[3] if the " sacred dialect" or elder form of Egyptian was alone employed in these texts, it follows that an antiquated dialect still remained in use, and co-existed with the more modern form by which it had been displaced. Thirdly, if one dialect was employed in hieroglyphical writing, it is at least equally probable that another was used in the hieratic, and a third in the enchorial. Lastly, Spohn and Seyfarth have equally misunderstood the statement of Manetho, quoted by Syncellus, in which the " sacred dialect," whatever it may have been, is expressly distinguished from the " hieroglyphical characters" which had been written in the time of Thoth, the first Hermes, " and which were taught after the transition from the *sacred dialect* to the Greek language." So much, then, for the first proposition, in support of which no proof of any kind is produced by Professor Seyfarth.

But the main pillar of the theory is the second proposition, namely, that the hieroglyphical characters are *not* letters, but *symbols* of letters. Remove this, and the whole fabric must at once fall to pieces. A letter is a character or symbol, representing either an elementary sound, or the simplest combination of elementary sounds. But what are we to understand by the symbol of a symbol of a sound? The symbol of a sound either represents a particular sound, or it represents nothing at all. If then a hieroglyphic be *not* a letter, but only the *symbol* of a letter, it follows that it is the representative of a representative, yet is neither that which it represents, nor the sign or symbol of the thing represented, namely, sound; in other words, it is merely the shadow of a shade. This fundamental principle or proposition, therefore, when taken by itself, would seem to be rather a *jeu de mots* than a statement of an elementary truth. But Professor Seyfarth labours to make himself intelligible; and, having narrowly examined his exposition, we shall endeavour, as distinctly as possible, to state the substance of his doctrine, or rather that of his master Spohn.

He admits that in every country, not excepting Egypt, the first attempts at writing consisted in rude delineations of material or physical objects; that, from the difficulty and inconvenience of this practice, men were soon led to abridge those delineations by putting, *per synecdochen*, a part for the whole, and by other devices; that as this pictural tachygraphy was incapable of representing changes of relation and qualities, as well as the sentiments and passions of animated beings, it soon came to be enriched with *symbols* strictly so called, that is, with arbitrary marks or characters employed to represent those ideas which had no sensible archetypes in nature; that, in the progress of time, all traces of connexion between the sign and the thing signified would be lost, and the characters, being applied to the spoken language, would become the representatives of words, or portions of words, as in the Chinese; and, lastly, that from accident, or the fortunate contrivance of a superior mind, some of these known characters would at length be appropriated to represent the elementary sounds of the spoken language, or, in other words, an alphabet would be invented and introduced. But, whilst he does not, and indeed cannot, dispute this gradual progression of the human mind from picture-writing to an alphabet, the first and greatest of all inventions, the finest result of the finest analysis, Professor Seyfarth at the same time contends that the Egyptians had passed all these different stages *before* they began to fabricate hieroglyphical characters; that, amongst them, alphabetical signs, instead of being the eventual offspring of picture-writing, through the intervention of kuriological and tropical writing, were in reality the parent of both these forms, primary as well as secondary; and that, in Egypt, *after* attaining the simplest and last refinement in the art of writing, they retrograded to the imperfect, obscure, and cumbrous methods which in every other country disappeared as soon as an alphabet had been invented.

According to Spohn and Seyfarth, the Egyptians as well as the Greeks received letters from Phœnicia.[4] But, if we are to give credit to these authorities, the former peo-

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[1] This notion is founded on a statement of Manetho, quoted by Syncellus, *Chronograph.* p. 40, Paris, 1652, which is as follows: Μανεθω χρηματισας ἐκ των ἐν τῃ Σηριαδικῃ γῃ κειμενων στηλων, ἱερᾳ, φησι, διαλεκτῳ και ἱερογραφικοις γραμμασι κεχαρακτηρισμενων ὑπο Θωθ, του πρωτου Ἑρμου, και ἑρμηνευθεισων μετα τον κατακλισμον ἐκ της ἱερας διαλεκτου εἰς την Ἑλληνιδα φωνην, κ. τ. λ.

[2] The real author of this fancy is Cosmas Indicopleustes, a geographical writer of the sixth century, who gravely reports that Moses learned γραμματα ἱερογλυφικα, μαλλον δε συμβολα γραμματων. (*Cosmograph.* p. 161.)

[3] A learned countryman of Professor Seyfarth's, Dr Sickler, wrote a book to prove that the language concealed under the hieroglyphics is Hebrew, or, at least, a form of speech composed of the different Semitic dialects.

[4] " At *demonstrari* potest Ægyptios litteras accepisse a Phœnicibus, p. 15. The learned professor, however, has not thought it

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ple must have made an extraordinary use of this invaluable acquisition. Instead of attempting to improve the invention, or to apply it directly to the purposes of writing, which it was so eminently calculated to facilitate, they did exactly the reverse, and immediately commenced embellishing, varying, and multiplying these elementary characters, as fancy or caprice happened to dictate. "Licuit cuivis calamo, cuivis cestro, variare hieroglyphica." Such is the broad and unqualified statement of M. Seyfarth; but how these arbitrary variations were to be rendered intelligible to any but the scribe, painter, or sculptor by whom they were executed, or even to *him* after the lapse of a considerable interval of time, the learned professor has not condescended to explain. It would seem, indeed, that nothing short of inspiration itself could enable any one to read and understand writing formed and executed in the manner here described. Yet the three kinds of Egyptian writing, now perfectly distinguished, were, it seems, the fortuitous results of this most extraordinary procedure, first imagined by Spohn, and afterwards zealously contended for by Seyfarth.

Clement of Alexandria informs us that those who were educated amongst the Egyptians learned three sorts of writing; firstly, the *epistolographic* or demotic; secondly, the *hieratic;* and, lastly, the *hieroglyphic.*[1] But Spohn and Seyfarth take it for granted that the *order of instruction* here indicated is also the *order of invention;* and, accordingly, they lay it down as a principle that the demotic is the basis upon which the whole superstructure has been reared, the original stem which the fancy or caprice of writers in time covered and adorned with a variety of branches. In plain terms, their notion is, that the hieratic has been generated by variations on the epistolographic or demotic, and the hieroglyphic by similar or analogous variations on the hieratic; and they contend that all these variations are *not* letters, but only *symbols* of letters (συμβολα γραμματων). Taking M. Seyfarth's assumption, therefore, that the original alphabetic characters were twenty-five in number, and supposing also with him, that each of these underwent thirty variations, in order to constitute the total amount of demotic characters, that the demotic underwent an equal number to form the hieratic, and the hieratic again an equal number to produce the hieroglyphic; we shall have 25 × 30 × 30 × 30 = 675,000 "symbols of letters," or 27,000 variations of every one of the twenty-five original alphabetic characters. This is M. Seyfarth's own calculation; and it is inconceivable how it should have failed to convince him of the utter extravagance and absurdity of his whole system. No critic, however ingenious or malicious, could have more effectually exposed it to ridicule than he has himself done. The total number of the Chinese characters, which are combinations of little more than two hundred elementary "keys," does not much exceed the number of variations (27,000) here supposed to have been made upon one original alphabetical character; yet, of all the languages, living or dead, that of China is the most difficult of acquisition, and to master it fully, so as to be able to write it with tolerable facility, is even to a native the work of half a life-time. But what shall be said of a language the graphic system of which must, upon this hypothesis, have embraced nearly 700,000 distinct characters, called "symbols of letters?"

There are data, however, from which a more direct and conclusive refutation may be deduced. Bruce, Zoega, and Champollion have each given approximate computations of the absolute number of hieroglyphics. From a somewhat superficial survey of the temples and other edifices of Egypt, Bruce reckons only 514; from a careful examination of the obelisks at Rome, and the monuments preserved in the museums of Italy, Zoega makes out 958; and, from a painful analysis of all the inscriptions which have been copied into the French national work *Déscription de l'Egypte,* and other publications, M. Champollion reduces them to 864. By taking a mean of the two last computations, 911, we shall probably make a pretty close approximation to the truth. If this, then, be added to the known heratic and demotic characters, it will be found that the total number of characters, in the three different kinds of Egyptian writing, does not exceed, if in truth it amounts to, 1200. Suppose it, however, 2000, or, if you will, 20,000, and still M. Seyfarth's case will not be improved; for, even on the last supposition, which is at least *ten times* more than the truth, the learned professor will have to account for 655,000 "symbols of letters," of which no trace can be discovered on the monuments.

Having thus unfolded the general principles of the theory of Spohn, M. Seyfarth next proceeds to classify the hieroglyphics. And these he divides into *emphonic, symphonic,* and *aphonic.* The *emphonic* are those which "suo ambitu integram litteram hieraticam pluresve describunt," and which "sistuntur pro situ litterarum in iis latentium, et ratione rerum quas significant." They are susceptible of transposition, variation, and abridgment, and may be affected by defective or superfluous writing, permutation of vowels or consonants, and by conjunction. The *symphonic* are those "quæ nonnisi cum aliis, sive singulis sive plüribus, elementa verborum vel litteras exprimunt;" that is, a sort of enclitic "symbols," significative only in combination with emphonics. They are of hieratic origin, but occur more frequently in the hieroglyphic than in the hieratic characters; and they are affected by permutation, position, order, conjunction, omission, and sejunction. The *aphonic,* "diversa sunt a litteris, magisque ad picturam quam scribendi artem referri debent;" in other words, they represent, either directly or metaphorically, not letters, but ideas, and are accordingly not phonetic, but ideographic symbols. They are divided into *mimetic,* "ipsæ rerum imagines;" *tropic,* "quæ imagine aliena rerum notiones exprimunt;" and *allegoric,* "quæ alia, quam quæ proxime significentur, innuunt." And this is all the information which the learned professor has vouchsafed to afford us respecting the system which is said to have enabled Spohn to decipher entire demotic inscriptions, and to achieve other wonders in

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necessary to give any demonstration to prove that the Egyptians received letters from the Phœnicians, but has contented himself with a reference to Zoega (*De Origine et Usu Obelisc.* p. 550), who, unfortunately for him, contends strenuously that the invention of letters is due, *not* to the Phœnicians, but to the Egyptians; an opinion which is supported by a great preponderating weight of ancient testimony, and by the concurrence of the most learned men of modern times. (See particularly, Plato *in Phileb.* p. 157, and *in Phædr.* p. 213; Cicero, *De Natur. Deor.* lib. iii. c. 22; Pliny, lib. vii. c. 56; Arnobius, lib. iv. p. 135: Diodorus Siculus, p. 14; Sanchoniathon apud Euseb. *Prepar. Evangel.* lib. i. c. 9, p. 31; Plutarch, *Sympos.* lib. ix. 9, 3, p. 738; Jablonski, *Pantheon Ægypt.* lib. v. c. 5, p. 161 *et seqq.;* Zoega, *De Orig. et Usu Obelisc.* p. 475.)

[1] In the appendix to M. Seyfarth's work, there is a very learned criticism, by Professor Weiske of Leipsic, on the celebrated passage of Clemens, in which, speaking of the perplexing πρωτα στοιχεια, he remarks, "At si noster (Clemens) τα πρωτα στοιχεια *initiales* voluisset esse verbi cujusque *litteras,* haud dubie του ὀνοματος ἑκαστου addidisset." Professor Weiske himself, resting on the authority of Aristotle's definition of the word στοιχειον (στοιχειον μεν ὀυν ἐστι φωνη ἀδιαιρετος . . . συνετη. *De Art. Poëtic.* c. 20), is inclined to render τα πρωτα στοιχεια "*simplicissimos sonos,* qui litteris exprimuntur;" a version which does not differ so widely from that of M. Letronne as he seems to imagine. For as the letters expressive of the *simplest* sounds were also the *most ancient,* it follows, even from M. Weiske's version, that τα πρωτα στοιχεια may equally mean τα παλαιοτατα—τα ἐξ ἀρχης γραμματα δια Καδμον ὀνομασθεντα.

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this marvellous region. We are not told in what way, or by what process of investigation, the trim classification here proposed was discovered; no examples are produced in illustration of any of these classes, or to enable us to distinguish an emphonic from a symphonic, and both from an aphonic hieroglyphic. Every thing is left in the uncertainty and obscurity of vague generality; and after being informed that the hieroglyphical characters are the "symbols of letters," and nothing more, we learn, to our astonishment, that there is nevertheless a class of these characters (the *aphonic*) which consists, *not* of "symbols of *letters*," but of symbols of *ideas*. In short, there is neither sense nor coherence in the system itself, or in any explanation which can be given of it, even by so learned an expositor as Professor Seyfarth.

The plates, or rather hieroglyphical tables, which accompany Professor Seyfarth's work, though very beautiful specimens of lithography, are constructed on a principle which it is not easy to understand; unless, indeed, it was his object to involve the subject in impenetrable mystery. But upon this supposition they are undoubtedly masterpieces of skill and ingenuity. The order of the hieroglyphics on the monuments is totally disregarded; an arbitrary collocation is introduced; imaginary or fantastical values are assigned to detached characters; and no attempt whatever is made to bring this pretended system to the test of experiment, by applying it directly to the interpretation of Egyptian texts, whether enchorial, hieratic, or hieroglyphic. It is no doubt true that M. Seyfarth has ventured to give some scraps of translation, which are set forth with all the learned parade of the Chaldaic letters. But, in the first place, we are left completely in the dark as to the method of interpretation pursued by him; and, secondly, the versions actually given are either absolute nonsense, or, where they disclose a glimpse of meaning, are evidently mystifications of M. Champollion. A single example will be sufficient to establish the truth of what is here stated. M. Champollion renders a certain hieroglyphical legend thus: "Soutien de l'Egypte, dieu fils d'un dieu, soutien de l'Egypte, Horus, manifesté ou engendré par ou d'Osiris, engendré d'Isis déesse." But, according to Seyfarth, the meaning of the legend is, "Venias age, Isis, venias age, Ægyptiorum generator in Ægyptum *deus*;" or "Venias age, Isis venias age, Ægypti generator in Ægyptum generator;" which is merely a mystification of M. Champollion's version, with an absurdity peculiar to itself, in the first form, namely, that of calling Isis, the sister-spouse of Osiris, a *god*. It would be easy to multiply examples of the same description, and, moreover, to show that, where the learned professor has not the aid of a prior version to guide him, the obscurity thickens into impenetrable night, unilluminated even by a solitary flicker of sense or intelligence sufficient to make the darkness visible.

Professor Seyfarth, unmindful of his obligations to the system which it is his object to overthrow, contends that the interpretations of M. Champollion cannot be genuine, because, in the hieroglyphical spelling of proper names, sometimes one vowel is omitted, and sometimes another. But he forgets that such is the practice in almost all the oriental languages; that systematic accuracy was scarcely to be expected in writing foreign names and words; that it is often exceedingly difficult to transfuse the sounds of one language into another; that the workmen employed in sculpturing the hieroglyphics were most probably ignorant of the language to which the proper names in question belonged; and that their natural impulse must have been to shorten or abridge their labour as much as they possibly could. The learned professor also forgets that, according to his own system of arbitrary variations, no two persons would write the same word in the same way, or in precisely the same sort of characters; and that, whilst such differences or discrepancies as those he has referred to exist in all languages, without in the least degree affecting the certainty of the mode of writing, or materially obscuring the names thus variously spelled, the number must, on his system, have been almost infinite; and hence, if there be any force in the objection he has raised, it must bear principally against his own hypothesis. In every view, then, we consider the doctrine of Spohn and Seyfarth as wholly untenable. It rests on assumptions which are either false in principle or erroneous in fact; it requires, in its exposition, the admission of elements totally inconsistent with these assumptions; and it leads to results, or, at least, results are deduced from it, which have either no meaning at all, or one which is absurd and extravagant.

Acrological Hieroglyphics.

IX. ACROLOGICAL HIEROGLYPHICS.

The discovery of what M. Klaproth has termed *acrological hieroglyphics* belongs to the Chevalier Goulianoff. Having adopted the idea that τα πρωτα στοιχεια, in the passage of Clemens, so often referred to, means *the initial elements* of the names of objects, the chevalier imagined a system of writing according to which the same sign may equally well represent all objects the names of which commence with the same letter, as *cat*, *cabin*, *capstan*, *coast*, *caravel*, *castanet*; *duke*, *dunce*, *ditch*, *day*, *doom*, *devil*. The first intimation of this discovery given to the world was contained in a letter which M. Klaproth addressed to M. de Goulianoff; but the ironical tone which pervades this composition was calculated to excite a suspicion that the object of the learned author was rather to banter his correspondent, than to evince a frank and sincere adhesion to a burlesque system, based solely on the hieroglyphical explanations given by Horus Apollo, and without the slightest support from the monuments, on which nothing had as yet been discovered that bore the slightest resemblance to an *acrology*.[1] This letter, however, was not long afterwards followed by another addressed to a different person, in which M. Klaproth employed all the resources of his ingenuity and learning to give a colouring of plausibility to a system essentially ridiculous, and, at the same time, to expose the ignorance of Coptic displayed by M. Champollion, as well as the unwarrantable liberties which the latter had taken with that language, in coining words when he could not find any, and perverting known terms to answer his immediate purposes. Nor can it be denied that, if he signally failed in convicting the ancient Egyptians of having employed so absurd a system of writing as that imagined by M. de Goulianoff, he nevertheless succeeded in establishing, by irresistible proofs, the ignorance, and, what is much worse, the bad faith, of M. Champollion, in as far as regards the Coptic language. It would be a waste of time to attempt a grave refutation of the acrological hypothesis, the original conception of which appears to have been suggested by an ingenious mistranslation of the words of Clemens, whilst the development of the conceit thus imagined rendered it necessary to adopt, without challenge, all the puerilities of Horus Apollo. A system of writing according to which a *god* may be designated by a *gander*, a *hero* by a *horse*, or a *woman* by a *walnut*, is surely a fitter subject for ridicule than for reasoning.

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[1] This name has been most infelicitously imagined. To render it susceptible of the sense which has been attached to it, from analogy with *acrostich*, it would have been necessary that λογος should signify a *word* or a *name*, as στιχος signifies a *verse*; but in Greek the grammatical sense of *word* or *name* is rendered by ὀνομα, λεξις, ῥῆμα, whilst λογος signifies *proposition*, *phrase*, *discourse*, and the like. It is no doubt true that we find the adjective ἀκρολογος applied as an epithet to the bee, and also the verb ακρολογεῖν; but these are simply used as poetic terms, composed of λογεω, and convey the idea of collecting honey from flowers, or cropping the summit of an object. If the words ἀκρολογος, ἀκρολογια, ἀκρολογικος, having as their root λογος or λεγω, had existed in Greek, they would have signified something analogous to the *point* or *summit* of *discourse*; *summary*, *superficial*, or *pointed discourse*; or perhaps a *discourse on points*; but they could never have conveyed any idea like that which has been attached to the words *acrological hieroglyphics*. (See Letronne, *Examen particulier des Expressions relatives aux Hiéroglyphes Phonétiques* in Champollion's *Précis*, p. 393. Paris, 1828.)

X. ELEMENTARY PRINCIPLES OF HIEROGLYPHICS.

The ancient Egyptians employed three distinct kinds of writing; I. the Hieroglyphic or sacred; II. the Hieratic or sacerdotal; and, III. the Demotic or popular, called also the Epistolographic, and Enchorial or common running hand of the country.

I. The Hieroglyphic or sacred writing is of three sorts; 1. Phonetic, in which the hieroglyphic stands for a letter, as the feather for A or E; 2. Emblematic or symbolic, when the object is represented by an emblem or symbol, as a hawk's head surmounted by a disc for the sun; 3. Figurative or pictural, when it is a representation of the object itself, as the image of a man or a horse to indicate *man* or *horse*.

In the first of these modes, words are formed of a number of phonetic hieroglyphics, in the same manner as in any other alphabetical mode of writing: thus MAI, *beloved*, is expressed by three characters respectively representing M, A, I; and IOH, *the moon*, by an equal number representing I, O, H. In words which are written phonetically, the medial vowels are very often suppressed, as in the Hebrew, Phœnician, Arabic, and other oriental languages; sometimes, indeed, the vowels are altogether omitted. Each sound or articulation may be represented by several homophonous signs; but the employment of one in preference to another seems to have been regulated by considerations derived from the material form of the sign, and the nature of the idea to be expressed by the phonetic characters.

The emblematic and figurative kinds are too simple to require any remarks. In the former, ideas are expressed by symbols, as when a part is put for the whole, or one thing is metaphorically employed to represent another. The latter is merely picture-writing. In the Egyptian sentence, "We give you the assemblies of Ra, the God," all the three kinds of hieroglyphic writing are simultaneously employed; "We give you" being expressed phonetically, "the assemblies" figuratively, "of" phonetically, "Ra" emblematically, and "the God" figuratively.

When two words resembled each other, the same character often stood for either of them; as NEB, *lord*, and NIBEN, *all*, each of which is represented by a segment of a sphere, or, as some think, a species of hatchet. The force or value of a phonetic sign is, according to Champollion, derived from the initial sound of the Egyptian name of the object which it represents. Thus the figure of an owl, MOULADJ, represents M, that of a goat or ram, BAAMPE, B, and that of a star, STOU, S. This might seem calculated to occasion great confusion, from the miscellaneous use of different signs; but, practically, the Egyptians confined themselves to particular characters in writing particular words; for example, *Amun*, which is invariably expressed by the same phonetic signs. Some few variations are, however, to be met with in writing the same word, as in MAI, *beloved*, and N, *of*, in which the characters are occasionally changed; but these variations are limited in number, and used with great discretion. Besides, many signs, as, for instance, a camel, are always excluded from the phonetic alphabet.

The next material point is the expletive sign. This is put after words to denote their grammatical force or effect. Thus an arm, with the forefinger of the hand pointing upwards, denotes an active sense, as "cuts," and a straight line, with a small leaf or flourish on one side, shows that the word preceding it is a noun, as in the expression "great honour," where the expletive is inserted after the adjective as well as after the substantive. But in those groups which are of most frequent occurrence, or the sense of which is unequivocal, these signs are often omitted.

The plural number is indicated by three lines, III, following the object, or by that object being thrice repeated; the dual number, when employed, is represented by two lines, but this is of rare occurrence.

The names of kings are contained in two scrolls or elliptical rings, the first of which includes the prænomen, composed of titles derived chiefly from the names of the gods, and the second the nomen or phonetic name of the king; as *Amasis*, *Ptolemy*. The former is generally preceded by the title "king of men, lord of the worlds, good god" (*divus bonus*); the latter by "son of Ra, lord of the strong." The queens have only a phonetic scroll or ring, preceded by the title "royal wife, the potent queen of the world."

The names of individuals are followed by the figure of a man, and are not enclosed in an oval or scroll; as "Germanicus, man."

The hieroglyphics are always to be read *towards* the faces of the figures. Thus, if the front be to the left, they must be read from left to right; if to the right, from right to left; and if arranged in perpendicular lines, from the top downwards. Historical tablets commence with the year of a king's reign, and the month of that year; but no trace of any era, such as the Christian or Mohammedan, has been discovered in these sculptures.[1] Sentences placed over the figures of the gods, and beginning, "This is (the figure) of," are arranged perpendicularly; as in the expression, "This is (the figure) of Isis, goddess."

A memorial, μνημα, or commemorative inscription, always commences with the same group of characters; offerings are in like manner represented by invariable signs; and the same thing may also be predicated of adoration or prayer.

In historical subjects the names of kings are preceded and followed by a profusion of titles relating to "power," "victory," and other attributes or distinctions, or by such expressions as "like the sun, like Atmoo, lord of the assemblies, like his father Phtha, like Horus," and so forth.

Pronouns combine with the groups which they qualify; as SONPH, Coptic PEPHSON, *his brother*, SONK, Coptic PEKSON, *your brother*.

In the names of districts and towns, the sign of "land" is placed after them: thus, "Philae or Ailak, land of;" "Ap or Tape (Thebes), land of." The sign which signifies "foreign land," may also apply to "country" in general, in opposition to the particular sign indicating "land." Town or abode is indicated by the hieroglyphic equivalents of EI, *house*, as EI-*Amun*, the "abode of Amun," or *Diospolis*.

II. The Hieratic or sacerdotal writing is immediately derived from the hieroglyphic, of which it is merely a tachygraphy or abbreviated form. The signs are accordingly considerably abridged; but they nevertheless comprehend figurative, emblematic, and phonetic characters, though instead of the two former are often substituted groups of characters, which are either phonetic or altoge-

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[1] See Young, *Rudiments of an Egyptian Dictionary in the ancient Enchorial Character*; Wilkinson, *Materia Hieroglyphica.*

Elementary Principles.

ther arbitrary, "qui ne conservent plus la forme de leur signe correspondant dans le système hiéroglyphique."

All the hieratic manuscripts extant, whether they are of the Pharaonic, the Macedonian, or the Roman epochs, belong to one system, that is, exhibit merely an abbreviated form of the hieroglyphic writing, however widely some of the characters may at first view appear to differ from it. This method seems to have been confined to the transcription of texts connected with matters of religion or science, or to inscriptions of a character purely religious.

III. The Demotic, Epistolographic, or Enchorial, is a method of writing distinct from the hieroglyphic, and also from the hieratic, of which it is an immediate derivative. The signs employed in the demotic or enchorial texts are, in fact, only simple characters, borrowed from the hieratic. The demotic nearly excludes all figurative characters, picture-writing being incompatible with the object aimed at in a current hand; but it admits emblematic or symbolical signs, though, according to Champollion, "seulement pour exprimer des idées essentiellement liées au système religieux."

The characters employed in the demotic or enchorial are much less numerous than those of the other methods; and Champollion affirms that a large proportion of them are phonetic. But this is evidently a mistake; for Mr Akerblad, who proceeded upon the assumption that the greater part of the enchorial characters were letters, or signs of sounds, failed to interpret a single word of the demotic text of the Rosetta inscription; whilst Dr Young, who conceived that proper names alone were written alphabetically, succeeded in interpreting the words or groups, and eventually deciphered all that remains of this branch of the triple inscription. During a long series of ages, the demotic, the hieratic, and the hieroglyphic methods of writing were simultaneously in use throughout the whole extent of Egypt.

In stating the elementary principles of the demotic writing, we shall begin with the verb. It appears to possess only a single form. When the root is prefixed to a noun or to a personal pronoun, without any qualification preceding, it may be translated by an indefinite past tense; and sometimes, when the sense requires it, even by the present, as happens in several of the Semitic languages. When the conjunction signifying *that* is prefixed to the radical form, the latter is thereby converted into a kind of optative or subjunctive, as "he took care *that they should do it*;" and the particle appears to convert the same primary form into a preterperfect. Of the pronouns annexed to the root, only four, *I*, *he*, *we*, and *they*, have as yet been met with; but there are probably three others, which still remain to be discovered, *thou*, *she*, and *ye*. The auxiliary verb denoting *ought* is used to express the imperative and future. It precedes the nominative, whether it be noun or pronoun, and then follows the root, as in the example (*Rosetta Inscript.*) signifying *debent sacerdotes colere*, the priests ought to attend to. The passive voice is commonly expressed periphrastically by means of the plural pronoun of the third person. Thus, for "the priests ought to be called," we have, "they ought to call the priests;" and for "that the customary things should be done," we find, "that they should do the customary things."

The only exception to the general rule, that the verb precedes its nominative, occurs when the nominative is a relative pronoun. The pronoun whence comes the Coptic ETE, prefixed to the verbal root, forms a kind of past participle, as in the example "who established," in Greek καταστησαμενον; but the particle used pronominally seems always to express the present participle, as in the example "who enter," in Greek εἰσπορευομενοι. If no verb follow this particle, it signifies "who is" or "who are." The initial vowel of this word is seldom expressed; indeed the omission of vowels may be regarded as a general practice in the enchorial writing.

Elementary Principles.

A masculine noun is made feminine by the addition of the termination T; and this termination, or an equivalent one, added to adjectives, converts them into abstract nouns. The plural of nouns is usually formed by adding an upright stroke A or E, as may be seen in the plural of "*priests*;" but, in the enchorial, as in the hieroglyphical writing, plurality is more commonly indicated by subjoining to the noun three upright strokes. Masculine nouns singular take one article; feminine nouns, singular and plural, take another, which is also used generally before the possessive pronoun when it precedes the noun. The possessive pronouns experience no change on account of gender or number, and are sometimes represented by affixes, as in the hieroglyphical method of writing.

All or *every* is expressed after the noun, as "the temples of Egypt, *all* of them." *Each* is expressed by the adjective following the noun written twice, as in the example, "the priests who are of the temple, temple each," that is, "the priests who are of each temple." Cardinal numbers follow the noun in the singular, with the singular article prefixed, if there be occasion to use one. This is contrary to the usage of almost every other language; but it is well established that such is the enchorial practice. Ordinal numbers are the same as the cardinal; but, for distinction, a T is sometimes placed after such numbers.

In the enchorial method of expressing the common fractions after figures, and in sentences, we discover a striking resemblance to that which we now employ, the fraction being represented by an oblique line, with the denominator placed underneath. The word denoting "one half," is easily read PHAKAT, a word which, with a slight modification, is used at this day in both parts of Nubia to signify the same thing.[1] The words denoting one third, one fourth, and so on, are used with or without the accompanying word signifying *part*, just as in English we say indifferently *a fourth* or *a fourth part*.

For the numerals, hieroglyphic, hieratic, and enchorial, the reader is particularly referred to Professor Kosegarten's first Commentation *De Prisca Ægyptiorum Litteratura*, also to Young's *Rudiments of an Egyptian Dictionary*, and to Wilkinson's *Materia Hieroglyphica*. That the forms of the Arabic numerals have been borrowed from the Egyptian, the slightest inspection will show; but the latter have no value in position, a circumstance which forms the distinguishing characteristic, as well as the great superiority, of the Arabic method of notation.

Plate CCLXXXV. contains the hieroglyphico-phonetic alphabet, according to Wilkinson's arrangement, which we consider as decidedly the best. The characters are divided into *certain*, *probable*, and *doubtful*. The *certain* are those for which there is sufficient authority or evidence, deduced chiefly from the names of the Ptolemies and the Cæsars. The *probable* are those which, on good grounds, are supposed to correspond to the respective letters under which they have been arranged, but for which no direct or positive authority can be produced. The *doubtful* are not only without positive authority, but in a great measure conjectural; though, as far as conjecture goes, they are supposed to correspond to the letters under which they are respectively placed. (A.)

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[1] We learn from Burckhardt that the Kensy word for "one half" is *bagatto*, and that the Nouba word is *Fagat-wera*, literally, "half one," *Fagat* meaning half, and *wera* one.

HIEROMANCY, in *Antiquity*, that part of divination which predicted future events from observing the various things offered in sacrifice.

HIEROMNEMON, amongst the ancient Greeks, signified a delegate chosen by lot, and sent to the great council of the Amphictyons, where it was his business to take care of all that concerned religion. The hieromnemonies were reckoned more honourable than the other members of that assembly, the general meetings of which were always summoned by them, whilst their names were prefixed to the decrees enacted by the council.

Hieromnemon (composed of ἱερος, *sacred*, and μνημων, *one who reminds of*), an officer in the ancient Greek church, whose principal function was to stand behind the patriarch at the sacraments and ceremonies, and show him the prayers and psalms, which he was to rehearse. He also clothed the patriarch in his pontifical robes, and assigned the places of all those who had a right to be around him when seated on his throne, just as the master of the ceremonies now does to the pope.

HIEROPHANTES, or Hierophanta (from ἱερος, *holy*, and φαινομαι, *I appear*), a priest amongst the Athenians. The hierophantes was properly the chief person who officiated in the Eleusinian mysteries. This office was first executed by Eumolpus, and continued in his family for about twelve hundred years, though when any person was appointed to this dignity he was required always to live in celibacy.

HIEROPHYLAX, an officer in the Greek church who officiated as guardian or keeper of the holy utensils, vestments, &c. and who answered to our sacrista or vestry keeper.

HIERES, four small islands in the Mediterranean Sea, a part of the department of the Var in France. They are near Toulon, and form shelter for a roadstead of the same name, where ships are protected by the town of Hiérès on the mainland. That town is small, but is remarkable for the mildness of the climate, and for the quantity of pomegranates, figs, and other fruits, which the vicinity yields.

HIGH, a term or relation, importing that one thing is superior to or above another. Thus we say a *high* mountain, the *high* court of parliament, *high* relief, and the like.

High, in *Music*, is sometimes used in the same sense with *loud*, and sometimes in the same sense with *acute*.

High Places were eminences upon which the heathens used to worship their gods, and which were chosen for that purpose as being supposed to be nearer heaven, their constant residence. The Jews are frequently blamed for their attachment to high places, after the manner of the Gentiles; and their *proseuchæ* were frequently upon mountains, with groves planted round them. Where high places are reprobated in Scripture, therefore, we should understand them as places abused and prostituted to idolatrous purposes.

High Way, a free passage for the king's subjects; on which account it is called *the king's high way*.

High-Way-Men are robbers on the high way, for the apprehending and taking of whom a reward of L.40 is promised by the statute 4 and 5 W. and M. to be paid within a month after conviction by the sheriff of the county; to which the statute 8 Geo. II. cap 6 superadds L.10 to be paid by the hundred indemnified by such capture.

HIGHAM-FERRERS, a town of the county of Northampton, which gives name to the hundred in which it stands, and is sixty-four miles from London. It is an ancient borough, formerly returning one member to parliament, but disfranchised by the law of 1832. There is a small market on Saturday. The inhabitants amounted in 1801 to 726, in 1811 to 823, in 1821 to 877, and in 1831 to 965.

HIGHGATE, a populous village, four miles from London, on the great north road. It is situated on a hill overlooking the metropolis, and commanding extensive views to the south beyond it. It is the residence of several of the opulent merchants and traders of the city, some of whose houses are of great elegance. It is partly in the parish of Hornsey and partly in that of Pancras, but has a church or chapel of ease. It was designed a few years ago to form a tunnel and a roadway through the hill; but that plan has yielded to an archway, which has lightened the labour of horses.

HIGHLANDERS, a general appellation for the inhabitants of the mountainous parts of any country. In Britain, the name is appropriated to the people who inhabit the mountainous parts of Scotland, to the north and north-west, including those of the Hebrides or Western Isles. See Scotland.

HIGHMORE, Joseph, a painter and writer of some eminence in his day, was born in the parish of St James's, Garlickhithe, London, on the 13th of June 1692, being the third son of Mr Edward Highmore, a coal-merchant in Thames Street. Having such an early and strong inclination to painting that he could think with pleasure of nothing else, his father endeavoured to gratify him by making a proposal to his uncle, who was serjeant-painter to King William, and with whom Mr, afterwards Sir James Thornhill, had served his apprenticeship. This however was subsequently for good reasons declined, and he was articled as clerk to an attorney in 1707, but so much against his own declared inclination, that in about three years he began to form resolutions of indulging his natural disposition for his favourite art, having continually employed his leisure hours in designing, and in the study of geometry, perspective, architecture, and anatomy, but without any instructors in these branches except books. He had afterwards an opportunity of improving himself in anatomy, by attending the lectures of Mr Cheselden; besides entering himself at the painters' academy in Great Queen Street, where he remained ten years, and had the honour to be particularly noticed by Sir Godfrey Kneller, who distinguished him by the name of the Young Lawyer. In 1714 his clerkship expired; and in 1715 he began painting as a profession, and settled in the city. In the same year Dr Brook Taylor published his Linear Perspective. On this complete and universal theory our artist grounded his subsequent practice; and it has been generally allowed, that few if any of the profession at that time were so thorough masters of Taylor's excellent but intricate system. In 1716 he married Susanna, daughter and heiress of Mr Anthony Hiller of Effingham, in Surrey; a young lady in every respect worthy of his choice. As his reputation and business increased, he took a more conspicuous station, by removing to a house in Lincoln's-Inn-Fields; and an opportunity soon offered of introducing him advantageously to the nobility, by his being desired, by Mr Pine the engraver, to make drawings for his prints of the knights of the bath, upon the revival of that order in 1725. The publication of Pamela in 1744 gave rise to a set of paintings by Highmore, which were engraved by two French engravers, and published by subscription in 1745. In the same year he painted the only original of General Wolfe, who was then about eighteen years of age. His Pamela introduced him to the acquaintance and friendship of the excellent author of that work, whose picture he drew, and for whom he painted the only original of Dr Young. In 1750 he had the misfortune to lose his wife. On the first institution of the Academy of Painting and Sculpture, in 1753, he was elected one of the professors; an honour which, on account of many avocations, he was induced to decline. In 1754 he published a critical examination of two paintings by Rubens on the ceiling of the banqueting-house at Whitehall, in which architecture is introduced, as far as relates to perspective; together with the discussion of a question which has been the subject of debate amongst painters; printed in 4to. Of the numerous portraits which Mr Highmore painted, in an extensive practice of forty-six years, it is impossible and useless to discuss the merits. Some of the best in the historical branch may, however, be mentioned, viz. Hagar and Ishmael; the Good Samaritan; the Finding of Moses; the Harlowe Family, as described in Clarissa; Clarissa, the portrait mentioned in that work; the Graces Unveiling Nature; the Clementina of Grandison; and the Queen Mother of Edward IV. with her younger son, in Westminster Abbey.

His principal literary work was his Practice of Perspective, on the principles of Dr Brook Taylor, written many years before, but not published till 1763. In 1765 he published Observations on a Pamphlet entitled Christianity not founded on Argument; and in the same year two small volumes of Essays, moral, religious, and miscellaneous, with a translation in prose of Mr Brown's Latin poem on the immortality of the soul. A strong constitution, and constant attention to his health, prolonged his life and preserved his faculties until his eighty-eighth year, when he gradually ceased to breathe, and, as it were, fell asleep, on the 3d of March 1780.

HIGHNESS, a quality or title of honour given to princes. The kings of England and Spain had formerly no other title but that of Highness; the former till the time of James I. and the latter till that of Charles V. The petty princes of Italy first began to be complimented with the title of Highness in the year 1630; and the Duke of Orleans assumed the title of Royal Highness in the year 1631, to distinguish himself from the other princes of France.

HIGHWORTH, a market-town of Wiltshire, which gives its name to the hundred. It is situated on a pleasant hill near the Valley of the White Horse, seventy-seven miles from London, has a market, which is held on Wednesday, and was formerly a corporate place. The inhabitants amounted in 1801 to 1493, in 1811 to 1580, in 1821 to 1388, and in 1831 to 3127.

HIJA, or HIXAR, a city of Spain, in the kingdom of Aragon, about thirty miles from Saragossa. It contains a church, a monastery, and two hospitals or poor-houses, with 2800 inhabitants, and confers the dignity of a duke on one of the oldest families of Spain.

HILARIA, in *Antiquity*, feasts celebrated every year by the Romans, on the 8th of the kalends of April, or the 25th of March, in honour of Cybele, the mother of the gods. The *hilaria* were celebrated with great pomp and rejoicing. Every person dressed himself as he pleased, and assumed the marks or badges of whatever dignity or quality he had a fancy for. The statue of the goddess was carried in procession through the streets of the city, accompanied by multitudes in the most splendid attire. The day before the festival was spent in tears and mourning. Cybele represented the earth, which at this time of the year begins to feel the kindly warmth of the spring; so that this sudden transition from sorrow to joy was an emblem of the vicissitude of the seasons, which succeed one another. The Romans originally derived this feast from the Greeks, who called it αναϐασις, *ascensus*; and the eve of the day they spent in tears and lamentations, whence they denominated it καταϐασις, *descensus*. But afterwards, the Greeks took the name ἱλαρια from the Romans; as appears from Photius, in his extract of the life of the philosopher Isidore.

HILARIUS, an ancient father of the Christian church, who flourished in the fourth century. He was born, as St Jerome informs us, at Poictiers, being descended of a good family, and he received a liberal education in the Pagan religion, which he did not forsake till he had arrived at maturity. He was advanced to the bishopric of Poictiers in the year 355, according to Baronius, and became a most zealous champion of the orthodox faith, particularly against the Arians, who were at that time gaining ground in France. He assembled there several councils, in which the determinations of the synods of Rimini and Seleucia were condemned. He wrote a treatise concerning Synods, and a work in twelve books on the Trinity, which is much admired by orthodox believers. He died about the end of the year 367. His works have been many times published; but the best edition of them is that by the Benedictines at Paris in 1693.

HILARODI, in the ancient music and poetry, a sort of poets amongst the Greeks, who went about singing little gay poems or songs, somewhat graver than the Ionic pieces, accompanied with some instrument. From the streets they were at last introduced into tragedy, as the magodi were into comedy. They appeared dressed in white, and were crowned with gold. At first they wore shoes; but afterwards they assumed the *crepida*, being only a sole tied over the foot with a strap.

HILARY, ST, a town, the capital of the island of Jersey. It has a very convenient and secure harbour, defended by a strong castle; and the town is powerfully fortified both on the land and the sea sides, and the entrance from the country is protected by a drawbridge and an iron gate. The town is well built, with broad streets, and there is an elegant building for the courts of justice of the island. In the church the public worship is performed in both the English and French languages. It has an excellent market on Saturday. The corn market is held in a handsome building, supported by piazzas of the Tuscan order. At the census of 1831, the inhabitants consisted of 16,027 persons, viz. 7298 males, and 8729 females. Long. 5. 24. 25. W. Lat. 50. 7. 38. N.

HILBURGHAUSEN, a city, the capital of the duchy of Saxe-Hilburghausen, in Germany. It stands on the right bank of the river Werra, is surrounded with walls, and contains the magnificent palace of the sovereign, two Lutheran churches and one Reformed, and several other public buildings. It is divided into three parts, the old town, the new, and the suburbs, which together have a population of 3820 persons, in 362 houses. It is a place of little commerce, and depends chiefly on the trade arising from the court, and from being the residence of the officers of the several boards of law and revenue.

HILDESHEIM, a province of the kingdom of Hanover, formerly an ecclesiastical state, but secularized and transferred to Prussia in 1803, and in 1805 delivered over, with Goslar, to the Hanoverian government. It is bounded on the north by Luneburg, on the east by Brunswick, on the south-east by Saxon Prussia, on the south by the Hartz and Brunswick, and on the west by Calenburg. It extends over 683 square miles, and comprehends nine cities, four market-towns, 240 villages and hamlets, formed into 135 parishes, with 18,803 houses, and a population in 1812 amounting to 121,816, now estimated to have since increased one fifth. The greater part of the inhabitants are Lutherans, but one sixth are Catholics, with a few Jews, and some Protestant sects. It is for the most part a level district, but towards the south there are some lofty mountains. A considerable portion of the land is covered with wood, and the rest yields moderate crops of rye, barley, flax, and potatoes, with some little wheat. It produces feathers, honey, and wax. The females spin much flax, and the yarn is an article of export; as are also wool, hops, rape-oil, and timber. The province is well watered by the rivers Innerste, which rises in the Hartz, by the Ecker, the Radau, and several small streams, which all finally terminate by the Leine, in the Weser. The province is governed by its own assembly of states, and has still its bishop, who has only ecclesiastical authority over the Catholics.

HILDESHEIM, a city of Hanover, the capital of the province of that name. It is situated on the river Innerste, and surrounded with walls and ditches, which have been converted into promenades. It contains an ancient cathedral, containing, amongst other antiquities, a pillar called the Irmin-Saule, said to have been constructed by the Saxons in honour of Arminius, who defeated the Roman army under Quintilius Varus. There are three other Catholic and four Lutheran churches, with 1874 dwelling houses, and 13,820 inhabitants. It contains a Catholic seminary called Joseph's Gymnasium, with eleven professors, and several schools for elementary instruction. It has some manufactures of ironmongery, linens, leather, soap, starch, snuff, and yarn. Near to it is the Zwergshohle, a saline spring, from which some Glauber salts are prepared. Long. 9. 48. 28. E. Lat. 52. 9. 32. N.

HILL, AARON, a poet of considerable eminence, the son of a gentleman of Malmesbury Abbey, in Wiltshire, was born in 1685. His father's imprudence having ruined his paternal inheritance, he left Westminster School at fourteen years of age, and embarked for Constantinople to visit Lord Paget, the English ambassador there, who was his distant relation. Lord Paget received him with surprise and pleasure, provided him a tutor, and sent him to travel, thus affording him an opportunity of visiting Egypt, Palestine, and a great part of the East. About the year 1709 he published his first poem, entitled *Camillus*, in honour of the Earl of Peterborough, who had commanded in Spain; and being the same year made master of Drury-lane Theatre, he wrote his first tragedy, called *Elfred*, or the Fair Inconstant. In 1710, he became master of the opera-house in the Haymarket, and wrote an opera called Rinaldo, which met with great success, being the first that Handel set to music after he came to England. Unfortunately for Mr Hill, he was a projector as well as poet, and in 1715 obtained a patent for extracting oil from beech-nuts; an undertaking which miscarried after engaging his attention for three years. He was also concerned in the first attempt to settle the colony of Georgia, from which he never reaped any advantage; and in 1728 he made a journey into the Highlands of Scotland, in prosecution of a scheme of applying the woods there to ship-building; but in this he also lost his labour. Mr Hill seems to have lived in perfect harmony with all the writers of his time, except Mr Pope, with whom he had a short paper war, occasioned by that gentleman's introducing him in the Dunciad as one of the competitors for the prize offered by the goddess of Dulness. Mr Hill, amongst many other pieces, also wrote one called *The Northern Star*, upon the actions of Peter the Great; and for this he was several years afterwards complimented with a gold medal from the Empress Catharine, agreeably to the czar's desire before his death. His last production was *Merope*, which was brought upon the stage in Drury Lane by Mr Garrick. He died on the 8th of February 1749, and after his decease four volumes of his works in prose and verse were published in octavo, and his dramatic works in two volumes.

HILL, *Sir John*, a voluminous writer, and singular character, was born about the year 1716. He was originally bred an apothecary; but his having married early, and without a fortune, made him very soon look around for other resources than his profession supplied. In the year 1746, he translated from the Greek a small tract by Theophrastus, on Gems, which he published by subscription; and which, being well executed, procured him friends, reputation, and money. Encouraged by this, he engaged in works of greater extent and importance. The first he undertook was a General Natural History, in three vols. folio. He next engaged, in conjunction with George Lewis Scott, in furnishing a Supplement to Chambers's Dictionary. He at the same time started the British Magazine; and whilst he was engaged in a great number of works, some of which would seem to have claimed the continued attention of a whole life, he carried on a daily essay, under the title of Inspector. Amidst this hurry of business, Mr Hill was so laborious and ready in all his undertakings, and was withal so exact an economist of his time, that for many years he scarcely ever missed a public amusement, where, whilst he relaxed from the severer pursuits of study, he gleaned up articles of information for his periodical works. It would not be easy to trace Mr Hill through all his various pursuits in life. He obtained his doctor's degree from the university of St Andrews. A quarrel he had with the Royal Society, for being refused admission as a member, provoked him to ridicule that learned body, in a review of the works of the Royal Society, 4to, 1751. This, together with his writing upon all subjects without reserve, made him sink in the estimation of the public nearly at the same rate at which he had ascended. He found, as usual, however, resources in his own invention. He applied himself to the preparation of certain simple medicines, as the essence of water-dock, tincture of valerian, balsam of honey, and the like. The well-known simplicity of these medicines made the public judge favourably of their effects, insomuch that they had a rapid sale, and once more enabled the doctor to figure in that style of life which was so congenial to his inclination. He obtained the patronage of the Earl of Bute, through whose interest he acquired the management of the royal gardens at Kew; and, to wind up the whole of an extraordinary life, having a little before his death seized an opportunity to introduce himself to the knowledge of the king of Sweden, that monarch invested him with the order of knighthood, which he had not the happiness of enjoying above two years. He died near the close of the year 1775.

HILVERSUM, a town of the Netherlands, in the province of North Holland, between Amsterdam and Norden. It contains 3520 inhabitants, who carry on extensive manufactories of carpets, floor-cloths, woollen baize, and kerseys, and make some cotton goods.

HILLAH. This town stands on a portion of the site of the ancient Babylon. It is situated about sixty miles to the south of Bagdad, on the western bank of the Euphrates. It is inclosed with a mud wall, and is said to have been built in the twelfth century, partly out of the ruins of the ancient city of Babylon. The land in the immediate neighbourhood is cultivated and fertile, and produces great quantities of rice, dates, and grain. This fertility is caused by the irrigation of the Euphrates, which here flows from two to two and a half miles an hour, and varies in breadth from 450 to 500 feet; and in spring, when it is in flood, is forty feet in depth. During six months of the year, the Euphrates is navigable as far as Hillah for flat-bottomed vessels not exceeding fifty tons burden. During the other six months the marshes of Lemloon entirely obstruct the commerce with Bassora; and but for this circumstance it would become the seat of a flourishing commerce. Hillah contains 12,000 inhabitants. A part of the town is situated on the eastern bank of the river, and is connected with the other by a bridge of boats, but is not nearly so extensive as that on the western bank. The town is well built, has an extensive and well-regulated bazar, several stately caravanserais built of the old Babylonian bricks, and numerous coffee-houses, along the bank of the river. It is governed by a magistrate deputed by the pasha. It is 48 miles to the south of Bagdad; 35 south-east of the Nahr-Malcha, at its junction with the Tigris, which is the site of Seleucia; and 130 miles west from Hit, a town on the Euphrates. Long. 44. 13. 15. E. Lat. 33. 34. N. See BABYLON.

Himalaya Mountains.

Himalaya Mountain

HIMALEH, or HIMALAYA (literally the *Seat of Snow*), sometimes HIMACHAL (*Snowy Mountains*), are the names given to a vast range of lofty mountains which separates India from the two Thibets, and forms the highest part of that extended chain which was known to the ancient writers of Europe by the names of *Imaus* or *Emodus*, which is, in all probability, a corruption of the Sanscrit name; as "*Imaus*," says Pliny, "in the language of the natives, signifies *snowy*."

If we consider the Himalaya as extending from the defile near Cashmere through which the Setlij or Sutledge flows, to that through which the Brahmapootra passes, the length will be, from north-west to south-east, nearly 1000 British miles; the western extremity being about the latitude 32°, and longitude 77°; the eastern about the latitude 24°, and longitude 95°. Throughout the whole of this extent their snow-capt summits present a succession of peaks of great but unequal elevation, some of which, in the fine pure atmosphere of Hindustan, are visible at an almost incredible distance. "The southernmost ridge of the Bootan Mountains," says Major Rennell, "rises near a mile and a half perpendicular above the plains of Bengal, in a horizontal distance of only fifteen miles; and, from the summit, the astonished traveller looks back on the plains, as on an extensive ocean beneath him." Beyond is a chain of peaks still higher, which, he adds, "are visible from the plains of Bengal, at the distance of 150 miles, and are commonly covered with snow." From these expressions, and from his conclusion of their being "in point of elevation equal to any of the mountains of the old hemisphere," it is quite clear that this celebrated geographer had no adequate idea of their real height.

On the northern termination of the plains of Hindustan is a narrow belt of a thickly wooded, swampy country, called Terreeana, between which and the base of the great Himalaya chain lies a broad tract of a rugged, mountainous region, from sixty to a hundred miles in width, full of fertile and well-peopled valleys, and once divided into a number of petty states, which are now mostly absorbed by the British or the Chinese empires; the latter at least laying claim to some of the hilly countries to the south of the Himalaya, as tributary states, to which our recent conquests have brought us into immediate contact. Beginning at the westward, the principal of these states were Serinagur, Almora, Kemaoon, Gorkah, Nepaul, and Bootan: all of these are parts of the mountainous belt, and their towns and fortresses occupy the summits of hills rising to the height of from 4000 to 6000 feet; and many of the shoulders or abutments which connect these hills with the lofty range of Himalaya are from 8000 to 14,000 feet high. The great extent of these mountain masses produces a greater degree of cold in winter than would probably be found in the same degree of latitude in Europe at an equal elevation; and, as will presently appear, a greater degree of heat also. In the middle of winter the snow covers the summits of those inferior hills, and falls sometimes even in the interjacent valleys; but the climate, in every part of this mountainous region, is delightfully fine, and almost all the species of European vegetables are found in a native state, and growing in the greatest luxuriance. In fact, since we have had free access to the base of the Himalaya range, it has been discovered that the general character of the vegetation corresponds very nearly with that of the middle and southern parts of Europe, and that a very large portion of the trees and shrubs of the latter are indigenous in the former; such as pines of various species, oaks, chestnuts, horse-chestnuts, walnuts, birch, the hazel, the raspberry, gooseberry, bilberry, barberry, and strawberries. Many of the flowering shrubs, and the humbler plants, as the polyanthus, anemone, and ranunculus, the common and lemon thyme, mint, sweet basil, and a great variety of other aromatic plants, clothe the sides of the hills, and shed their fragrant odours around. Moorcroft mentions the furze (*Ulex Europea*), which was supposed not to be met with out of Europe. These hills may be considered as the roots and branches of the great stem, all of them connected more or less remotely with it, and appearing at a distance, when seen from the plains of Hindustan, as a succession of inferior ranges; but, on entering the country, "the whole," says Mr Fraser, "becomes a confused and chaotic assemblage of most rugged mountains, huddled into masses and peaks, and running into ridges which defy arrangement."[1]

The highest peaks of the Himalaya Mountains had long been noticed before it was known or even conjectured what their absolute height might be above the level of the sea. All the information respecting them that could be obtained was derived from Hindu pilgrims, who annually flocked to pay their devotions at the shrine of some deity presiding over the various wild and awful features of these elevated regions. To a people gifted, like the Hindus, with strong imaginative faculties, the snow-capt summits of the Himalaya Mountains, and the numerous torrents issuing from their bosom, which, when united into one grand stream, carried fertility over their extensive plains, could not fail to become so many varied objects of their veneration. From the accounts of these people, the main branch of the Ganges was represented to issue from a chasm or cavern in the side of the mountains, to which, from its supposed resemblance to the mouth of an animal sacred in the ritual of their faith, was given the name of the *Cow's Mouth.* This cavern was supposed to perforate the great chain of mountains, and the source of the Ganges to be in a lake on the other side, considerably to the eastward of the Cow's Mouth. This lake was named Manasarovara, and was held sacred; and, under the impression of the relation of pilgrims being correct, the source and passage of the Ganges were laid down in the most improved maps of Hindustan.

The authority, however, on which this hypothesis rested not being deemed satisfactory, it was determined by the Bengal government that an expedition should be undertaken to ascertain how the fact stood; and Captains Raper and Hearsay, accompanied by Captain Webb, assistant-surveyor, set out in the spring of the year 1808, in order to clear up this point; and from their observations, and those of more recent travellers, it has now been ascertained, that the main sources of the Ganges are all on the southern side of the great Himalaya chain; and that, reckoning from the westward, they consist of, 1. the Jumna (whose two great branches are the Girree and the Touse); 2. the Bhagiruttee, whose source is near the celebrated spot called Gangoutri, where the Cow's Mouth is supposed to be situated; and, 3. the Alkananda, with its numerous tributary streams, the last of which rivers is now acknowledged as the main branch of the Ganges.

The object of Captains Raper and Hearsay was to penetrate as far as possible to the sources of the two great branches, the Bhagiruttee and the Alkananda. With great difficulty and fatigue they approached near enough to Gangoutri to enable them to conclude, from the contraction of the stream, and the stupendous height and unbroken sides of the Himalaya Mountains, that "there can be no doubt but the source of that branch is situated *in* the snowy range;" and that "any other hypothesis can scarcely be reconciled to hydrostatical principles." Not quite satisfied, however, with this conclusion, they dispatched one of those fanatics of India, known by the name of Fakirs, who deem a pilgrimage to Gangoutri to have the effect of redeeming the person performing it from all the troubles of this life, and of ensuring him a happy passage through all the stages of transmigration which he is destined to undergo in another, to push his inquiries farther into the mountains. This man reported, on his return, that, a few miles beyond Gangoutri, the river was lost under vast beds of snow, and that a rock in the midst of the rushing stream resembled the body and head of a cow; and here the valley was terminated by the steep and wall-sided mountain.

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[1] *Journal of a Tour through part of the Snowy Range of the Himalaya Mountains*, 4to, Lond. 1820.

The party next set out in order to trace the other great stream of the Ganges, the Alkananda, and succeeded in reaching a spot four or five miles beyond the temple of Bhadrinath, where the stream was narrowed to eighteen or twenty feet, and where "the north faces of the mountains were completely covered with snow from the summit to the base." A little way beyond this place was a cascade named Barsiê d'Hara, where the Alkananda (or, as sometimes called, the Vishnuganga) was entirely concealed under immense heaps of snow, beyond which no traveller has been known to pass. Yet this place was estimated to be still distant about twenty miles from the southern front of the Himalaya chain. In these lofty regions, beyond Bhadrinath, stands the populous town of Manah, consisting of two hundred houses; the inhabitants of a different race from the generality of the mountaineers; and, from their broad faces, small eyes, and olive-coloured complexions, evidently of a Tartar origin. Seven hundred villages are said to be attached to the temple of Bhadrinath, whose sanctity may be estimated by the fact of no less than 40,000 pilgrims, chiefly fakirs, having visited it that year.

Not less holy in the estimation of the Hindus, though less frequented from the difficulty of access, is the source of the main stream of the Alkananda, named the Caligunga, near which is situated the temple of Kedar-nath, at an elevation of 12,000 feet nearly above the level of the sea. This place was not visited by Messrs Raper and Hearsay, but its height was ascertained barometrically by Captain Webb.

Though this expedition threw considerable light on the nature of the country between the plains of Hindustan and the southern base of the Himalaya Mountains, and succeeded in tracing two of the most considerable branches of the Ganges nearly to their sources, still the great chain of the Himalaya itself had not yet been approached, and the altitude of its various peaks above the level of the sea remained undecided. The account however given by Captain Raper (*Asiatic Researches*, vol. xii.) is full of interesting and important details.

The task of penetrating this vast chain was left to the exertions of a more daring traveller. Mr Moorcroft, accompanied by Captain Hearsay, the same who had been on the former expedition, and by a Hindu pundit of the name of Harkh Deo, set out with the hope of finding a passage across these mountains into the regions of Tartary, in order to purchase horses and the shawl-goat, and, at the same time, to collect such geographical information respecting these unknown regions as might fall within their reach. With the latter view, the learned pundit was engaged for the express purpose of *striding* over these mountainous regions, along the whole route, in regular paces of four feet each; a task which, it seems, he performed with exemplary patience and perseverance, across rocks, and rivers, and the most rugged precipices, without failing or faultering, except on one single occasion, where a piece of rock had slipped out of a narrow ledge on the very verge of a tremendous declivity, and left a gap just wide enough to show an abyss below, of a depth sufficient to appal the stoutest heart.

Beginning their operations at the point where the Dauli river falls into the Alkananda, they followed up the former to the very base of the Himalaya, and, after eighteen days of excessive fatigue, reached a gorge in the mountains, named the Nitee Ghati, or Pass of Nitee. At some distance below it was a small village of the same name, the great height of which was inferred by the hill, terminating the valley on which it stood, being tipped with snow on the 5th of June, and also by a quick breathing with which Mr Moorcroft was seized, and which obliged him to stop every four or five steps; he complained also of a sense of fulness in the head, accompanied by giddiness. In ascending the Ghaut, the difficulty of breathing increased, with great oppression about the heart; and, when on the point of falling asleep, a sense of suffocation was felt, and sighing became frequent and distressing. The same symptoms of oppression and debility were experienced by M. Saussure on the Alps, which he ascribed rather to the presence of carbonic acid gas, than to the tenuity of the atmosphere. We conceive, however, that the great height alone is sufficient to account for these symptoms.

At Nitee the travellers were informed that the passage of the mountains was never attempted before *Sancrant*, or the entrance of the sun into Cancer; they waited, therefore, till the 24th of June. For the last twenty days the thermometer at sun-rise was generally about 46°, at noon 72°, and from that to 80°; the nights were clear and serene; the birch trees and rose bushes were just then bursting into leaf, the furze coming into blossom, and the grain appearing above the ground.

The length of the Nitee Pass is about two miles; it leads to an elevated plain, to which there is little or no descent, called by the natives Undes or Ondes, which signifies "the country of wood." The name of Thibet was not known to them, and Captain Webb thinks it may have been derived from *Teiba*, which signifies, in the Gorkah language, "high-peaked mountains." The mountains crossing this plain, or rising in detached masses out of its surface, were covered with snow. The first, and indeed the only continued ridge seen by Moorcroft, was at the distance of about forty miles from the Himalaya, and nearly parallel to it, closing, however, gradually upon it to the eastward; but, at the distance of above eighty miles, they united, not far from the two lakes of Rawan-hrad and Manasarovara, which were separated from each other by a slip of land about four or five miles in width. The ridge thus uniting with the Himalaya is named Caillas, which is rather a generic term for any high mountain, than peculiar to a single one, and is among the Hindus what Olympus was among the Greeks.

The intermediate plain consists of a rugged stony surface, bristled in some places with rude shapeless rocks, and in others scooped out into broad and deep ravines, presenting on every side an extended dreary waste, without a tree or shrub to enliven the prospect, the only vegetation being confined to some low furze bushes, a woolly plant like everlasting, tufts of silky grass, and a species of moss, exhibiting a sickly green, among patches of snow and splashes of snow water. The only enlivening objects that appeared to Mr Moorcroft and his party were "two very beautiful poplar trees, in which were many goldfinches." These were on the banks of a considerable stream, flowing to the westward, down the middle of the plain, in the bed of which was a species of tamarisk, then in blossom, and reaching to the height of eight feet.

This river was then conjectured, and has since been ascertained, to be the Sutledge or Satudra. It rises in the lake Rawan-hrad, to the eastward of any of the sources of the Ganges, and, having collected in its western course the various streams from the northern face of the Himalaya, and the southern face of the Caillas, finds a passage through the former chain, near Mount Kantel, on the eastern side of Cashmere; and, on entering the plain of Hindustan, becomes the easternmost of the Punjab, or Five Rivers, the boundary of our Indian possessions to the westward; and, in its course to the southward, joins the Indus. This source and direction of the Sutledge can now be no longer doubted, as its course, which was ascertained by Mr Baillie Fraser to lie through the great range of mountains, has been traced back through the ravine of the Himalaya, and for a considerable distance to the eastward. On this elevated plain is situated the town of Deba.

Mr Moorcroft and his party having passed the first tableland, crossed the Caillas range, on the other side of which the rugged plain extended beyond the reach of sight. The numerous streams from the northern face of Caillas, uniting in the vale of Ghertope, form a river of considerable magnitude, which, from information, pursues a northwesterly course for some hundred miles, passes by Latak, and then crossing the Hindu Coosh, which may be considered as a prolongation of the Himalaya, to the westward of Cashmere, assumes the name of Indus or Scinde; of which great river it may be considered as one of the main branches, the other coming from the northward out of the mountains called the Moos-tag.

Mr Moorcroft did not ascertain what river or rivers flowed *out* of the lake Manasarovara, and seems to think that it has no outlet. This is very improbable, as its water was fresh, and there seems to be little doubt but the Sanpoo, or the main branch of the Brahmapootra, issues from its eastern extremity. In that case, this lake may be considered as about the highest part of the general level of the great plateau of Tartary.

Thus, by the exertions of intelligent travellers, the geography of the great mountainous buttress which supports the elevated regions of Thibet and Tartary has been pretty well ascertained; but all is still conjecture as far as regards an extensive range of country to the north, the north-west, and north-east of the Caillas range of mountains.

Neither the ancients, to whom the Himalaya Mountains were well known, nor the Hindus, to whom they have always been the cherished objects of veneration, nor our countrymen, who, from the plains of Bengal, had so often gazed at their snow-capped summits from a distance of 150 miles, ventured to form a conjecture even of their absolute height above the level of those plains. Mr Colebrooke, in his Note to Captain Raper's *Narrative*, observes that, "without supposing the Himalaya to exceed the Andes, there is still room to argue, that an extensive range of mountains, which rears high above the line of perpetual snow, in an almost tropical latitude, an uninterrupted chain of lofty peaks, is neither surpassed nor rivalled by any other chain of mountains *but* the Cordilleras of the Andes." Shortly after this, however, he thinks the observations of Captain Webb "authorize the opinion, that the Himalaya is the loftiest range of alpine mountains which has yet been noticed, its most elevated peaks *exceeding* the highest of the Andes."

The highest part of the Himalaya is about the centre of the chain, or between the source of the Bhagiruttee and the valley of Nepaul. From an observation taken by Colonel Crawford (when at Cathmandu, in Nepaul, in 1802) of very small angles at the extremities of a short measured base, it is concluded that one peak, called Dhaibun, rose to an elevation of 20,140 feet above the spot where the observation was made; which being itself 4500 feet above the level of the sea, would make the height of this peak 24,640 feet. By similar observations, the height of another peak was proved to be 22,319 feet, of another 24,525, another 22,952 feet, and of a fifth 23,162 feet, above the level of the sea.

But the peak which was found to possess the most extraordinary elevation was that called *Dhawala-giri*, or the White Mountain. By a mean of three observations, taken from the following computed distances, and seen under their respective angles, namely,

At station A, distance $89\frac{35}{100}$ miles. Ang. 2° 48′
——— B, ——— $102\frac{83}{100}$ —— —— 2° 19′
——— C, ——— $136\frac{35}{100}$ —— —— 1° 22′

and, by allowing for refraction, the height of this mountain is calculated at 27,677 feet above the plains of Gorak'hpur; which plains being 400 feet above the mouth of the Ganges, it follows that the whole height of Dhawala-giri must be taken at more than 28,000 feet above the level of the sea. By a subsequent calculation, however, the height of this peak was reduced to 26,862 feet. Of this and six other peaks, the following are the results of Mr Colebrooke's calculations, made from the observations of Captain Webb:

	Feet.
Dhawala-giri, "on the lowest computation"...	26,862
Jamunawatari, or Jamautri...	25,500
A mountain supposed to be Dhaibun...	24,740
A nameless mountain...	22,768
Another nameless mountain...	24,625
Another, near the last...	23,262
A third, in its vicinity...	23,052

These heights are probably exaggerated; it appears, indeed, that subsequent observations, made by Captain Webb, with an excellent instrument, from the extremities of a well-determined and sufficient base, have decided them to be so. They make, for instance, the height of the first "nameless mountain" in the above table only 21,000 feet above the plains of Rohilkhund, or 21,500 above the level of the sea, being a deduction from Mr Colebrooke's calculation, for the same mountain, of 1268 feet.

The following table exhibits the results of Captain Webb's corrected observations, of no less than twenty-seven different peaks of the Himalaya range, as taken in the progress of his survey of Kumaon, but for the accuracy of which he candidly admits it would be impossible to vouch, in all the circumstances under which the observations were taken. They are, however, in all probability, not far from the truth:

No. of Peak.	Altitude.	No. of Peak.	Altitude.
1	22,345	15	22,419
2	22,058	16	17,994
3	22,840	17	19,153
4	21,611	18	21,439
5	19,106	19	22,635
6	22,498	20	20,407
7	22,578	21	19,099
8	23,164	22	19,497
9	21,311	23	22,727
10	15,733	24	22,238
11	20,681	25	22,277
12	23,263	26	21,045
13	22,313	27	20,923
14	25,669		

After these trigonometrical deductions had been made, Captain Webb had the good fortune to succeed in making several barometrical observations in the Nitee Pass, through which Moorcroft had reached the plateau of Tartary. In his way thither he reached nearly the base of those lofty peaks of the Himalaya which tower above the temple of Kedar-nath, and the altitudes of which are amongst those previously determined by triangulation, at a great distance, and seen under very small angles. He had, however, at this place, the advantage of observing one of these peaks under an angle of 26° 15′ 15″; and this, he says, gave him a result that agreed as well as could be expected with the position and altitude he had formerly assigned to it. The temple itself, by the mean of five barometers, was found to be 11,897 feet above the level of Calcutta, or about 12,000 above that of the sea, yet no snow lay near it in the beginning of July.

Captain Webb next proceeded to Josimuth, near the commencement of the defile leading to the Nitee Pass, where he met with one of the civil servants of the East India Company proceeding on a mission to the frontier, with a view of opening a commercial intercourse with the Tartars. These subjects of China, however, declined all connection with us, and pushed forward picquets of cavalry to guard the pass. This untoward circumstance did not deter Captain Webb from proceeding. On approaching the pass he experienced the same difficulty of breathing which occurred to Moorcroft, and from the influence of which, he says, neither horses nor yaks are exempt. The natives call it *Bis-Kee-huiva*, or the poisonous atmosphere; and conceive it to be owing to the effluvia of certain flowers.

He found in the pass a troop of Tartar cavalry, who, with some inhabitants of Deba, received him kindly, and consented to let him remain until an answer should be received from Ghertope respecting his farther progress, which, at the end of fifteen days, was a negative, or, which amounted to the same thing, a reference to the viceroy of Lassa. He had been permitted, however, to proceed to the crest or highest ridge of the Nitee Ghaut, which is at or near its farthest extremity, and to make his observations, which are exceedingly interesting and important. On the 21st of August, at three P. M., by the mean of four barometers, the mercury stood at 16,27 inches, and the thermometer at 47°; and on the same day and hour, and the two preceding and following days, the state of the barometer and thermometer at Dumdum, about fifty feet above the sea, by a journal of the weather kept by Colonel Hardwicke, was as follows:

Aug. 19,	barometer 29,46 inches.	Ther. 88°
20	29,46	84
21	29,48	85
22	29,48	84
23	29,65	81
Mean	29,51	84·4

From which the Nitee Ghaut above Dumdum must be 16,764 feet, and above the sea 16,814 feet. Yet, at this extraordinary elevation, not a vestige of snow appeared in the Ghaut, nor on the shoulder of the ridge on the left of the pass, which rose to the height of 300 feet above it; and hence it would appear that the lower point of congelation, on the northern or Tartarian side of the Himalaya, is *not less than seventeen thousand feet.*

From the crest of the Ghaut Captain Webb was able to perceive the line of the Sutledge winding through the plain to the westward, and to take the angle of depression, from which, and Moorcroft's distance (generally found to be correct), he determined the elevation of this lowest part of the table-land of Thibet to be 15,924 feet. The angle of depresssion was 1° 28′ 10″, and the distance 15½ British miles. Notwithstanding this enormous elevation of 15,000 feet, the banks of the Sutledge afford the finest pastures for myriads of quadrupeds; and crops of a species of barley called *ooa*, from which the natives make their bread, are annually produced. Nay more; on the cheeks of the Nitee Pass plants were found that ripened their seed at the height of 17,000 feet. These singular anomalies, so utterly at variance with the theories of Humboldt, Leslie, Kirwan, and all European writers on the subject, can only be explained with reference to the great radiation of heat from that vast extent of elevated land that rises out of Central Asia like the boss of a shield, creating as it were a new atmosphere of its own. "As the heat," says the Baron de Humboldt, "of high regions of the atmosphere depends on the radiation of the plains, it is conceived that, under the same geographical parallel, one may not find in the system of transatlantic climates the isothermal lines of the same elevation above the level of the sea, as in the system of European climates." For the same reason, the system will apply still less to the climates of Central Asia. The same philosopher has observed, that the Cordilleras of the Andes, though they extend from north to south 120 degrees of latitude, are, generally speaking, not more than from two to three, and very rarely from four to five degrees in breadth; but the vast surface of table-land, supported by the great Himalaya buttress, stretching from Daouria on the east, to Belur-tagh on the west, through 47 degrees of longitude, and from the Altai on the north, to the Himalaya on the south, through a mean breadth of 20 degrees of latitude, presents a *plateau*, more or less elevated, equal to above three millions of square miles.

In confirmation of the great influence of radiated heat from extensive elevated plains, some strong facts are exhibited both in America and Asia. Thus, on the mountains which rise out of the elevated plain of Mexico, Humboldt observed the lower line of perpetual congelation, in lat. 19°–20°, at 15,090 feet above the sea, which, by the table of Professor Leslie, ought to have been at 13,560, making a difference between fact and theory of 1530 feet. The lower point on the side of Chimboraço, nearly under the equator, was 15,746 feet, being only 656 feet higher than on the mountains of Mexico; whereas, by Leslie's table, the difference ought to be 1729 feet. Compare, again, the height of this lower limit of perpetual congelation on the side of Chimboraço with the observations of Captain Webb in the Nitee Pass, and we have the extraordinary anomaly of a place in Asia, in 30° of latitude, having that limit higher by 1253 feet than another place in America immediately under the equinoctial line, and at 5500 feet, or more than a mile, higher than it ought to be in that parallel of latitude, according to the theory on which Professor Leslie constructed his table.[1]

It is right to observe, however, that the same anomaly exists, though in a less degree, on the southern face and abutments of the Himalaya range. Thus the elevation of Kedar-nath, at 12,000 feet, is below the verge of perpetual snow, which in Europe, on the same parallel of latitude, would be at 700 feet lower. Thus, also, the village and temple of Milem, in lat. 30° 25′, were not only without snow at the height of 11,790 feet, but extensive fields of buckwheat and Tartaric barley were growing at that elevation. In the same degree of latitude the same height in Europe would be some hundred feet within the limits of perpetual snow. At the same height, on the 21st of June, Captain Webb's encampment was surrounded with flourishing woods of oaks, of the long-leafed pine, and the arborescent rhododendron, and the surface was clothed with a rank vegetation. On the following day he determined the elevation of Pilgointi-Churhai Pass to be more than 12,700 feet above the sea; yet even here no snow was visible, but the black soil was clad with creeping plants; and the shoulder of a mountain rising still higher was without a vestige of snow, and appeared, as far as could be seen through the mist, enamelled with flowers. The reflected heat from the perpendicular face of the immense mass of naked rock, on which snow cannot rest, exposed to the rays of a south-western sun, will probably be deemed sufficient to explain the anomaly which is found to exist on the southern side of the chain.

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[1] See the article CLIMATE.

Of the geological strata of these mountains we have not as yet full information. Mr Baillie Fraser, who penetrated to the very base of the great chain, at the head of the Jumna and the Bhagiruttee branches, describes the first and inferior hills of sandstone, more or less destructible, of indurated clay, with beds of rounded pebbles and gravel. The second ridge of hills, rising to the height of 1500 to 5000 feet, are sharp, rough, and run into numerous ridges, divided by deep shaggy dells; and the crests of the ridges are frequently so sharp that two persons can hardly stand abreast upon them. Beyond these are a mass of hills entirely composed of limestone, of a round, lumpish, rugged character, whose highest points may be from 5000 to 7000 feet. Next to these commences the schistus, or slate, which continues to the very roots of the Snowy Mountains. All above appeared to be striated hard grey gneiss, and a compact granite, which, Mr Fraser supposes, is the material which constitutes the highest ridges and crests of this great mountain range; but schistus is the rock that mostly predominates. Hot springs are found on both sides of the Himalaya; and copper, lead, and iron, are commonly met with. Gold is also found in the beds of the rivers. Captain Webb obtained the petrified bones of an animal of the deer kind, which were dug out of a bed of gravel, on the side of the Caillas Mountain, at least 16,000 feet above the level of the sea, a height at which, it may safely be asserted, no other organic remains have hitherto been discovered.

For some further statements of the height of the highest peaks of the Andes, as compared with those of the Himalaya chain, see the article Asia.

HIMILCO, a celebrated navigator of Carthage, a contemporary of Hanno, and equally distinguished for his maritime discoveries. He was the first who ventured to traverse the Northern Ocean, and to examine the shores of Great Britain; but the details of this voyage, which must have been remarkable for its boldness at that early period, have nearly disappeared in the lapse of years (Plin. ii. 67). Festus Avienus, in his work entitled *Ora Maritima*, has preserved to us a few particulars, which, as it is the earliest notice taken of our island, it may be interesting to give: "Here is the point of a high ridge, called in ancient times Œstrymnis; the whole lofty mass of rocks faces the warm south. In front of this promontory opens the bay Œstrymnicus, in which are found the islands Œstrymnides, rich in tin and lead. The country is populous, and the inhabitants are remarkable for their pride, their active industry, and their commercial spirit. They traverse, in small boats made of skins, the boisterous sea and whirlpools of their ocean, abounding in sea monsters. Two days sail, you reach the island of the Hiberni, and near them you have the island of Albion." The Œstrymnides are evidently the Scilly Islands, which were afterwards called Cassiterides. This voyage is supposed to have taken place in the sixth century before the Christian era.

Himilco, a senator of the Barcine or popular faction at Carthage, who warmly supported the policy of Hannibal in attacking the Romans in their own country. The successful battle fought 216 B. C. at Cannæ, was to him a convincing proof of the correctness of their policy, and he did not fail to take advantage of this opportunity to inveigh loudly and sarcastically against the gloomy predictions of his opponents, and the more cautious policy which they recommended. (Liv. xxiii. 12.) The severe defeats sustained by the Romans in Italy had shaken the fidelity of even their more faithful allies, and it was not to be expected that their more distant conquests in Sicily could be retained without a complete supremacy of power. Many of the cities in that island had abandoned their cause; and Himilco, who commanded the fleet at Pachymnon, 214 B. C., returned to Carthage to press on the attention of the executive the necessity of more decisive measures. His representations were attended to, and he landed at Heraclea with a force which he imagined to be sufficient to drive the Romans from Sicily. He took the city of Agrigentum, but his subsequent success was by no means equal to the sanguine expectations he had entertained. Marcellus still maintained his position before the city of Syracuse, and the fearful example he made of the people of Euna prevented even the most disaffected cities from openly declaring in favour of the Carthaginians. (Liv. xxiv. 35–39.) At last the critical position of Syracuse imperatively required some efforts to be made for its relief, and Himilco, with his colleague Hippocrates, suddenly took up positions so as to render the besiegers the besieged. The boldness of this proceeding was not followed by measures sufficiently vigorous. A pestilential fever succeeded, which attacked the Carthaginians with more severity than the Romans, and Himilco, with the whole body of his countrymen, fell a victim to its ravages, B. C. 212. This melancholy end of Himilco was the death-knell to the liberties of Syracuse. (Liv. xxv. 26.)

HIN, a Hebrew measure of capacity for things liquid, containing the sixth part of an ephah, or one gallon two pints English measure.

HINCKLEY, a town of the hundred of Sparkenhoe, in the county of Leicester, 100 miles from London. It is built on an eminence in a fertile country, and is chiefly inhabited by persons employed in the hosiery trade. There was formerly a castle, now converted into a modern dwelling, and a Benedictine monastery; and the town must once have been of greater extent than it is at present. There is a well-supplied market which is held on Monday. The population amounted in 1801 to 5070, in 1811 to 6058, in 1821 to 6706, and in 1831 to 6468.

HINDIA, a district of Hindustan, in the Mahratta territories, in the province of Khandesh. It is situated between the twenty-second and twenty-third degrees of north latitude, and is bounded on the north by the Nerbuddah, and on the south by the Cattygong hills. The country is fertile. Hindia, the capital of this district, is a fortified town, and is pleasantly situated on the northern bank of the Nerbuddah river. Long. 77. 10. E. Lat. 22. 31. N.

HINDON, a borough-town of the county of Wilts, formerly a part of the parish of East Knowle, in the hundred of Downton. It is ninety-six miles from London, has a small market on Thursday, and its population amounted in 1801 to 793, in 1811 to 781, in 1821 to 830, and in 1831 to 932.

HINDONE, a town of Hindustan, in the province of Agra. It was formerly a large city, but has suffered severely from the depredations of the Mahrattas. Long 77. E. Lat. 26. 45. N.

HINDU Coosh, or Kosh, a portion of the Himalaya range of mountains, in Afghanistan. They form the north-west boundary of the province of Caubul, separating it from Balk and Buduckshan. The range of mountains so denominated extends in a south-westerly direction as far as the snowy peak of Hindu Coosh, nearly north of Caubul. These mountains are covered with snow the greater part of the year, and void of verdure at the summit, but are well wooded at the base. They form the Caucasus range of the ancients. From the peak of Hindu Coosh the height diminishes; it no longer bears perpetual snow; and it is soon afterwards lost in a group of mountains which stretch in length from Caubul to Herat in Persia, and occupy more than two degrees of latitude in their breadth. Through these mountains there are seven passages; the principal of which are at Bajaruch, Anderab, Tool, Bamian, and Abderah.

HINDUSTAN.

HINDUSTAN has from the earliest ages been celebrated as one of the most highly favoured countries on the globe, and as abounding in the choicest productions both of nature and art. In ancient times, this distant region was very imperfectly known to the Greeks and other nations of the West; but they imported its most valuable produce, its diamonds, its aromatics, its silks, and its costly manufactures. The country which abounded in those expensive luxuries was naturally reputed to be the seat of immense riches, and every romantic tale of its felicity and glory was readily believed. In the middle ages, an extensive commerce with India was still maintained through the ports of Egypt and the Red Sea; and its precious produce, imported into Europe by the merchants of Venice, confirmed the popular opinion of its high refinement and its vast wealth. After the discovery of a passage to India by the Cape of Good Hope, the same ideas still prevailed; and the maritime states of Europe contended with their fleets and armies for the dominion of the Asiatic seas, and for the commerce of the country. The Portuguese, and afterwards the Dutch, made important conquests, and carried on an extensive trade. In later times, Great Britain and France appeared on the field as competitors for the prize of Indian commerce and dominion, and were allowed to establish factories on the coasts for the reception and the store of goods. These were gradually converted into military posts, defended by soldiers and cannon; and in due time those two powers were ranged on opposite sides in all the wars and politics of India. This contest terminated in the triumph of the British arms. France lost her pre-eminence on the continent of India; and her great rival, enlarging her power on every side, gradually rose to greatness and dominion, and now rules with undisputed sway from the Himalaya Mountains to Cape Comorin. This vast extension of the British power in the East has opened the way into the interior of India. It has tended greatly to enlarge our knowledge of this distant region; and if more accurate inquiry has reduced the marvellous tales of its glory and greatness within the bounds of sobriety and truth, Hindustan, the seat of industry, of commerce, and of the arts, when Europe was sunk in barbarism, the scene of many eventful revolutions, from the Mahommedan invasion till its conquest by the armies of Britain, and inhabited by a people of peculiar manners, laws, institutions, and religion, still presents a wide field for interesting inquiry and speculation.

In the following account of this interesting country, we propose to describe, I. Its geography and natural features; its produce, its animals, its manufactures and commerce; the numerous races by which it is inhabited, with their manners, religion, and policy; and the wars and political revolutions which have terminated in establishing the sway of Great Britain over nearly the whole continent of India. II. The transactions and internal policy of the East India Company, with the various reforms introduced into the revenue, judicial, and police departments, will afford ample materials for a separate discussion and inquiry. And, III. A brief account will be given of the constitution, commercial privileges, and pecuniary transactions of the Company, originally merchants, now the sovereigns of a vast empire.

Ge raphy. I. The ancient geographers had no precise ideas of the extent of Hindustan or India, terms which we mean to use synonymously in the following article; and they accordingly extended its frontier westward as far as Persia, and eastward to China. In after ages its limits often fluctuated with the events of war, and served only to mark out the course of conquest, with little or no attention to geographical accuracy. Yet in no part of the earth has nature pointed out, in the great features of the country, more distinct and magnificent boundaries. On the north it is separated from the elevated table-land of Thibet by the precipitous wall of the Himalaya Mountains, the highest land of the Asiatic continent; on the west the Indus divides it in its course to the sea from Afghanistan; while the great river Brahmapootra may be said to constitute its eastern boundary, or, more accurately perhaps, that range of hills and forests that skirt the Bengal districts of Chittagong and Tipperah, and stretch southward to the point where the Brahmapootra, after having long flowed in a westerly course, makes a sudden sweep to the south. The Indus and the Ganges discharge themselves into the ocean on the western and eastern coasts of Hindustan, in about 24° and 25° north latitude; and to the south the country is contracted into an irregular triangle, projecting into the Indian Ocean to within eight degrees of the equator, or about 1000 miles, and on all sides enclosed by the sea. The extensive region situated within these limits is nearly comprehended between the 8th and 35th degrees of north latitude, and between the longitudes of 68° and 91° east; and its length from the northern barrier of the Himalaya Mountains to Cape Comorin is about 1900 miles, whilst in breadth it may be estimated at 1500 miles, though, owing to the irregularity of its figure, it does not exceed 1,280,000 English square miles.

Natural features. Hindustan is of an extremely diversified aspect, and comprehends within its bounds all the varieties of climate, of soil, and of natural scenery, from the bare and naked rock, and lofty mountain buried under eternal snows, to the low and fertile plain, scorched by the tropical sun, and the seat of luxuriant vegetation. This diversity in the aspect of the country has given rise to the following territorial divisions, namely,

1. Northern Hindustan, which comprehends the Himalaya Mountains on the north, with their lower ranges of hills, extending southward to the great plain of the Ganges; and which includes Cashmere on the west, and the country of Bootan on the east.

2. Hindustan Proper, which extends southward as far as the Nerbuddah river, where the Deccan commences, and which includes the following provinces, namely, Bengal, Bahar, Allahabad, Oude, Agra, Delhi, Lahore, Cashmere, Ajmeer, Moultan, Cutch, Gujerat, and Malwah.

3. The Deccan, bounded on the north by the Nerbuddah river, and on the south by the rivers Krishna and Toombudra, comprehends the provinces of Gundwana, Orissa, the Northern Circars, Khandesh, Berar, Beeder, Hyderabad, Aurungabad, and Bejapoor.

4. India south of the Krishna river, comprehending the provinces of Canara, Malabar, Cochin, Travancore, Balaghaut Ceded Districts, Mysore, Coimbetore, Salem and the Barramahal, and the Carnatic.

1. The alpine region of Hindustan, which forms its northern barrier, is a narrow strip of land not exceeding 150 miles in breadth. It is here that the land of Asia attains to its height; and the country is composed of a succession of vast mountains rising far above the level of perpetual snow. These frozen deserts consist in many places of rugged and bare rocks, shooting aloft into the sky, and divided by deep ravines, very steep, and often ending in dark chasms, which are sometimes wooded, but as often bare rocks several hundred feet in height, with little more space between them than has been worn by the violence

of the torrents. Here is concentrated all that is sublime in the scenery or phenomena of nature. On every side are to be seen snowy summits of stupendous height, and of every form; the conical volcanic peak; the mountain regularly rounded, or broken into rugged and frightful precipices, rising upwards to a tremendous height, or descending with a frightful declivity into deep hollows, and all covered with snow. This mountainous and frozen region is the scene of the destructive avalanche, when the accumulated snows of successive winters are precipitated from the mountains into the plains below, burying every thing in their progress; or when the action of the intense cold upon the solid rock rends it from its base, and sends it bounding down the steep, producing the most fearful ruin of every thing beneath. Mr Moorcroft, who in the year 1816 penetrated across the Himalaya ridge, mentions the tremendous crash from the fall of a rock, which he heard at a great distance. The slope of a hill he also saw broken from top to bottom. "In its fall," he observes, "it has overwhelmed large trees, of which some have been hurled into the river, others lay across its bed half buried in rubbish, and others, thrown down, were seen hanging by their roots with their heads towards the base of the mountain." The southern face of the Himalaya Mountains is much more steep than the northern descent into the tableland of Thibet, and it is in proportion difficult and dangerous. There is nothing like a road in these mountainous districts. The traveller has to scale the most terrific heights, by a path so narrow as not to admit two abreast, which winds along the mountain, and often along bare and perpendicular precipices, by a narrow and irregular flight of steps, or by natural irregularities in the face of the polished marble rock, and sometimes by a projecting ledge not more than a foot broad, whilst a declivity of 600 or 700 feet in depth opens on the outer side. These steps, at certain projecting points, where the rock is perpendicular, wind in lines of zigzag not more than ten or twelve feet in length, at angles so sharp that, in a length of twenty-four feet, the actual height gained is not more than ten feet, and they are often placed at most inconvenient distances, which greatly increases the danger and the difficulty of access, except to those hardy mountaineers who have been trained from their infancy to agility and steadiness in such tremendous paths. Mr Moorcroft himself had on one occasion a narrow escape. "My left foot," he says, "having slipped off one of these irregularities, I lay for a few seconds upon the poise; but a snatch at a clump of grass, which on being seized did not give way, and a sudden spring, brought me to a comparatively safe spot, with the loss of some skin from my knees and elbows, and some rents in my trowsers and sleeves."[1] His Hindu attendants encountered the same perils, and one of them had very nearly fallen down the precipice. On missing his footing, he mentions that "he shrieked violently, and sunk down almost senseless upon a point of stone, with one leg hanging over the abyss, calling out that he was lost." Another of the bearers was so alarmed that he was incapable of proceeding until he was secured by a turban tied round his waist, and held by one of his companions. In some places the rock was found to project to the edge of the river, and it was turned by rude staircases made of wood and stone, or the path lay over immense stones and rocks, piled up in dangerous disorder, where it was very difficult to secure a footing; whilst in other places the party had to aid their ascent by laying hold of shrubs, roots of trees, clumps of grass, and clods of earth, or by creeping on both hands and knees to prevent slipping down. Yet the heavily loaded native carriers, each carrying a weight of 60 pounds, are seen descending these difficult passes with apparent ease and unconcern.[2] Lieutenant Webb, who in 1808, along with Captains Raper and Hearsay, was sent to explore the sources of the Ganges, experienced the same dangers as Mr Moorcroft, and was finally compelled to desist from his hazardous journey when he had reached within six or seven days' journey of Gangoutri. The country here assumes a savage wildness, and, except in the passes or beds of the rivers, is totally impervious; and these rivers, in approaching their sources, from rapid and turbulent streams flowing over a rocky channel, become furious torrents, dashing from one huge block of stone to another, along which the traveller, climbing over rocks, or picking his dangerous way along the path of precipices, as already described, is at last met by masses of mighty ruins, which entirely check his further progress. More recently these wild regions have been explored by that enterprising traveller Dr Gerard, who crossed the great Himalaya pass, and penetrated into the plateau of Tartary. The abstract of his tour, given in the Asiatic Journal, is replete with valuable information, and confirms all the previous accounts of travellers respecting the nature of the country, rude and inaccessible, and exhibiting, on a scale of grandeur hardly to be conceived, all the great phenomena of nature.

The Himalaya Mountains contain the sources of the great rivers which flow through the burning plains of Hindustan. The deep valleys between the mountains are the channels through which the waters flow from the higher grounds; and, by the melting of the snow, those streams, suddenly swoln into torrents, and rushing down the declivity, work out a deep and narrow channel amongst the rocks, where, imprisoned as it were between steep and perpendicular banks, they roar and foam amidst precipices, or in dark and unfathomable glens, exhibiting, in the conflict of their troubled waters, all the great phenomena which belong to rivers, namely, the cataract, the rapid, the boiling eddy, and the dangerous whirlpool, and only subside into smoothness when they break out and spread over the plains. Huge rocks were seen by Dr Gerard whirled along with frightful velocity; nothing visible but an entire sheet of foam and spray, thrown up and showered upon the surrounding rocks with loud concussion, and re-echoed from bank to bank with the noise of the loudest thunder. Across these streams are thrown rude bridges made of ropes or of wood, the usual expedient by which rivers are crossed in all mountain countries. Where the breadth of the river is small, the passage is effected by one or two fir spars laid across from rock to rock; but where the space is wider, a bridge of ropes is constructed, on the principle of the chain bridge. In attempting the passage by one of these rude bridges, a carrier who accompanied Fraser in his journey to the sources of the Ganges unfortunately lost his footing and fell into the water. He was instantly swept down the stream to its junction with the Bhagiruttee, about fifty yards, "when his head," says the traveller, "appeared for a moment, and his load floating beside him; but the foaming current of the Bhagiruttee, here tumbling over large rocks with a mighty roar, seized him and hurried him along with its tremendous torrent."

The height of the great Himalaya range has been fixed by accurate measurements at between 26,000 and 27,000 feet above the level of the sea. According to the accounts of all travellers, these mountains present from the plains below one of the sublimest aspects in nature, and they are at a loss for words to express the admiration and awe with which they are first beheld. Bishop Heber mentions that the nearest range rises into a dignity and grandeur which he was not prepared for, divided as it is into successive ridges, in all the wildest and most romantic forms of ravine, forest, crag, and precipice. In his further progress he found "one range of mountains after another quite as rugged, and, generally speaking, more bare than those which we had left, till the horizon was terminated by a vast range of ice and snow, extending its battalion of white shining spears from east to west, as far as the eye could follow it; the principal points rising like towers in the glittering rampart, but all connected by a chain of humbler glaciers." Captain Raper, who accompanied Lieutenant Webb in his survey of the Ganges, viewed the Himalaya ridge from a summit about 4000 feet above the lower plain. "From the edge of the scarp," he observes, "the eye extended over seven or eight distinct chains of hills, one rising above the other, till the view was terminated by the Himalaya or Snowy Mountains. It is necessary for a person to place himself in our situation before he can form a just conception of the scene. The depth of the valley below, the progressive elevation of the intermediate hills, and the majestic splendour of the cloud-capt Himalaya, formed so grand a picture, that the mind was impressed with a sensation of dread rather than of pleasure."[1] "The stupendous height of those mountains," says Elphinstone, "the magnificence and variety of their lofty summits; the various nations by whom they are seen, and who seem to be brought together by this common object; and the awful and undisturbed solitude which reigns amidst their eternal snows, fill the mind with admiration and astonishment that no language can express."[2]

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[1] See Moorcroft's Journal, *Asiatic Researches*, vol. xii. p. 386.

[2] Fraser, *Journal of a Tour through part of the Snowy Range of the Himalaya Mountains.*

Northern Hindustan varies in its climate and in its aspect with the height of the ground. The lower ranges of mountains, though they scarcely reach the level of perpetual snow, still retain the sublime features of alpine scenery; namely, the rugged and bare mountain, the craggy rock, white, gray, red, or brown, springing up in fantastic forms above the general mass; and the deep and suddenly descending chasm, with the foul torrent foaming over its rocky bed. The luxuriant foliage is wanting which embellishes the lower hills; the rich and smiling valley is not so often seen; whilst the forests of dark brown fir fringing the mountains and the hollows impart a sombre and unvarying appearance to the scene. At a lower level the country improves; and though it still exhibits the mountain and the precipice, the intervening valley is clothed with verdure, and the lower hills with the most magnificent forests of large and lofty trees, the open country with roses, jasmines, and other lovely or odoriferous shrubs, and with the most luxuriant alpine plants.[3] The valleys through which flow the head waters of the Indus and the Ganges, namely, the Sutlege, the Pabur, the Jumna, the Bhagiruttee, the Alkananda, with their tributaries, exhibit all the varied and sublime scenery of this romantic country. The valley of the Sutlege is hemmed in by brown and barren mountains, steep and rocky, without the grandeur of lofty precipices or fringing wood. The hollows through which it receives its tributary streams are dark chasms, without cultivation; the heights crowned with forts, but without any neat villages surrounded with trees to relieve the adjacent desert. The banks of the Jumna, on the other hand, though rocky and wild, are wooded and green, and the sloping faces of the hills fertile and well cultivated; and even at its source, the country, however wild and picturesque, is still not nearly so dreary as the valley of the Bhagiruttee. The features of the landscape are here lofty, rugged, and inaccessible, with less of the beautiful than of the sublime and terrible. A pleasing contrast to this wild scenery is presented by the smiling valley through which the Pabur meanders, chequered as it is with pasture and crops, and the banks and the hills clothed with cultivation, villages, and wood. Such is the usual aspect of the lower valley of Northern Hindustan, the height of which is for the most part from 3000 to 6000 feet above the plains. The difference between the northern and southern exposures of this mountainous country is remarkable, not only in the formation and structure of the hills and rocks, but in the vegetation. The country on its southern face is of a brown and dusky colour; the grass short and parched; the hills rough and lumpy, with rocks standing through the ground; the lower parts bare of wood; and above, the Weymouth pine, with a few stunted larches sprinkled amongst the rocks; whilst the higher parts are spread over with oak, holly, and alder, their leaves of brownish green, harmonising with the burned appearance of the hills, and giving a sombre hue to the whole scene. On the northern exposure a rich colour of dark green is diffused over the whole landscape; the rocky sides of the glens are bolder and grander; and they are clothed with noble forests of larch, silver, and spruce firs, which shroud from the view the highest and steepest cliffs. "All," says Fraser, "was rich and dark; and here and there a glade opened, or a high slope extended from the base of the rock, or projected between two streams, of a bright beautiful green, shining through the sombre forest." This difference between the northern and southern exposures is strongly marked all over the hills.[4]

That strip of flat country, about twenty miles in breadth, which lies at the base of the great Himalaya range, dividing it from the plain of the Ganges, is called Terrae or Terreeana. It is covered with thick forests and low swamps, and, though fertile, is so unhealthy that it is little cultivated. Bishop Heber graphically describes it as a long, black, level line, extending at the foot of the lowest hills, "so black and level," he adds, "that it might seem to have been drawn with ink and a ruler." This flat does not extend farther north-west than through a portion of Rohilcund, where the healthy cultivated country reaches to the foot of the hills, which rise abruptly from the sandy flat beneath. These low hills are watered by streams from the higher mountains, that rise to the level of 1500 or 5000 feet, from which this lower range is frequently separated by fine valleys of some length, which are called *doon* by the natives, answering to the Scottish name of *strath.* The hills which rise beyond this lower range to the height of about 5000 to 7000 feet, are lofty and majestic, and broken into numerous ridges, divided by deep shaggy dells. This appearance Fraser ascribes to the quality of the rock of which they are composed, which consists of a strongly indurated clay, with a mixture of siliceous matter, forming a rock exceedingly hard, though easily destructible by exposure to the air, and splitting into variously-sized fragments, leaving hard marbly masses staring through the scanty soil. It may be finally remarked of this singular and interesting country, that though it appears from the plains to be divided into distinct ranges or terraces, it is really a vast collection of mountains heaped in masses one above another, without any order or plan that can be discovered, until the height of land is reached at the great Himalaya ridge, which extends from beyond the sources of the Indus in a continuous chain far into China.

The great plain of Hindustan presents an entirely different scene. The cold and bracing air of the upper country is there exchanged for burning heat; the mountain torrents no longer rage, except when they are in flood, but roll their streams lazily over the plains. That large tract which is contained between the Indus and the Brahmapootra, and which extends east and west from 1200 to 1400 miles, and about 300 or 400 miles from north to south, is, with few exceptions, a level country, consisting chiefly of the great plain of the Ganges, rich and fertile, and clothed with the most luxuriant vegetation, in which the spreading palm, with groves of mango and other trees of the most luxuriant foliage, and gardens, are intermixed with cultivated fields. The noble river which intersects this extensive plain determines the aspect and character of the country. Its swelling stream, as it approaches the sea in the provinces of Bahar and Bengal, is very broad and deep, and waters so completely the whole country, that in the driest season there is scarcely any part more than twenty miles distant from some river; and by means of lakes, rivulets, and water courses, boats may approach the peasant's door. During the annual inundation, a large tract of cultivated country is submerged to a great depth; and the lower part of the Delta, named the Sunderbunds, is chequered by a labyrinth of creeks and rivers, expanding to a breadth of two hundred miles; the actual inundation reaching a breadth of one hundred miles, in which trees and villages are seen like islands appearing above the water. Higher up the stream the inundation is diminished in extent; and in the province of Bahar the river is not above a mile broad, the country being flat and fertile, though not so abundant in trees as the rich plains of Bengal. Towards the west, the plain watered by the Ganges and its tributary streams yields in abundance all the productions of the tropics; especially the Dooab, or the tract that lies between the Jumna and the Ganges, the provinces of Allahabad and Agra, and in general all the alluvial tracts near the rivers. At a distance from these, irrigation is resorted to by the cultivators, and deep wells are dug. The plain is diversified by ranges of hills, with abrupt peaks occasionally shooting up, and crowned with forts, in which, during the decay of the Mogul empire, the rebellious or robber chiefs sought to secure a precarious independence. The plain of Hindustan is generally fertile when water can be obtained; and, as it approaches the mountains, in the northern provinces of Oude and Delhi, and is watered by the numerous streams flowing towards the Ganges, it is flat, fertile, and rich, except towards the western borders of Delhi, on the verge of the great desert, where sterile tracts occur, without cultivation or inhabitants. Towards the south-western portion of the plain, near the Nerbuddah, in the province of Malwah, the country is of greater elevation, but has a regular descent from the Vindhya Mountains, which extend along the north side of the river, as is pointed out by the course of the numerous streams that still flow northward into the Ganges. But the aspect of the country changes as it recedes from this great stream; the overflowing river no longer spreads over the plain, and forms a navigable water-course; it is now merely a mountain torrent, of no depth to float down the produce of the country. Westward, in approaching the Indian Ocean, wild tracts occur, hilly and rocky, and overgrown with jungles, the haunts of wild beasts and of robbers; and, still further west, the province of Cutch is a cold, sterile waste, half covered with a salt morass called the Runn. In the interior of Hindustan, large and fertile tracts have been laid waste by misrule, or the devastations of war: these are overrun with a rank vegetation, which quickly springs up under the quickening influence of a tropical sun; and which, consisting of tall trees with spreading branches, interwoven into an impenetrable fence with brushwood, and with innumerable shrubs and creeping plants clinging round the trees, and lacing them firmly together, forms thick jungles, affording abundant cover to the wild animals of the country, and to gangs of banditti, who are even more ferocious than the beasts of the field.

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[1] See Raper's Narrative of a Survey of the Sources of the Ganges, *Asiatic Researches*, vol. ii. p. 469.

[2] Elphinstone's *Journey to the Kingdom of Caubul*, p. 95.

[3] Fraser's *Journal*, p. 141.

[4] *Ibid.* p. 142.

Hindustan, as well as almost all other tropical countries, would soon be changed, by the great heat, into deserts of sand, like a large portion of Africa, if it were not refreshed by the periodical rains and the overflow of the rivers. In the plain of Hindustan, towards the west, occurs a tract of this description, which, having neither rains nor refreshing streams, still remains an arid sand. This great desert reaches northward as far as the Chinaub, one of the five tributary rivers of the Indus, and to the south as far as the salt lakes of Cutch, which communicate with the Gulf of Cutch in the Indian Ocean. It extends about five hundred miles from north to south, and is about four hundred miles in breadth, encroaching eastward on the cultivated parts of the Delhi and Agra provinces, and westward on the country fertilized by the Indus. Mr Elphinstone, in his journey to Afghanistan, travelled across this waste, which he describes as consisting mostly of hillocks of loose and deep sand, from twenty to a hundred feet in height, which in summer are blown aloft in clouds by the wind, and threaten to overwhelm the traveller. Here a miserable village is sometimes seen, which is merely a few round straw huts, with low walls and conical roofs, like little stacks of corn, surrounded by hedges of dry thorny branches stuck in the sand. A few fields, watered by the dews and the rains, surround these abodes of misery, and yield crops of the poorest kinds of pulse, and coarse grain. Water is scarce, and is only obtained from wells often three hundred feet deep, with a diameter of only three feet, and all lined with masonry. One was seen by Mr Elphinstone of the enormous depth of 345 feet, with such a scanty supply of unwholesome brackish water, that the whole was drawn out, by two bullocks turning the water wheel, in a single night. In this sandy desert springs up in profusion the most juicy of all fruits, the water-melon. From about the western frontier of Ajmeer, at Shekawutty, to Bahawulpoor, the distance is 280 miles, of which the western portion, for 100 miles, is wholly destitute of inhabitants, water, and vegetation. In the Punjab, the abundance of water corrects the sterility of the soil; and in the country watered by the five well-known rivers which flow into the Indus, cultivation, with waving grass and trees, marks the termination of the desert. In the north-western extremity of Hindustan, high up the Indus, and embosomed amongst lofty mountains, is situated the Valley of Cashmere, celebrated in oriental tales for its romantic beauty. Here the eastern princes, in the days of their prosperity, were wont to retire, and to seek in those sequestered scenes of natural beauty a brief oblivion of their daily cares.

The country to the south of Nerbuddah, namely, the Deccan, extending north-west and south-east 800 miles, comprehends the whole breadth of Hindustan, between the Nerbuddah on the north and the Krishna or Kistnah river on the south. The western range of the Ghaut Mountains, rising up with the steepness of a wall from the shore of the Indian Ocean, runs along the coast southward from the river Taptee, as far as Cape Comorin, and forms the highest land, only about seventy, or in some places forty miles, from the western shore; whilst on the opposite side the distance eastward to the coast is from three to six or seven hundred miles. Owing to this conformation of the ground, all the rivers of any size or length of course, such as the Godavery and the Krishna, which water the Deccan, and the Conjeveram and the Cavery, which belong to Southern India, roll down the eastern declivity of the Ghauts, there being no space on the western declivity for the formation of any other than a mountain stream. These mountains also diverge in ridges across the country of the Deccan, which on the eastern coast is low, flat, and sandy, with the exception, however, of the tract between the Godavery and Kistna or Krishna rivers, 150 miles in length, along the sea shore, and forty miles broad, composed of rich vegetable mould, such as is usually found at the mouths of rivers, and remarkably fertile. In the interior, the country, especially towards the north, is wild, woody, mountainous, and overrun with thick jungle; in some parts, as in the province of Gundwana, it is a primeval wilderness, inhabited by barbarous tribes, who owe their safety to their poverty. Towards the south and the west, in the provinces of Hyderabad, Beder, and Berar, the ground rises into a table-land, which declines towards the north in the province of Khandesh; and it is hilly, though not mountainous, well watered, and in many parts fertile; but towards the south, large tracts have been desolated by war and robbery; and ruined towns, and wasted fields overgrown with jungle, still remain, the sad memorials of those calamities. The western provinces of Aurungabad and Bejapoor extend towards the Indian Ocean, and include the Western Ghauts, which rise to the height of about three thousand feet above the level of the sea. They abound in all the interesting aspects of mountain scenery, and are studded with fortresses and natural strongholds. The eastern declivity stretches out into a table-land, with plains well watered and productive; whilst the intervening strip of land, from the mountains to the sea, is in general flat and sandy, but improves as it approaches the mountains, which are fringed with noble forests of teak and other valuable trees. Numerous mountain streams, but no rivers of magnitude, make their way to the sea from the Western Ghauts; and there are few coasts so much broken into small bays andhar bours, with so straight a general outline.

To the south of the Kistna river, the country forms a triangle, of which this river is the base, and the coasts of Coromandel and Malabar the sides. Its extent from the Kistna to Cape Comorin, which is the point of the triangle, is 600 miles; and its breadth in the widest point is about 550. It may be shortly described as a table-land 3000 feet in height, containing the central provinces of Balaghaut, Mysore, and Coimbetore, and enclosed on each side by the Western and Eastern Ghauts, from which the country descends on both sides to the sea; on the east to the Bay of Bengal, and on the west to the Indian Ocean, forming the two provinces of the Carnatic and of Malabar; the latter a narrow strip of low country, extending 200 miles along the coast, much broken, and interspersed with back-water runs and extensive ravines, shaded with forest and jungle, and filled with population; the former also a long narrow tract, stretching 570 miles along the shore, and nowhere more than 120 miles in breadth, and commonly not more than seventy-five. The Eastern Ghauts extend from the Cavery to the Kistna. They are not so high as the western range; and naked, sun-burnt, and rocky peaks are more commonly seen amongst them. The table-land in the centre descends both towards the north and south, its elevation in the southern province of Coimbetore not exceeding 900 feet. It is extremely diversified with woods, waste, and jungles; and cultivation is here, as in other parts of India, carried on by means of large tanks containing a supply of water for the irrigation of the land. In descending from the hills into the southern plains of Travancore, which extend to the Indian Ocean, the country presents a varied prospect of hill and dale, and winding streams which clothe the valleys in perennial green; and the grandeur of the scene is heightened by the lofty forests which cover the mountains, producing pepper, cassia, frankincense, and other aromatic gums.

The following are the chief rivers of Hindustan, with the length of their respective courses to the sea:—Indus, 1700; Brahmapootra, 1650; Ganges, 1500; Jumna (to its junction with the Ganges 780), 1500; Sutlege (to the Indus 900), 1490; Ghylum (to the Indus 750), 1250; Gunduck (to the Ganges 450), 980. In the Deccan and south of India, the Godavery, 850; Kistna, 700; Nerbuddah, 700; Mahanuddy, 550; Tuptee, 460; Cavery, 400. There are few coasts of such extent, so destitute of islands and harbours as that of Hindustan. With the exception of emerged sea banks and mere rocks, Ceylon is the only island near its shores; and on the eastern coast, Masulipatam, which admits vessels of 300 tons burden, is the only harbour for large vessels between Trincomalee in the island of Ceylon, and the Ganges, which is free from a raging surf. To this inconvenience Madras, though an important British settlement, is peculiarly liable. On the western coast, the only harbour capable of admitting large vessels is Bombay; Mangalore admits no vessels drawing more than ten feet, and this only at the height of the tide.

Climate.

Hindustan comprehends within its bounds the opposite extremes of heat and cold. The plains are burnt up with intense heat; whilst winter, with every intermediate variety of temperature, prevails in the mountains. Philosophers have in vain endeavoured to fix the point of perpetual congelation under different degrees of latitude. They have indeed framed a graduated scale of the respective heights at which, according to calculation, this point should begin at corresponding distances from the equator. But theory is here at variance with actual observation. The climate of mountainous tracts depends so much on localities and the particular course of the winds, as to baffle all general speculation. Hence in the Himalaya Mountains harvests of grain are found, where, according to hypothesis, the ground should be buried under deep snow, and trees are seen to flourish in the regions of perpetual winter. Captain Webb, in ascending the Himalaya range, saw around him, at the height of 11,630 feet above the level of Calcutta, rich forests of oak, pine, and rhododendra, the ground covered with vegetation as high as the knee, strawberry beds in full flower, and currant bushes in blossom; and in 1818, at the Niti Pass, 16,814 feet in height, philosophy was again at fault, as the ground was clear of snow, though above the line of perpetual congelation, and many quadrupeds were feeding on the grassy banks of the Sutlege. It was remarked by Dr Gerard that vegetation attained a higher level on the northern than on the southern face of the Himalaya ridge, where the extreme height of cultivation is 10,000 feet; the limit of the forest 11,800 feet, and 12,000 feet that of bushes. On the northern side cultivation rises to the height of 11,400 feet; in other places to 13,600 feet; birch trees to 14,000 feet; and tama bushes, which form excellent fuel, to the height of about 17,000 feet. In Northern Hindustan, great and sudden changes of temperature occur, which is the cause of pulmonary affections. During summer, the thermometer, which is often in the morning at 32° or under it, rises to 70°, 75°, and 80° or upwards during the day: the winters are, however, uniformly severe. In this also, as in other hilly countries, the traveller may be fainting to-day under a tropical sun, and shivering to-morrow amidst the rigour of perpetual snows. From the banks of the Sutlege, where the thermometer frequently stands at 100° and 108°, three days climbing will carry him into the regions of winter.

Seasons.

In the plains of Hindustan, the heat during the greater part of the year is unintermitting and intense; except where it is modified by the ranges of mountains, or the table-lands towards the west. The seasons here are commonly divided into the hot, cold, and rainy. The spring and the dry season throughout the valley of the Ganges last about four months, the heat gradually increasing with the season, until, in May and June, the thermometer rises to 100°, and frequently in the interior to 108° and 110°, when it is almost intolerable even to the natives, and still more so to Europeans, who resort to various modes of alleviation, such as the *cuscus tatty*, which is a frame of wood, interwoven with twigs, between which is distributed a layer of a particular kind of sweet-scented grass. This being hung before an open window, in the quarter of the prevailing wind, and constantly moistened on the outside by a water-carrier, diffuses a refreshing coolness. Bishop Heber, however, thought it more effectual to shut out the external air, by which, and by agitating the air within by punkahs, a slight frame of wood, covered with silk or with canvass, and suspended from the ceiling, and swung backwards and forwards by servants, hé reduced the temperature to 85° within doors, although it was at 100° without. Thus imprisoned, he complains that in going to an open window or door, "it is literally like approaching the mouth of a blast-furnace." This raging heat is modified by occasional thunder storms from the north-west, termed north-westers, which, however terrific, refresh the air and the ground, and give new freshness and luxuriance to the grass, and to the shrubs and trees. Milder showers also occur, which refresh the atmosphere. In the western provinces of Allahabad, Agra, Delhi, &c. a parching wind very frequently blows from the west during the hot season, and, during the night, is succeeded by a cool breeze from the opposite quarter, sometimes for days and weeks by easterly gales; and as these parching winds prevail, refreshing breezes and cooling showers of rain and hail are more rare. Those remarkable winds, the monsoons, which blow half the year from the south-west and the other half from the north-east, exercise a powerful influence on the climate and seasons of Hindustan. The periodical rains are ushered in by the south-west monsoon, which commences about the beginning of June in the south of India, and somewhat later towards the north. Mr Elphinstone, in his account of his journey to Afghanistan, gives a just and forcible description of the phenomena which accompany the change of the seasons in those eastern countries. "The approach of the monsoon," he observes, "is announced by vast masses of clouds that rise from the Indian Ocean, and advance towards the north-east, gathering and thickening as they approach the land. After some days, the sky assumes a threatening appearance in the evening, and the monsoon in general sets in during the night. It is attended by such a thunder storm as can scarcely be imagined by those who have only seen that phenomenon in a temperate climate. It generally begins with violent blasts of wind, which are succeeded by floods of rain. For some hours lightning is seen almost without intermission; sometimes it only illuminates the sky, and shows the clouds near the horizon; at others it discovers the distant hills, and again leaves all in darkness, when in an instant it re-appears in vivid and successive flashes, and exhibits the nearest objects in all the brightness of day. During all this time the distant thunder never ceases to roll, and is only silenced by some nearer peal, which bursts on the ear with such a sudden and tremendous crash, as can hardly fail to strike the most insensible with awe. At length the thunder ceases, and nothing is heard but the continued pouring of the rain and the rushing of the rising streams. The next day presents a gloomy spectacle; the rain still descends in torrents, and scarcely allows a view of the blackened fields; the rivers are swollen and discoloured, and sweep down along with them the hedges, the huts, and the remains of the cultivation, which was carried on, during the dry season, in their beds." After some days the sky clears, and discloses the face of nature changed as if by enchantment. The fields, formerly parched, are now covered with luxuriant verdure; the clear and burning sky is varied and embellished with clouds; the rivers are full and tranquil; the dust which loaded the atmosphere, and which made the sun appear dull and discoloured, has now disappeared; and the parching wind, like the blast from a furnace, and the still more sultry calms, have been succeeded by a pure and delicious air. Intermitting rains now fall for about a month, when they come on again with great violence, and in July are at their height. During the third month they rather diminish, but are still heavy; and in September, and at the end of the month, they depart amidst thunders and tempests as they came.[1] About eighty inches of rain fall in Bengal during the rainy season.[2]

The dense masses of clouds which arise on the Indian Ocean are carried forward by the south-west monsoon over the plains of Hindustan, as far as the Himalaya Mountains. On the coasts they descend in deluges of rain, which diminish as they recede from the sea, unless where the vapours are intercepted by high mountains, when they pour down in torrents of rain on the plains beneath. But in Southern India, the south-west monsoon is intercepted by the double chain of the Western and Eastern Ghauts, by which the mass of clouds being as it were cut in twain, is carried forward on the north and the south sides of this mountain wall, going clear of a considerable tract to leeward of the Eastern Ghauts, namely, the coast of Coromandel, which is thus free from the periodical rains which fall in all other places of Hindustan. The western range of the Ghauts, though it checks, does not altogether impede the passage of the clouds; and we find accordingly, that in the table-land of Mysore and the neighbouring countries, the south-west monsoon brings on the rains, though they are not so violent nor of such long continuance as in Bengal, and on the western shores of India. But those light and elevated clouds which pass the Western Ghauts, being stopped in their progress by the eastern chain, or descending in rain on the intermediate table-land, never reach the Coromandel coast; and here, accordingly, on the eastern side of the mountains, the dry season prevails, when it rains on the table-land of Mysore to the west, and still more heavily on the Malabar shore. On the other hand, it is the north-east monsoon which, in the Bay of Bengal, sets in about the middle of October, with thunder and lightning and violent hurricanes, that ushers in the rains on the Coromandel coast, which continue to the middle of December, and sometimes to the 1st of January, whilst at this period southerly gales and fair weather prevail on the opposite coast of the Indian peninsula. It was formerly supposed that the Ghauts, interrupting the progress of the south-west monsoon, occasioned a diversity of seasons through a great part of India. But it is only that limited track of country to the leeward of the Eastern Ghauts that is free from the influence of the south-west monsoon, which accordingly brings on the rainy season at the mouth of the Godavery, immediately to the north. Major Rennell suggests that those clouds may be blown by the south-west monsoon from Cape Comorin; though he afterwards adds that this is not his opinion, because the cape bears south-south-west from the mouth of the Godavery, and the reigning winds are much more westerly.[3] But the true reason seems to be, that the eastern chain of the Ghauts does not extend so far north; hence they afford no shelter to the country at the mouth of the Godavery, which thus lies in the direct course of the south-west monsoon. To the north of the Ghaut Mountains, in the parallel of Surat, the south-west monsoon, meeting with no interruption, carries its supplies of moisture over the whole face of the country. The periodical rains accordingly extend over the great plain of the Ganges. They commence on the coast of Malabar in May, farther north in June, where they are not so violent; at Delhi they do not come on till the end of June; and a much smaller quantity of rain falls than at Bombay or Calcutta.[1] Near the sea the clouds are still in a deep mass, and descend in deluges of rain; but they are exhausted as they go; the rains become weaker and weaker, and are at last diminished to a few transient showers in the south of the Punjab. On the sea-shore the south-west monsoon extends into Beloochistan, and thence into Mekran, the easternmost province of Persia, where the clouds being arrested by mountains, descend in heavy rains. They pass with little obstruction over the countries of Lower Sind; but being intercepted by the mountains of Upper Sind, they occasion the principal rains of the year.

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[1] Elphinstone's *Account of the Kingdom of Caubul*, p. 128.

[2] Martin's *History of the British Colonies*, vol. i. p. 91.

[3] *Memoir of a Map of Hindustan*, p. 214.

The eastern provinces of Hindustan, including Bengal and the mountainous countries of Bootan, Nepaul, and the other contiguous provinces, are not dependent on the rains that come across the country from the Indian Ocean, which would be very scanty at so great a distance from the sea. Of the mass of clouds driven before the south-west monsoon, that portion which passes Cape Comorin on the south is carried north-eastward across the Bay of Bengal, until, meeting with the mountains that join the Himalaya from the south, of which they are indeed a continuation, they follow their direction, and are thus diverted from a north-easterly into a north-westerly course; and it is from this quarter accordingly, namely, from the south-east, that Bengal and the adjoining provinces receive the rains fresh and abundant from the ocean. Part of these clouds make their way over the first hills, and bring on the rains in Nepaul and Thibet; and part passing to the north-west, water the plains of Bengal, the southern face of the Himalaya Mountains, the countries which lie to the north of the Ganges, the northern parts of the Punjab, and, in their progress to the north-west, the southern declivity of the Cashmere Hills, and the plains beneath, though they scarcely make their way over these hills into the Valley of Cashmere. They continue their progress westward to Afghanistan, where they gradually become weaker, and only produce occasional showers. The cold season, which succeeds the rains, lasts from November to the middle of February; and during all this period the air is clear, and the thermometer is from 65° to 84°. In Southern India the heat is greater than in Bengal. In the Carnatic the thermometer ranges from 100° to 106°, and the cold season is of very short duration. On the table-land above the Ghaut Mountains, as at Coimbetore, among the hills, the temperature in the cold season is from 31° to 59°; in summer 64°, 65°, and 75°, or even higher. On the table-land in which Bangalore in situated, the thermometer seldom rises above 82°, or falls below 56°.

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Hindustan comprehends all the known varieties of the vegetable tribes. The mountainous tracts of Northern Hindustan produce all the alpine plants, and the various species of European grain, fruits, and flowers. Deep woods cover those lower ranges of mountains, in which are found the pine tree of various species, "the tallest, straightest, and most magnificent," says Fraser,[2] he ever beheld; the larch, the silver, and the spruce fir, from the bark and twigs of which resin exudes in abundance; the yew tree; several species of oak, holly, alder, sycamore, birch, with mulberry and chestnut trees. Here is also found the mimosa tree, from which is made the catechu or Indian rubber; the resinous part of this fir, cut into slips, answers the common uses of the lamp. These noble forests extend over immense tracts, and would afford inexhaustible supplies of timber, if they could be transported to the proper market. Fruits in great variety are also produced in this elevated region, such as apricots, peaches, and grapes, apples, pears, currants, raspberries, blackberries, and strawberries; roots, such as turnips, carrots, garlic, onions; flowers and plants, as roses, both red and white, lilies of the valley, jasmines, butter-cups, yellow, blue, and white cowslips, sweet briar, with numerous other beautiful and fragrant plants. The valleys exhibit, according to their altitude and temperature, the productions of Europe or of the tropical countries. At the height of 6000 feet appear the oak and the pine; at that of 3000 feet rattans and bamboos of enormous dimensions; in some parts the pine-apple, the orange, the sugar-cane, grow to maturity; in others, barley, millet, and similar grains are produced. The lower part of these hills is the seat of the saul forests. The lower valleys yield rice sown broad-cast, maize, wheat, barley, pulse of various kinds, sugar-cane, cotton, Indian madder, a large species of cardamum, besides other productions. The pastoral tribes of Northern Hindustan feed considerable flocks on the lower hills and valleys; in summer they climb the alpine country, and browse on the herbage adjacent to the region of perpetual frost.

The vegetable produce of the plains in Hindustan, and of the southern provinces, is the same as in all tropical countries. The soil, where it is copiously watered, is fertile; and if the country were one unvaried level, the copious rains would afford a sufficient supply for every spot. But, from the inequalities of the surface, the lower parts are frequently overflowed, whilst, in the higher grounds, vegetation is burnt up. To secure a more equal distribution of water, various contrivances are resorted to. It is retained in extensive plains by means of dams, or in reservoirs constructed of stone, or in ponds and water-courses, whence it is distributed over the land. But these beneficial works, so essential to agriculture, are in a dilapidated state. Their construction conferring a reputation for piety, they have been uselessly multiplied; and not being duly repaired, they are soon filled with aquatic plants, putrid water, bad smells, and pernicious exhalations. One of these tanks, seen by Dr Buchanan, is stated to be eight miles long and three broad. "I never viewed a public work," he observes, "with more satisfaction, a work which supplies a great body of people with every comfort which their moral situation will permit them to enjoy."[3] The Hindu, though he is a most industrious, is not a skilful cultivator; his implements are of a very rude kind; and even if he had the skill, he has not the capital necessary for an improved system of husbandry. The ploughing in Hindustan is quite different from any thing seen in this country. The plough has no contrivance for turning up the earth, nor has the share sufficient depth to stir a new soil. Several ploughs in succession deepen the furrows, or rather scratch the surface. The branch of a tree, or some other equally rude substitute for a harrow, is then employed to pulverise the soil, and prepare it for the seed. The plough is drawn by oxen, and in Southern India by buffaloes. The field, after it is sown, must be protected for several days by a person exalted on a bamboo stage, against the depredations of numerous flocks of birds, and still longer in woody districts, from the havoc of wild elephants, buffaloes, and other animals. The harvest is reaped by the sickle, the scythe being unknown. There is no occasion for stacking rice, which is completely preserved by the husk. The grain, after it is winnowed, is stored in jars of unbaked earth, or in baskets made of large twigs. In Benares and the western provinces, and also in the south of India, it is stored in subterraneous granaries; but in the damp climate of Bengal it is hoarded above ground. The rotation of crops, so essential to the husbandry of Europe, is not known in Bengal; nor are the articles for cultivation ever selected with any view to restore the exhausted powers of the soil. The land is never properly manured. The Hindus, from their limited use of animal food, are no extensive breeders of stock. The labouring cattle are either pastured on small commons, or fed at home on cut grass; and those for the dairy graze in numerous herds in the forests or on the downs. The dung is accounted holy by the superstitious Hindus, and is either converted to religious uses, or into fuel, and sold. In Bengal no manure is used; and, in the southern provinces, only a small quantity of ashes and dried vegetables. Oil-cake is sometimes employed as a manure for the sugar-cane. The ryot or husbandman is generally poor, deriving only a bare subsistence from his labour; the greater part of the produce of the land being taken for the government tax. Under the extortions of the eastern governments, whether native or British, a thriving farmer could hardly exist.

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[1] Elphinstone's *Account of the Kingdom of Caubul*, p. 130.

[2] Fraser's *Journal of a Tour through the Himalaya Mountains*, p. 139.

[3] See *Journey from Madras, through Mysore, Canara, and Malabar*, vol. i. p. 16.

Rice is the great staple of agriculture throughout Hindustan, in the plain of the Ganges as well as in Southern India. It is sown at the approach of the rains, and it is gathered during the rainy season, about the end of August; the last crop is sown during the same season, and is gathered in the beginning of December. It is esteemed the best, not being equally liable with the other to decay. The diversity of soil and climate, and the several seasons of cultivation, have given rise to infinite varieties in this species of grain. When the rains fail throughout Hindustan, which occasionally happens, the rice crops are apt to be deficient to a degree altogether unknown in the well-regulated agriculture of Europe, where the severest scarcity hardly ever raises the price of corn more than three times its usual rate. But the famines of Hindustan leave thousands without subsistence, and fill the land with scenes of misery and death. In the great famine of 1769, it was estimated that three millions of the people perished; the air was so infected by the noxious effluvia of dead bodies, that it was scarcely possible to stir abroad without perceiving it, and without hearing also the frantic cries of the victims of famine, who were seen in every stage of suffering and death; whole families expired, and villages were desolated; and when the new crop came forward in August, it had no owners. Bengal has been less liable to famines since this period, but they very frequently occur in other parts of India. Rice thrives well in the inundated track of the Ganges; and in Southern Hindustan, especially on the low lands of the sea-coast, higher up the Ganges, wheat and barley are more generally cultivated, also in the high grounds and elevated table-lands of Southern India. Other kinds of grain are cultivated, such as Indian corn; and great varieties of pulse and coarse grains, such as peas, beans, chiches, gram, vetches, and raggy, which is the most important crop raised in the dry field, and in some parts of Southern India is the subsistence of all classes, in others of the poorer classes. These are important articles of cultivation, as they have each their particular season, and thrive even on poor soils. Maize is the general produce of poor soils in hilly countries, and is commonly cultivated in the more western provinces. Millet and other grains are also cultivated, and, vegetating rapidly, and in every season, they fill up profitably for the farmer the short intervals between the other modes of cultivation in Lower Hindustan. Sugar is everywhere cultivated, and at less expense, by the Hindu cultivator, though sometimes a slave, than by the slaves of the West Indies; and it is on this account burdened in Britain with a heavier import duty than the expensive sugar of the West Indies, by which means, under the baneful influence of monopoly, we favour one colony by crushing another. Though formerly unknown in Europe, sugar has been produced in India from the remotest times, and was thence transplanted into Arabia, whence it has been introduced into Europe, Africa, the West Indies, and America. It grows luxuriantly throughout all the valley of the Ganges and in the plains of Southern India, and could be produced, with the help of European skill and capital, to meet any demand. It thrives more especially in Bahar and Benares, and in particular districts of Bengal. Opium is the peculiar and staple produce of the province of Bahar, and is also extensively cultivated in Malwah, and in other parts of Hindustan. It is a precarious crop, producing alternately high profits and heavy losses. The liquor extracted from the poppy is collected as it exudes, and is then placed in pots, where it is dried and formed into lumps, in which process it loses from one tenth to one eighth of its weight. The opium produced in Bahar and Bengal being monopolized by the East India Company, and bought at a fixed price, is a contraband article of trade, and its cultivation is confined to certain districts. But it is nevertheless clandestinely imported into Bengal, and sold in considerable quantities. In Malwah a treaty was entered into with the different rulers and chiefs, by which the monopoly was extended to that country, and all that was produced delivered to the Company, at the rate of three rupees a seer, which is two pounds. But so great was the discontent excited by this extension of the monopoly, that, at the desire of the chiefs, the treaties were rescinded in 1819–1820; and the trade in opium, and its cultivation, is now free in that province, and everywhere throughout India, except in the Company's dominions, which renders it impossible to maintain a strict monopoly, more especially as the opium of Malwah, having of late years been greatly improved in quality, and rivalling, and even surpassing, the best opium produced in Bahar, is brought into competition with the Company's opium in all the foreign markets, and especially in China.[1] The cotton plant has from time immemorial been one of the staple products of Hindustan, and is indigenous from Ceylon in the south, to the Himalaya Mountains. It is cultivated extensively throughout Bengal, and in the interior provinces on the banks of the Jumna; also in the Deccan, and in Southern India, whence it is imported into Bengal, and into Mirzapoor, in the district of Benares, where it is manufactured. Flax and hemp are also cultivated in several districts both in the north and in the south of India. Silk was long the exclusive product of India and China. Silk worms are now reared principally in the district of Burdwan, and in the vicinity of the Bhagirati and in the Ganges, and for about 100 miles down their streams. Four crops of mulberry leaves are obtained in the year, the last in December. A considerable quantity of silk, of a coarse kind, is obtained from wild silk worms, which do not feed on the mulberry, and are found in the forests of Silhet, Assam, and the Deccan. Indigo was originally a product of India; and the plant was afterwards carried to South America, whence Europe was for a long time supplied with this dye. The manufacture on which the quality of the indigo depends was very unskilfully conducted until the year 1783. Since this period it has been so much improved by the skill and capital of Europeans that it is now a staple article of commerce, and in Bengal the annual produce amounts to about nine millions of pounds. Indigo is produced generally throughout the plain of the Ganges, and in Southern India, but chiefly in Bengal. Tobacco, formerly unknown in India, and introduced from America probably about the beginning of the seventeenth century, is now extensively cultivated in every part, chiefly however in the northern provinces, and more rarely in the south. The tobacco grown in the Mahratta territories is most esteemed; particularly that which is produced near Bilsea, a town in Malwah. Bengal does not yield good tobacco; but the Company's territories in Guzerat, being principally of a rich black soil, are considered as peculiarly suitable to its cultivation.[1] The Hindus having been already in the habit of inhaling the smoke of hemp leaves, and other intoxicating drugs, readily adopted tobacco as a more agreeable substitute, and it soon came into general use. Their recent knowledge of it appears from their having no name for it which is not a corruption of some European term. Pepper, though of inferior consequence, is a valuable product of Southern India, especially of Malabar. It is produced from a species of vine which is made to twine round the jack tree. It bears fruit about the third or fourth year, amounting to from three to seven pounds weight, and yields two crops in the year. The areca nut and betel leaf, universally chewed by the natives, thrive in the low grounds, where water is abundant; and cardamums, a spice in great repute. The universal and vast consumption of vegetable oils in Hindustan, for food or unguents, or for the lamp, is supplied by the extensive cultivation of mustard seed, linseed, sesamum, palma christi, besides what is procured from the cocoa nut. The first ripen in the cold season, the sesamum during the rains, or soon afterwards.

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[1] See Appendix to the Report on the East India Company's affairs, p. 15, Par. 59, House of Commons Papers, 1831. Minutes of Evidence before Lords' Committee, 26th February 1830.

The forests in the low plains of Hindustan, of Southern India, and those which cover the western range of the Ghauts, and more sparingly the Eastern Ghauts, abound in the most valuable trees, applicable to many important uses. The extensive woods in Southern India supply the teak tree, valuable for ship-building; and in Malabar, these forests are the private property of the Nairs, by whom they are often sold or mortgaged to the dealers. Saul, sissoo, toon, and bamboo trees abound; the last of which yields a medicine much used by the native doctors, and which sells for its weight in silver. There are many species of the palm tree, with its luxuriant and spreading leaves, of which the produce is extremely useful. The cocoa-nut tree is in some provinces an important article of culture. The kernel is used for food by the richer natives, either in its raw state, or dressed after various fashions; and it yields by far the finest oil in India, if the nut be fresh and the oil quickly used. Extensive tracts, many miles in length, are planted with the cocoa-nut and betel-nut palms. Many other species of timber are found in the deep recesses of the woods, of which Dr Buchanan, in his account of Mysore, gives a particular description, with the botanical names of the different trees, and to his work we refer; observing generally, that the woods consist of every description of timber, black, heavy, and strong, and adapted for the beams and posts of houses; other kinds are white, hard, and durable, and adapted to all the purposes for which strong materials are required; some are beautifully grained, and take a fine polish, and are well suited for furniture, or exude resins and gums of a sweet scent, that are used in temples for incense; the wood of some kindles readily into a clear light, and is used for torches.[2] Other kinds of wood are employed for dyeing. The sandal wood is valuable for its perfume, and for the essential oil which it yields. It requires a strong soil, and it is twelve years before it attains the proper size for being cut. The billets of wood are prepared by being buried in the dry ground for two months, when the ants eat up all the outer wood, leaving the heart, which is the sandal. The deeper the colour the higher the perfume. The whole sandal wood of Hindustan is now in possession of the rajah of Mysore, who succeeded to a small portion of Tippoo's dominions, and of the British government.

The climate of Hindustan, owing to the long and heavy rains of summer, is not so favourable for many kinds of fruit which are not ripened by the previous heat of the spring. Orchards of mango trees diversify the plains of Bengal, and are common all over Hindustan; the palmyra and the date tree abound everywhere, and especially in Bahar. The former thrives remarkably well in dry barren spots, and is prized for the tari or wine which it yields. The bassia, which yields an intoxicating spirit, also suits the poorest soils, and abounds in the hilly districts, where the oil expressed from its seeds is a common substitute for butter. The other fruits are the plantain, the lime, the sweet and bitter orange, the guava, the pomegranate, the jack, the tamarind, &c. Under the shade of lofty flower and fruit-bearing trees, and the luxuriant bamboo, and the rank weeds which shoot up along with them, the natives, from shyness, bury their cottages, and especially their females, from the view of strangers; and the damp vapour from the confined air, the loathsome and pernicious animals which harbour among the trees and weeds, and the filthy habits of the natives, are generally sufficient to repel Europeans from their habitations. The Hindus cultivate in their kitchen gardens a variety of esculent vegetables and roots. But, of the European vegetables, the potato alone is suited to the climate, and is of as good quality as that which is produced in England. Asparagus, cauliflower, radish, onions, and other esculent plants, are raised; but they are comparatively tasteless.[3]

Animals.

Hindustan, from the great extent and inequality of its surface, its stupendous and snow-clad mountains, and its vast and wooded plains lying under a burning sun, comprehends all the most interesting forms of animal life; more especially those animals of the tropical regions remarkable for ferocity or size, which have been the subjects of scientific research as well as of popular curiosity in all ages, and which find ample cover in the deep woods and jungle-covered wastes of those tracts of the country which have been desolated by tyranny or war. A minute or systematic inquiry into so important a branch of natural history cannot within our limits be attempted. All that we can propose is a brief and popular sketch of the principal animals which give to the zoology of India its distinct and brilliant character. The elephant, which holds a conspicuous place in the animal creation, is seen in all parts of Hindustan, and ranges wild in its deep forests and jungles. This animal, from its size and strength, was employed in the ancient wars, and the prodigious momentum of its charge often turned the tide of battle. The richly caparisoned elephant is still used to swell the gorgeous parade of the Asiatic courts, and is at the same time, from its patience and docility, the humblest of domestic drudges. An elephant is about thirty-five inches high when newly born, and does not attain his full growth of ten or ten and a half feet, or twelve feet when the head is set up, until the age of twenty or thirty years. In length he is about fifteen or sixteen feet. The rhinoceros is between five and six feet high, in length eight feet, the whole body covered with a thick and nearly bare skin, in irregular folds, and the head, at least of the Indian species, armed with a single horn. The rhinoceros is strong and active, of peaceable habits; but when he is hunted he turns on his pursuers and resists fiercely. The Bactrian camel with two humps, so useful in traversing the sandy wastes of the torrid zone, and the dromedary with a single hump, formed more lightly for speed, are natives of Hindustan. The deer is found in all its varieties, from the large and powerful mountain stag, with its well-compacted form, to those lighter forms of the antelope species which sport so gracefully in the woods and in the burning plains. The musk-deer, so named from the perfume contained in a small bag situated in the lower region of the abdomen of the male, is a solitary dweller in the mountain tracts of Hindustan and of Central Asia, amidst ice and snows; it is shy and timid, and seldom approaches the lower region of the pine forests. This animal has no horns; the horned tribe are, however, numerous. The Nepaul stag has a short tail, short horns, and two small antlers at the base. Deer of a large size abound in Bengal, and also in Southern India, in the forests of the Ghaut Mountains. One species, with branching horns, attains to the size of a horse. The black deer of Bengal is about fifteen or sixteen hands high; it is a bold, fierce, and powerful animal; dark brown in the upper parts of the body, and in winter of a shining black; whitish in the belly, with a ring of white round the nostrils and mouth. The spotted deer, with large antlers, ranges all over India, and abounds in the forests of Bengal, and along the banks of the Ganges. The hog-deer is known in Bengal and in the northern parts of India; and the roe-buck in the hilly districts, and still more among the Ghaut Mountains in the south. There are, besides, numerous other varieties of the deer species. Hindustan contains several species of the antelope; one about twenty inches in height, and nearly three feet in length, with four horns, haunts the western forests and hilly tracts in the valley of the Ganges. The white antelope, between three and four feet in height, and of surpassing swiftness, ranges along the banks of the Ganges and the Indus, and over the intervening deserts; and another species, with one horn, and an abundant covering of wool, is a native of the mountain and icy regions of the Himalaya. Of the feline tribe, the lion claims the first place. He is considered as the lord of the brute creation; and his whole appearance, the flowing and shaggy mane, the ample forehead, the kindling eye, and the muscular strength and compactness of the whole frame, so powerfully armed by nature for the purposes of destruction, concur to give an idea of majesty and power, which is further strengthened by the boldness and courage with which, instead of seeking a dastardly retreat in the forest or the jungle, he rushes forth to confront his enemies in the open plain, where he is generally shot by the hunters. But, in the event of his being only wounded, he is extremely formidable, from his vast strength and fierceness, and the immense weight of his body, especially towards the head, and the power of his tremendous claws.[1] The lion is not nearly so common in Asia as in Africa, and is only found in the northern provinces of Hindustan.[2] The tiger is the more common animal of India, abounding in all the forests and jungles, from the mouth of the Ganges to the Himalaya Mountains. He is not quite equal in strength to the lion, though superior in activity; and his undulating movements have more of ease, grace, and bounding elasticity; whilst his bright-yellow, tawny-coloured skin, variegated with dark stripes, shaded with white in the under parts, completes this beautiful specimen of the animal creation. Since the British have acquired possession of India, they have so eagerly pursued the sport of tiger-hunting, that the animal has been driven from the inhabited parts of the country into the vast jungles which line the great rivers, and which may be considered as the game preserves of Hindustan. The leopard and the panther are found in the woods; the former animal in such numbers, that during the marches of the British troops in 1803, amongst the deep forests at Cuttack, in the province of Orissa, many of the sentinels were carried off by them in the night. The bear abounds in all the wooded mountains; also wolves, which at Cawnpore, where there is a British encampment, are so numerous that they frequently dash into some corner of the camp, and carry off children under five years of age, who happen to be straggling amongst the huts. The other wild animals are hyenas, jackals, foxes, hares, porcupines, hedgehogs, monkeys in great variety, and prodigiously multiplied by the superstitious Hindus, who consider them as sacred animals, to the great annoyance of Europeans. The wild boar, which inhabits the woods and jungles of India, is a fierce animal, and very destructive to the corn fields and sugar plantations. It affords excellent though sometimes dangerous sport to the hunter, when it turns on its pursuers. The wild dog of the Himalaya Mountains is a remarkable animal, in form and fur resembling a fox, though stronger and larger. Bishop Heber saw one of these animals which had been taken, and was exceedingly wild and fierce. They hunt in packs, give tongue like dogs, and have a very fine scent; and they are said to attack and, by dint of numbers, to destroy the tiger. They are highly valued in these countries.[3] Dr Gerard observed a pack of these wild dogs stealing along a gulley quite red. The buffalo, both wild and tame, is a native of India. There are different species, one of which (the Bos Arnee) is noted for its gigantic dimensions, its great strength, and its horns, which are nearly six feet in length, by the aid of which it is a match for and frequently repels the fiercest tiger. Dr Buchanan, however, insists that this is merely the common buffalo in its wild state.[4] The yak, or ox of Tartary, particularly described by Turner in his account of his embassy to Thibet, is numerous among the Himalaya Mountains, where they browse in herds, amidst ice and snow; and constitute, next to corn, the wealth of the inhabitants.[5] It has a downcast, heavy look, and is fierce and of a suspicious temper. The Cashmere goat has been long celebrated for the soft silky nature of the wool found at the root of its long hair, which is manufactured into shawls. The other animals in the alpine regions of Hindustan are also provided with a similar covering of soft wool. "The cow," says Moorcroft in his Journal, "has a material of the same kind, not much inferior in warmth and softness; the hare has her fur of peculiar length and thickness; and even the dog has a coat of fur added to his usual covering of hair."[1] The goat bred in Southern India, called the maycay or long-legged goat, mentioned by Dr Buchanan, is also of quite a different breed from the common goat. There are other breeds remarkable for long and curiously-twisted horns. The native horse of India is a small, ill-shaped, vicious pony, the finest horses being imported from the countries to the west of Hindustan. But wild horses are seen in herds in the northern mountains. The sandy desert in the west of Hindustan is the haunt of the wild ass; as he is described in Scripture, "his house the wilderness, and the barren land his dwelling." This animal is found in herds of sixty or seventy on the banks of the Runn, the great salt morass or lake of Cutch, where it browses on the brackish and stunted vegetation of the desert. When caught, as it sometimes is by the natives in pits, it is fierce, untameable, and bites and kicks in the most ferocious manner. Its form is that of the mule rather than of the ass; its body is of an ash colour, changing to a dirty white under the belly. It is larger than the tame ass, stronger and more active, remarkable for shyness, and still more for speed, throwing out, at a shuffling trot peculiar to itself, the fleetest horses in the pursuit.[2] In Southern India, the ass, of which there are several varieties as to colour, is very commonly tamed for domestic purposes; some are of a black hue; and there is a species of milk-white ass, though it is rare.[3] The rat tribe abound in Hindustan; and one species is of enormous size, the tail above a foot long, and very mischievous, burrowing to a great depth in the ground, making its way under the foundations of stores and granaries, and perforating the mud or unburnt brick walls of the native cottages.

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[1] See Letter of the Secretary to the Court of Directors, to the Secretary of the India Board, 5th September 1828.

[2] See Journey from Madras, through Mysore, Canara, and Malabar, vol. i. p. 25.

[3] See Hamilton's *Geographical, Statistical, and Historical Description of Hindustan*, vol. i. p. 26.

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[1] Heber's *Journey*, ii. 170.

[2] "The lion," says Bishop Heber, "which was long supposed to be unknown in India, is now ascertained to exist in considerable numbers in the districts of Saharunpoor and Loodianah. Lions have also been killed on this side of the Ganges, in the northern parts of Rohilcund, in the neighbourhood of Moradabad and Rampoor, as large, it is said, as the average of those in the neighbourhood of the Cape of Good Hope. Both lions, where they are found, and tigers, are very troublesome to the people of the villages near the forest, who, having no elephants, have no very effectual means of attacking them with safety. The peasantry here (in the province of Delhi) are not a people to allow themselves to be devoured without resistance, like the Bengalese; and it often happens, that when a tiger has established himself near a village, the whole population turn out, with their matchlocks, swords, and shields, to attack him. Fighting on foot, and compelled to drive him from his covert by entering and beating the jungle, one or two generally lose their lives; but the tiger seldom escapes." Heber mentions, that he derived his information from Mr Boulderson, who was a keen sportsman, and had long been in India, and who said that he had seen some skins of tigers which "bore the strongest marks of having been fought with, if the expression may be used, hand to hand, and were in fact slashed all over with cuts of the tulwar or short scimitar." (Heber's *Journey*, vol. ii. p. 149.)

[3] Fraser's *Journal of a Tour through the Himalaya Mountains*, p. 176.

[4] *Journey through Mysore*, vol. i. p. 118.

[5] Fraser's *Journal of a Tour through the Himalaya Mountains*, p. 263.

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The ornithology of India, though it is not considered as so rich in specimens of gorgeous and variegated plumage as that of other tropical regions, still contains many splendid and curious varieties of the feathered race, as well of those that are clothed in nature's gayest attire, far surpassing the richest dyes of art, as of that other class, the birds of prey, distinguished by strength, size, and fierceness. The parrot tribe are the most remarkable for beauty. So various are the species, that we cannot even enumerate them, and must refer for details to the scientific works on the subject. Of the birds of prey, the eagle or the condor, which haunts the inaccessible crags of the great Himalaya range, is the most remarkable; Bishop Heber mentions that one of these animals was shot at Dega by Lieutenant Fisher, with whom he conversed; and, from the bareness of its neck, resembling that of the vulture, the form of its beak, which is longer and less hooked than the eagle's, and from its extraordinary size, he judged it to be the condor. It measured between the extended wings thirteen feet; its talons were eight inches in length; its colour was a deep black. According to Heber, children are sometimes carried away by this animal from the streets of Almorah.[4] Eagles, of which there are three different sizes, are numerous, and do great injury to the flocks of the shepherds in the mountainous districts. There are various kinds of vultures, and also of the falcon tribe. There is the gentle falcon; the goshawk, a large grey short-winged bird; the shaukeen, which is taught to soar over the falconer's head, and strike the quarry as it rises; the chirk, which strikes the antelope, fastening on its head, and retarding its course till the hounds come up; with various other species.[5] Numerous other birds are common in India, such as herons, cranes; the gigantic stork, well known for clearing the country of snakes and other reptiles, and the populous cities of offal; the peacock, which is found wild in the forests in all its various and brilliant hues; the black-backed goose, measuring nearly three feet in length; besides other kinds, which migrate with the seasons, and are very destructive to the corn; swans, partridges, quails, gulls, plovers, wild ducks, and the other common domestic fowls.

Reptiles.

The serpent brood in India is numerous: they swarm in all the gardens, and intrude into the dwellings of the inhabitants. Some are comparatively harmless, but the bite of others is speedily fatal. The cobra di capello, the name given to it by the Portuguese, from the appearance of a hood which it produces from the expanded skin about the neck, is the most dreaded. It is not above three or four feet long, and about an inch and a quarter thick, with a small head, covered on the fore part with large smooth scales; it is of a pale-brown colour above, and the belly is of a bluish white tinged with pale brown or yellow. It is more frequently the assailant than any other, though the bite of these also is equally dangerous, and often fatal. The Russelian snake, about four feet in length, is of a pale-yellowish brown, beautifully variegated with large oval spots of deep brown, with a white edging. Its bite is extremely fatal. The whip snake is a remarkably malignant species; it darts from the thick foliage of the trees, at the cattle below, most commonly at their eyes, and inflicts wounds of which they quickly expire, often in great pain. Itinerant showmen carry about these serpents, and cause them to assume a dancing motion for the amusement of the spectators. They also give out that they render them harmless by the use of charms, though it is known that it is by extracting the venomous fangs. But, judging from the frequent accidents which occur, they often dispense with this precaution. The snake-catching fakirs pretend to bear a charmed life; and it is related, that one of these impostors being invited by a shopkeeper to catch a snake which had been seen in an inner apartment, was stung in the hip bone, and for shame would not discover the injury he had received, and went home endeavouring to counteract the poison, but in vain. He died; and such is the blind confidence of the natives in these impostors, that they believed he would revive into life, until the body became putrid.[6] Physicians differ respecting the mode in which the poison of serpents acts upon the human frame. The symptoms also vary, the patient being sometimes seized with torpor and insensibility, or falling into feverish heat and convulsions; the breathing laborious; the skin cold and clammy, with a livid countenance and a feeble pulse. The mode of treatment by the British physicians in India is to bind up the limb above the wound; along with this to apply strong stimulants, as ammonia, hartshorn, eau de luce, and the like; and, above all, to give the strongest narcotics, such as laudanum and brandy. By this judicious treatment many patients have been brought back from the jaws of death.[7] There are several water-snakes in India, the bite of which is venomous; and scorpions are common.

Fishes.

The rivers of Hindustan, and the surrounding seas, abound in a great variety of fishes and amphibious animals, such as alligators, porpoises, and small turtle of inferior quality. The voracious shark infests the mouths of the rivers, as well as the sea-coast, and grows to an enormous size. One that was caught in the Ganges measured in length eleven feet nine inches, and its girth round the shoulders was immense.[1] The dolphin of the Ganges is about seven feet long, and abounds chiefly in the delta of the river. It pursues its prey with great velocity, though at other times its motions are slow and heavy. The Ganges and its numerous branches, and all the tanks, swarm with fish; during the wet months they may be scooped up with a hand-net in every field; and, next to rice and plantains, they form the main food of the poorest classes. The bickty or cockup is an excellent fish; as is also the sable fish, which is uncommonly rich. But the best and highest-flavoured fish is the mango, a favourite delicacy at all the European tables, especially during the two months when it is in roe. Mullet abound in all the rivers, and are often killed with small shot as they swim against the stream. The Indian eel, of a pale-brown colour, with spots of a somewhat deeper hue, is said to possess a certain degree of electrical power. The remora, about seven feet in length, is remarkable for its singular habits. It is used by the fishermen for catching turtle. A long cord being inserted through a ring fastened to the tail of the fish, it is carried to sea in a vessel filled with salt water, and is let out into the water near the turtle, when it immediately fastens itself on its breast so firmly that both are drawn out together. There are many other kinds of fish, some of a delicate flavour, others noted for the various colours of their shining scales. The voracious dolphin, and the flying fish, its food, abound in the Indian Seas. The pomfret is much esteemed as a delicacy; also the robal, and several others of the same nature. The bumbalo, when dried, is an article of commerce, and is much prized for its nutritious qualities; as is also another fish, the urahl, found in the interior lakes. There are many other kinds of fish which we cannot attempt even to enumerate. The natives are dexterous fishers. They enclose the fish with nets into a narrow space, when they catch them with their hands or teeth. Bishop Heber, in his excellent Journal, gives a lively account of the fishing of a pool or lake which was nearly dried up owing to the want of rain. The fish were driven into a shallow part of the lake, when four Bheels from the mountains, with bows and arrows, made in a few hours such havoc among them, that they were procured in the greatest abundance. "They singled out the largest," says Bishop Heber, "and struck them with as much certainty as if they had been sheep in a fold. The arrows intended for striking the fish were so contrived that the iron head slipped off the shaft when the fish was struck, but remained connected with it by a long line, like a harpoon, and afloat on the water, which not only contributed to weary out the animal, but to show which way he fled, and to facilitate his capture."[2] Oysters are procured from the coast of Chittagong, not so large, but fully as well flavoured, as those of Europe.

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[1] *Asiatic Researches*, vol. xii. p. 460, J. Moorcroft's Journey to Lake Manasarovara.

[2] Elphinstone, p. 7.

[3] Buchanan, p. 7.

[4] Heber's *Journey*, vol. ii. p. 277.

[5] Elphinstone, p. 144.

[6] *Asiatic Annual Register*, vol. xxiv. p. 760.

[7] *Asiatic Journal*, vol. xviii. p. 391.

Insects.

The insect tribes in India may be truly said to be innumerable; nor has any thing like a complete classification been given of them, in the most scientific treatises. The heat and the rains give incredible activity to innumerable noxious or troublesome insects, and to others of a more showy class, whose large wings surpass in brilliancy the most splendid colours of art. Stinging musquitoes are innumerable; and moths and ants of the most destructive kind, as well as others still more noxious and disagreeable. Amongst those which are useful is the silk worm; the insect which produces the vermilion dye, the cochineal, a South American species; and that which produces lac, which is imported into Europe and used for varnish, and more recently for cochineal. Clouds of locusts are occasionally seen, which leave no trace of green behind them, and give the country over which they pass the appearance of a desert. Dr Buchanan saw a mass of these insects in his journey from Madras to the Mysore territory, about three miles in length, like a long narrow red cloud near the horizon, and making a noise somewhat resembling that of a cataract. Their size was about that of a man's finger, and their colour reddish. They did no damage at that time to the smallest vegetable; but at other times they eat up every green thing.

Mineral productions, &c.

From the wild and inaccessible nature of the country in many parts of Hindustan, its metallic products are but imperfectly known. It is found to produce all the metallic ores, as well as diamonds and precious stones, and other mineral substances. Gold is generally found in the sands of the mountain streams, and is extracted by washing. The head streams of the Ganges bring along with them particles of gold, which in Rohilcund are collected by a particular caste of people. It is found in various parts of Mysore, particularly nine miles east of Boodicotta, where the country is impregnated with it; also in the Nielgherry Mountains, and in great quantities in all that tract of country that lies west, and in the adjoining Koondanad and Ghaut Mountains. This whole tract, including the mountains, and comprising a space of 2000 miles, contains gold. Unrefined gold is regularly exchanged by many of the mountain tribes of the north for the produce of the plains. It is estimated that about 1000 men are continually employed in collecting this precious metal. Copper is produced in the province of Delhi, which the natives collect either on the surface or with very slight excavations; also in the Rajpoot principality of Jeypoor in the province of Ajmeer, and in other parts of the same province, there are copper mines, and in the Carnatic, about forty miles north-east from Cuddapah. The metal is found in layers about two inches, and occasionally two feet thick; they are coated with ochre, and are in general flat, as if they had undergone compression. The ore exists in nearly a metallic state, without any admixture of sulphur, arsenic, or any other substance that requires separation. The best ores yield fifty, and the worst six per cent. of pure metal. The granitic mountains of Nepaul and Northern Hindustan contain much iron, lead, and copper, with a little gold in the river courses. The copper mines are quite superficial, the ore being dug from trenches entirely open above, so that the work is laid aside in the rainy season. Iron ore is found in many parts of Hindustan. There are mines of iron in Lahore and in Ajmeer. In Orissa many of the natives are iron smelters, and most of the iron sent from Balasore to Calcutta is produced in this district. In Bejapoor the working of iron furnishes employment to many of the inhabitants, who extract it by a very rude process. The Mysore country abounds in iron, and forges are erected, by which it is extracted from the black sand, which is found during the rainy season in the Cavery or its tributary streams, and partly from ores. At the iron works near Chinarayana Durga the ore yields about forty-seven per cent. of malleable iron, though, as usual, it is very impure. The smelting houses are so small and mean that they are put up in a day. There are also forges for manufacturing steel, which are minutely described by Dr Buchanan in his account of the Mysore country.[3] In Coimbetore and in Malabar the iron mines give employment to a considerable number of persons. The process and machinery for extracting the iron are very imperfect. Iron mines were formerly worked in the district of Boglipoor, but they have been long neglected. Rich iron ores are abundant in Cutch. The ore is gathered in baskets from the surface of the earth, and yields twenty-two per cent. of iron; and the steel which is made from this ore is the finest in the world. Lead is produced in various parts; also antimony, plumbago, sulphur, alum; and there are inexhaustible supplies of coal, though the mines are not worked with any effect. Coal is raised in Burdwan in considerable quantities and of a fine quality. Saltpetre is produced in Bengal and Bahar, though its manufacture does not go beyond the eastern limits of the latter province. It might, however, be attempted with success in Bengal, where the tendency of the soil to its production is very great; and there might be manufactories of salt in almost every part of the country, but they are restricted by the Company's monopoly. In the Mysore plains the wells are salt, and the ground is frequently covered with a saline efflorescence. A range of hills, extending from the Indus to the Hydaspes, yields the famous rock-salt of Lahore, of which they are almost entirely composed.[1] Many quarries are found in the hilly districts, which produce fine stone, that is cut by the inhabitants into pillars, flags, statues, and used for other ornamental purposes. Dr Buchanan saw several fine-grained specimens of granite, also a black stone used in the construction of Hyder's monument, and a beautiful green stone which takes on a marble polish. The hills of Guzerat contain marbles exhibiting many colours and qualities; and marbles are seen in the various tombs and monuments of ancient art still remaining in the country, finely ground and of different colours, white and yellow with red veins, and green clouded with yellow and black, of which the quarries have never been discovered.

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[1] *Asiatic Journal*, vol. xix. p. 276.

[2] Heber, vol. ii. p. 467.

[3] *Journey from Madras*, vol. i. p. 170, 180; vol. ii. p. 139.

Diamonds are no longer found in the celebrated mines of Golconda, but they are still gathered in the bed of the Krishna, and in the province of Gundwana. Near the confluence of the Hebe and the Mahanuddy, thirteen miles beyond the town of Sumbhulpoor, after the rains, the natives find diamonds in the red earth washed down from the mountains. The matrix containing them is a clay which has a red appearance like burnt bricks.[2] There are diamond mines in the south of India, about seven miles north-east of Cuddapah, on both banks of the Pennar river. These mines have been worked for several hundred years, and occasionally yield large diamonds, which are either found in the alluvial soil, or are recognised by their sparkling among the gravel after it is washed and spread out, or in rocks of the latest formation. The grounds are leased by the collector of taxes to private speculators, at a moderate rent. In Allahabad also, the table-land which surrounds Pannah, wherever the ground is of a gravelly nature, produces diamonds. The soil is from two to eight cubits deep, and diamonds are found intermixed with small pebbles, though not adhering to them. A very few diamonds in the course of a year repay the labours of the workmen. The diamonds found are mostly under the value of 500 rupees, or L.30, though some reach the value of from 500 to 1000 rupees. They are weighed and sold to the merchants residing at Pannah, and are by them carried to all parts of the country. The workmen are allowed three fourths, two thirds, or a half of the diamonds they find, according to their size, and any man is at liberty to dig. The number of workmen amount to 1000, who appear to be wretchedly poor. The diamond grounds are strictly guarded against the contraband trader, and the least delinquency draws down the prompt and barbarous vengeance of the rajah. These are supposed to be the diamond mines mentioned by Ptolemy. Their annual produce was estimated, in the reign of Acbar, at eight lacs of rupees. In 1750 it had fallen off to one half; and being now comparatively insignificant, it has been given up by the British to the native chiefs.

The other varieties of precious stones found in India are the ruby from the table-land of Mysore, the beryl, the topaz, the chrysolite, garnet, cat's eye, &c. There are cornelian mines in the province of Guzerat, in the wildest parts of the jungle. They consist of numerous shafts worked down perpendicularly, about four feet wide, and several of them to the depth of fifty feet. Some of them extend at the bottom in a horizontal direction, though not to any distance; the heavy rains cause the banks to fall in, so that new openings are always made at the end of the rainy season. The nodules weigh from a few ounces to two or even three pounds, and lie close to each other in abundance, not in distinct strata, but scattered about. They are of various colours when they are found, of a blackish olive, like common dark flints; others of a lighter hue, with a slight milky tinge; though it is quite uncertain what appearance they will assume after the process of turning. They are carried to Cambay, where they are cut, polished, and formed into the fine ornaments for which that city is so highly celebrated. Beautiful jaspers and agates are also found in this district, and in other parts of India.

Manufactures.

In every country the nature and quality of the manufactures must depend on the condition of the consumers, and amongst the despotic states of Asia these naturally consist of two classes; 1*st*, of the great and powerful, in whose hands the property of the country is accumulated, and who are comparatively few; and, 2*dly*, of the body or mass of the people, oppressed by extortion, and sunk in poverty. Such, accordingly, has been from time immemorial the state of Hindustan; and its manufactures, which are necessarily adapted to the use of these two classes, have always consisted of exquisitely fine fabrics of cotton, for the use of the imperial court, or of the rajahs and princes of the country, or of coarse stuffs for the common people; and to such perfection have they attained, that the modern art of Europe, with all the aid of its wonderful machinery, has never yet rivalled in beauty the products of the Indian loom. Yet the Hindu workman has no advantage from capital, from machinery, or from the division of labour; he prepares the raw material with his own skilful hand, in all the various stages of its manufacture; his loom and all his implements are of the rudest construction; and yet, by patience, perseverance, and unusual skill, he produces an article which is prized all over the world for its inimitable richness and beauty, as well as for its durability. The native artisan distinguishes at once these fine fabrics from all counterfeits, by the eye, the touch, and the smell. In the district of Dacca are chiefly fabricated plain muslins, variously denominated, according to the closeness or fineness of the texture; also flowered, striped, or chequered muslins, denominated from their patterns; and the thinnest sort of muslins, for the manufacture of which the province is much celebrated, as is Coromandel in Southern India for its calicoes and other piece-goods, of the most brilliant and durable colours. Other kinds more closely woven are fabricated in the western parts of Bengal; and another sort of a more rigid texture in every district. Coarse muslins, in the shape of turbans, handkerchiefs, &c. are made in all parts of Hindustan; and in its northern provinces plain and flowered muslins, but of inferior quality to the beautiful fabrics of Dacca. In Moultan are manufactured silks which possess a strength of texture and brilliancy of hue that have secured for them a preference in the Indian market. They are woven into shawls and scarfs, which are in great demand, and which the Indian manufacturer in other parts has never been able to rival, either in colour or durability. Carpets are also manufactured in this province, though they do not equal those of Persia. Various articles of calico are made, which still retain their Indian denominations, as khasahs, which are manufactured north and east of the Ganges; cloths of nearly the same quality are made near Tanda in Oude. Near Luckipoor, on the western frontier of Benares, in the neighbourhood of Allahabad, and also in the province of Bahar, baftaes are manufactured; sanaes in Orissa, and in the district of Midnapoor; and a similar cloth under the same denomination in the eastern parts of the province of Benares; woven silk and taffeta, both plain and flowered, in the neighbourhood of Moorshedabad; tissues, brocades, and ornamented gauzes, at Benares; plain gauzes for domestic use in the west and south of Bengal; and at Moulda, Boglipoor, and at several towns in the district of Burdwan, mixed goods of silk and cotton. Sackcloth is manufactured from packthread in many places, especially in the northern provinces, for the clothing of the mountaineers. Cotton is made into canvass in the neighbourhood of Chittagong, Patna, and other places; and blankets everywhere for common use. A coarse cotton cloth dyed red with cheap materials is very generally used, and is chiefly manufactured in the country between the Jumna and the Ganges. Fine and coarse calicoes are dyed with permanent and fugitive colours for common use in the province of Benares, the city of Patna, and the neighbourhood of Calcutta. This art appears to have had its origin in India, and to have been there perfected to a degree never surpassed by Europeans. Dimities of various kinds, and damask linen, are made at Dacca, Patna, Tanda, and various other places. In Mysore, near Bangalore, silk is manufactured into different articles of dress; into strong cloths, which men, women, or boys, wrap round them, and into turban pieces. These cloths are of a rich fabric, variously figured, and the pattern, if ordered, is elegantly wrought in gold thread. Turbans are made of cotton and silk. Thin white muslins with silk borders ornamented with gold and silver, and plain green muslins with silk borders, are manufactured for female dresses; also striped and chequered muslins; cloth like the khasahs of Bengal, for wrapping round the shoulders of men, sometimes with striped or silver borders. Handkerchiefs with red borders, a coarse thick white cotton cloth with red borders, and turbans ornamented with silver and gold thread at the ends, are also made in this district; and the dyeing of cotton cloth, cotton thread, and silk, is carried on by a set of people who act as tailors, cloth-printers, and dyers. Tanneries are established, and manufactories of oil.[1] At Chinapatam there are manufactories of glass, of green and of glass rings, universally worn as bracelets by the women of the Deccan. Steel wire is also made here for the strings of musical instruments. At Vizigapatam, in the Northern Circars, the inhabitants are very expert in carving curious little boxes of ivory and bone. Throughout Southern India manufactories of cotton and silk are generally established. In the Northern Circars the principal part of the East India Company's investment of piece goods was formerly provided. This country, extending about 500 miles along the coast of Coromandel, from the river Kistnah to the borders of Cuttack, has from very early times been the seat of an important and extensive manufacture of cotton piece-goods, of which the description of calicoes known as Madras long cloths and salempores are the chief, and, with Masulipatam dyed handkerchiefs, and other kinds of goods for the African and West India trade, have, until lately, been in great demand. Masulipatam goods have, however, for some years been entirely superseded by the manufactures of Manchester and Glasgow; and in all appearance the Northern Circars will at no distant period of time be deprived of the manufactures of white calicoes also.[2] A great change has indeed been brought about in the manufactures of India by the introduction of British goods, which, in many branches, have supplanted those of the country; the poor Hindu, notwithstanding the low rate at which he works, is thus undersold in his own market by the manufacturers of Manchester and Glasgow; and this competition of British goods nearly ruined the native manufacturers of India, deprived the workmen of employment, and reduced them to great distress; so that the directors remark concerning the Indian trade, that "it exhibits the picture of a commercial revolution, productive of much present suffering to numerous classes in India, and hardly to be paralleled in the history of commerce."

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[1] See the observations of Lieutenant Burnes, on the commercial relations of the Punjab.

[2] See Hamilton, vol. ii. p. 20.

Commer

Hindustan, from its great extent, and the diversity of its soil and climate, supplies the materials of an extensive commerce. Its internal trade is great, while its rare and precious products are exported to the remotest regions of the world. An extensive commerce takes place between Bengal and the other maritime districts, and the western provinces of Hindustan, consisting in the exportation of grain from the corn districts, in exchange for salt, a great staple, for betel nut, sugar, raw silk, silk and piece goods. From the provinces of Central India are imported into Bengal opium, the great staple of Bahar and Malwah, saltpetre, indigo, cotton, cotton cloths, &c.; and from Allahabad diamonds, in return for which salt is received, and European goods, from the maritime parts of Bengal. The holy city of Benares is a great mart of trade, in which are exchanged the shawls of the north for the diamonds of the south, and for the muslins of Dacca and the eastern provinces; and it has, besides, very considerable silk, cotton, and fine woollen manufactures of its own, the produce of which is exchanged for other commodities. Through the northern provinces of Delhi and Lahore a great trade is carried on between the hill countries and the plains. The inconsiderable town of Hurdwar or Hardiwara, being a celebrated place of Hindu pilgrimage, is a great commercial emporium, to which multitudes resort for the purposes of trade, as well as from piety. This great annual concourse takes place in the spring, when the produce of the northern and western countries is exchanged for the manufactures of the lower provinces. The principal articles brought here for sale from Cabul, Candahar, Moultan, and the Punjab, are horses, mules, camels; some of these from Balk, Bokhara, and the countries on the northern side of the Hindu Coosh Mountains; a particular species of tobacco, antimony, assafœtida, dried fruits, such as apricots, figs, prunes, raisins, almonds, pistachio nuts, and pomegranates; from Cashmere and Amritsir, shawls, dootas, and pattoos; spotted turbans, looking-glasses, toys, with various manufactures in brass and ivory from Jeypoor; shields from Rohilcund, Lucknow, and Silhet; bows and arrows from Moultan and the Doab; rock-salt from Lahore; baftas and piece-goods from Rahn, a large city in the Punjab. The country of Marwar also supplies many camels, and a species of flannel called loo. In exchange are brought from the British provinces Kharwa muslins, mushroo or sarsnet, woollen cloths, the coarsest of which only find a market. In this fair Dutch and Venetian coins are current; and some toys of European manufacture were seen exposed to sale by Mr Webb. The northern merchants by whom it is frequented assemble at Amritsir in caravans about the end of February, and pursue their route through the Sikk country, molested by freebooters, who frequently carry off stragglers. Still farther to the north and west the province of Lahore and Moultan export to the countries to the west of the Indus, sugar, rice, indigo, wheat, and white cotton cloths, hides, &c. The imports are swords, horses, fruit, lead, and spices; and into all these countries European goods are imported from the lower provinces. The southern provinces export to Bengal pepper, betel nut, sandal wood, and cardamums, teak timber, &c.; whilst they receive in return salt and rice, cotton cloths, and articles of European manufacture.

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[1] Buchanan's *Journey through Mysore*, vol. i. 209, 229.

[2] See Copy of a Letter from the Secretary to the Court of Directors, to the Secretary of the India Board, dated East India House, 5th September 1828.

A very considerable coasting trade is carried on between the different parts of Hindustan. Bengal exports to Madras and the coast of Coromandel grains of different descriptions, sugar, saltpetre, molasses, ginger, long pepper, oil, silk wrought and unwrought, muslins, spirits, and provisions. The returns are salt, red wood, fine long cloth, izarees, and chintzes. From the Malabar coast the imports are sandal wood, coir rope, pepper, cardamums; and the returns are generally in the annual supplies which Bombay receives from Bengal. From Bombay are brought teak timber, elephants' teeth, lac, &c.

From the reputed wealth and precious produce of India, foreign nations were always desirous to participate in its trade. Prior to Alexander's expedition to the East it was scarcely known to the Greeks, nor is it certain that they had ever seen its productions. But we know that these were brought to Rome, especially silk, which so allured the vanity of the Roman ladies that it sold for its weight in gold. Other valuable commodities of India, such as calicoes, muslins, aromatics, ivory, diamonds, pearls, and other gems, precious aromatics, the pepper of Malabar, turtle shell, &c. and some dry sugar and indigo, were also imported into Alexandria, the chief emporium of eastern commerce, and were naturally attracted to the great metropolis of the ancient world. This trade was carried on from Myos Hormos, the chief port on the Red Sea, whence, after the conquest of Egypt by the Romans, the annual fleets, sometimes of 120 vessels, set sail, and, under the propitious influence of the south-west monsoon, boldly stretched across the Indian Ocean for the western coast of Hindustan, which they reached in about forty days; and afterwards extended their voyage round Cape Comorin to the coast of Coromandel and the mouths of the Ganges. The high price received for these eastern luxuries in Rome encouraged the merchants to provide larger vessels, and a band of archers to defend them against the pirates, who then, and until very lately that they were extirpated by British ships of war, infested the western shores of India. The commodities of the East being landed at Myos Hormos, were carried on canals to Coptos, the seat of a flourishing trade, and thence by sea to the Nile, whence they reached Alexandria by water carriage, and were reshipped to the different ports on the Mediterranean. The produce of India was also brought to Europe by other routes, namely, by the way of Palmyra, then a flourishing city, and thence to Rome and other western countries, through the ports of Syria; or across the Himalaya Mountains to the Oxus, thence to the Caspian, and afterwards to the Black Sea, and finally to its ulterior markets in Europe. But though there was a demand in Europe for the produce of India, there was no demand in India for the produce of Europe; and bullion was the only article that could be sent out in exchange. The annual drain of gold from Rome and its provinces, for Indian goods, was estimated by Pliny at 500 sestertia, equal to about L.400,000. In the convulsions which followed the decline of the Roman empire, the trade of the East was successively engrossed by the Persians and Arabians. The latter in the year 636 built the city of Bassora, which soon grew into a great commercial mart; and to this place, and to Ormus, long celebrated for its vast riches and its trade, the spiceries and merchandise of India were brought, and distributed through the various ports of the Mediterranean. After the expulsion of the crusaders from Syria and Egypt, Alexandria again became the chief entrepôt of eastern produce, whence it was carried to Italy by the Venetians and others, and distributed throughout Europe. But the discovery of a passage to India in 1495 by the Cape of Good Hope changed the course of this trade, which now entirely left the Italians, and was engrossed by the Portuguese for nearly a century without any molestation from European rivals. At length the Dutch and the English became their competitors, and established joint-stock companies, with the exclusive privilege of the eastern trade. But their anticipations of profit were not realised. The great distance of Europe from India, and the want of an equivalent for its produce, precluded any extensive intercourse; the trade accordingly bore a very small proportion to the trade of the country; and being besides cramped by monopolies, it never attained its natural growth. In 1773 the average exports of Britain to India amounted to about L.489,000 a year; in 1793, on a like average, to about a million a year; and it does not appear that a greater trade was carried on with India from any other part of Europe. The commerce of nations is limited to the surplus produce which they can mutually exchange; and, from the great distance between India and Europe, this surplus produce was long confined to those few articles which, containing a great value in small bulk, could bear the expense of a long voyage. The demand was also altogether on the side of Europe, and its trade with India consisted merely in the purchase, with bullion, of a small quantity of precious articles for the consumption of the rich. The progressive improvement of industry in Europe, together with the partial opening of the trade to India in 1793, and still more in 1814, has occasioned not only a greater exportation of British goods, but a change also in the nature of the trade. It is not so much the produce of the labour, as of the climate and soil of India, which no ingenuity can supply, that is in demand in Britain; and accordingly whilst the import of Indian manufactures has fallen off, that of the raw material, and many varieties of vegetable produce, has increased. Thus the importation of cotton piece-goods, namely, white calicoes and muslins, which amounted in 1814 to 1,266,608 pieces, had decreased in 1832 to 407,506 pieces; whilst within the same period the importation of cotton wool had increased from 2,850,318 lbs. to 35,219,504 lbs., and the exportation of cotton manufactures from 811,003 to 57,183,599 yards. Even the fine muslins of Dacca are in less demand since the introduction of British goods.[1] Thus, in the progress of the trade between India and Europe, the former country, notwithstanding its boasted wealth and superior industry, has taken the lowest place, exporting her rude produce for the manufactures of the richer country, which is the nature of the trade carried on between Britain and America, and the countries in the north of Europe, and is a sure index to the respective progress of the two countries in wealth and improvement. Those countries which cannot manufacture their own rude produce send it to Britain, which abounds in capital, and still more in art and industry; and both countries are benefited, the poorer country exchanging its surplus produce for a supply of manufactures of which it is in want, and the richer country the produce of its overflowing capital, for a supply of the raw material, which its own soil does not afford. This is now the relative condition of Great Britain and India. The former having outstripped the latter country in industry and wealth, sends out a supply of cheaper goods than the native workman can furnish; and so prodigious have been the improvements in machinery, that the raw material of cotton is imported from India, and being manufactured in Britain, is re-exported and sold at a cheaper rate than it can be made at home, though loaded with the expense of a double voyage across half the globe; and thus it has become an important staple in the trade of Great Britain with the East. A notion was long and successfully propagated by the advocates of the monopoly, that the Hindus, from their poverty and their simple habits, would never become extensive consumers of European goods, and that the demand was amply supplied by the exports of the East India Company. Evidence to this effect was given before the committee of the House of Commons in 1810, by Sir Thomas Munro, and other eminent servants of the Company. But such statements have been completely refuted by the rapidly increasing exportation of British goods to India since the partial opening of the trade in 1814. This will appear from the following table.

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[1] See Report of Lords' Committee on the Affairs of the East India Company, Evidence of W. Chaplin, Esq. p. 179.

Value of Exports from Great Britain to Hindustan.

Years.	By the East India Company.	Private Trade.	Total Exports.
	£	£	£
1814	826,558	1,048,132	1,874,690
1815	996,248	1,569,513	2,565,761
1816	633,546	1,955,909	2,589,455
1817	638,382	2,750,333	3,388,715
1818	553,385	3,018,779	3,572,164
1819	760,508	1,586,575	2,347,083
1820	971,096	2,066,815	3,037,911
1821	887,619	2,656,776	3,544,395
1822	606,089	2,838,354	3,444,443
1823	458,550	2,957,705	3,416,255
1824	654,783	2,841,795	3,496,578
1825	598,553	2,574,660	3,173,213
1826	990,964	2,480,588	3,471,552
1827	805,610	3,830,580	4,636,190
1828	488,601	3,979,072	4,467,673
1829	434,586	3,665,678	4,100,264
1830	195,394	3,891,917	4,087,311
1831	146,480	3,488,571	3,635,051
1832	149,193	3,601,093	3,750,286

The goods exported, as they are enumerated by Mr Rickards in his valuable work on India, consist of all the staple manufactures of Britain. "Woollens and cottons," he mentions, "of every variety and value; manufactured silks; hardware of all descriptions; iron, copper, lead, tin, and spelta, in large quantities; marine and military stores; machinery for various uses; glass ware of the metal specimens, down to articles of the commonest use; china ware or porcelain, the same; jewellery of all sorts; gold and silver plate and ornaments; clocks, watches, furniture, carriages, harness, haberdashery, hosiery, stationery, books; in short, every article of luxury, comfort, or convenience, which British industry can produce."[1] According also to all the most correct observers of Indian manners, the taste for European fashions, luxuries, and comforts is rapidly extending among the Hindus. Bishop Heber, in his interesting journal of a tour through India, strongly confirms this fact. "The wealthy natives," he observes, "now all affect to have their houses decorated with Corinthian pillars, and filled with English furniture; they drive the best horses and the most dashing carriages in Calcutta. Many of them speak English fluently, and are tolerably read in English literature; and the children of one of our friends I saw one day dressed in jackets and trowsers, with round hats, shoes, and stockings."[2] At Benares he found "English hardware, swords, shields, and spears, from Lucknow and Monghyr; and these European luxuries and elegancies, which are daily becoming more popular in India, circulate from hence through Bundelcund, Gorruckpoor, Nepaul, and other tracks which are removed from the main artery of the Ganges."[3] At Nusseerabad, in the province of Berar, the same traveller mentions that "English cotton cloths, both white and printed, are to be met with commonly in wear among the people of the country, and may, I learned to my surprise, be bought best and cheapest, as well as all kinds of hardware, crockery, writing desks, &c. at Pallee, a large town and celebrated mart in Marwar, on the edge of the desert, several days' journey west of Joudpoor, where, till very lately, no European was ever known to have penetrated."[4] In short, it appears that British and other European manufactures, from their quality and cheapness, are everywhere in demand. They penetrate into the remotest districts of Asia; and now that the termination of the East India Company's monopoly, which took place in 1834, has laid open Hindustan to the capital and enterprise of Britain, experience proves that an equal demand for them may be anticipated in that country. We subjoin the following tables, containing a view of the trade between Great Britain and Hindustan, and a list of the principal articles exchanged between the two countries, abridged from the parliamentary accounts.

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[1] *Rickards' India*, or facts submitted to illustrate the character and condition of the native inhabitants, vol. i. p. 75.

[2] *Heber's Journal*, vol. iii. p. 252.

[3] *Ibid.* vol. i. p. 381.

[4] *Ibid.* vol. ii. p. 448.

Account of the principal Imports into Great Britain, from all Places eastward of the Cape of Good Hope, excepting China.

ARTICLES.	1830.			1831.			1832.		
	East India Company.	Private Trade.	Total.	East India Company.	Private Trade.	Total.	East India Company.	Private Trade.	Total.
Borax, lbs	...	172,642	172,642	...	...	...	..	...	...
Camphire unrefined, lbs.	...	273,682	273,682	...	...	...	...	...	...
Canes, viz. rattans, not ground, number...	...	2,414,562	2,414,562	...	3,908,423	3,908,423	...	3,922,355	3,922,355
Coffee, lbs.	...	7,025,799	7,025,799	...	7,656,386	7,656,386	...	10,407,837	10,407,837
Cotton piece-goods, namely, white calicoes and muslins, pieces	171,223	...	171,223	1,467	15,900	17,367	...	79,090	79,090
Dyed cottons, pieces	47,538	205,025	252,563	32,107	136,731	168,838	11,126	216,100	227,226
Nankeen cloths, pieces	...	573,581	573,581	...	854,671	854,671	...	195,807	195,807
Cardamums, lbs.	...	41,035	41,035	...	72,800	72,800	...	67,218	67,218
Cinnamon and cassia, lbs	...	1,367,710	1,367,710	...	787,500	787,500	...	1,087,279	1,087,279
Cloves, lbs.	...	3,198	3,198	...	124,607	124,607	...	224,644	224,644
Cotton wool, lbs.	620,333	11,892,556	12,512,889	446,930	25,366,463	25,813,573	2,586,415	32,633,089	35,219,504
Elephants' teeth, cwts.	...	1,602	1,602	...	2,173	2,173	...	1,010	1,010
Lac dye, shell lac, seed lac, stick lac, lbs.	...	1,172,490	1,172,490	...	2,048,524	2,048,524	...	1,849,013	1,849,013
Nutmeg, lbs.	...	45,059	45,059	...	110,039	110,039	...	223,426	223,426
Raw silk, lbs.	1,020,963	715,268	1,736,231	1,088,973	636,677	1,725,650	727,175	1,087,644	1,814,819
Silk manufactures, bandanoes, romals, and silk handkerchiefs, pieces	68,524	55,752	124,276	62,997	121,401	184,398	63,547	148,340	211,887
Pepper of all sorts, lbs.	...	2,742,224	2,742,224	1,070,464	5,057,776	6,128,240	...	4,630,475	4,630,475
Indigo, lbs.	2,154,341	5,772,516	7,926,857	1,781,978	5,223,268	7,005,246	1,731,898	4,479,997	6,211,895
Mace, lbs.	...	12,962	12,962	...	40,921	40,921	...	72,022	72,022
Rice, not in the husk, cwts.	...	125,487	125,487	...	133,887	133,887	...	171,560	171,560
Saltpetre, cwts.	44,928	98,774	143,702	28,818	141,904	170,722	49,512	180,026	229,538
Sugar unrefined, cwts.	118,358	660,729[1]	779,087	102,476	647,972[1]	750,448	56,060	647,077[1]	703,137
Tin, cwts.	...	14,574	14,574	...	5,472	5,472	...	26,642	26,642
Turmeric, lbs.	...	1,867,764	1,867,764	...	1,292,028	1,292,028	...	1,004,045	1,004,045
Other articles, such as aloes, assafœtida, ginger, gum, hemp, nutmegs, castor oil, mace, madder-root, musk, rhubarb, soap, vermilion, &c. making the total value	L. 1,593,566	L. 4,085,505	L. 5,679,071	L. 1,434,372	L. 4,295,438	L. 5,729,810	L. 1,107,787	L. 5,229,311	L. 6,337,058

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[1] The account of the sugar imported by the private traders includes, in 1830, 485,326 cwts.; in 1831, 516,077 cwts.; and in 1832, 527,904 cwts. from the Mauritius.

Account of the Quantities and Declared Value of the Principal Articles exported from Great Britain to all Places eastward of the Cape of Good Hope, except China, in the years 1830, 1831, *and* 1832; *ordered by the House of Commons to be printed, 25th June* 1833.

ARTICLES.	1830.			1831.			1832.		
	Declared Value. Private Trade.	By the East India Company.	Total.	Declared Value. Private Trade.	By the East India Company.	Total.	Declared Value. Private Trade.	By the East India Company.	Total.
Apothecary wares......	L.9,642	L.10,588	L.20,230	L.6,169	L.6,582	L.12,751	L.9,778	L.6,967	L.16,745
Apparel..................	28,224	4,352	32,576	27,362	1,895	29,257	23,477	9,271	32,748
Beer and ale............	71,364	......	71,364	60,405	259	60,795	87,607	......	87,606
Copper, unwrought, in bricks and pigs	200,050	......	200,050	204,936	......	204,936	178,036	11,180	189,216
Cotton manufactures, British calicoes, white and plain....	1,009,105	......	1,009,105	726,706	......	726,706	819,189	......	819,189
Ditto, printed, checked, stained, or dyed	536,111	......	536,111	471,688	......	471,688	531,664	......	531,664
Muslins, white and plain................	185,940	......	185,940	179,652	......	179,652	143,140	......	143,140
Ditto, printed...........	7,562	......	7,562	22,579	......	22,579	14,168	......	14,168
Hosiery and small wares..............	21,834[1]	......	21,834	19,370	......	19,370	23,242	......	23,242
Aggregate value of British cotton manufactures exported...................	1,760,552	......	1,760,552	1,419,514	......	1,419,514	1,531,393	......	1,531,393
Cotton twist and yarn...	324,955	......	324,955	483,762	......	483,762	309,731	......	309,731
Earthen ware...........	20,501	......	20,501	17,521	......	17,521	27,086	......	27,086
Iron, bar and bolt......	87,314	......	87,314	80,238	......	80,238	104,037	......	104,037
Plate, jewellery, and watches............	44,370	10,025	54,395	32,208	2,333	40,541	33,778	......	33,778
Wines.....................	105,404	......	105,404	92,581	......	92,581	150,257	......	150,257
British woollen manufactures exported to India, aggregate value	279,406	64,992	344,398	247,390	34,048	281,438	199,708	37,801	237,509
Total value, including articles not enumerated.............	L.3,891,917	L.195,304	L.4,078,311	L.3,488,571	L.146,480	L.3,635,051	L.3,661,095	L. 149,193	L.3,750,286

Besides the articles here enumerated, Great Britain exports other varieties of European goods, such as books, carriages, guns, pistols, haberdashery, hardwares and cutlery, machinery, musical instruments, &c.

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[1] When the declared value of the articles exported by the East India Company amounts only to L.300 or L.400, or less than that sum, as in the case of cotton manufactures, &c. it is not particularly specified.

The pernicious effects of monopoly are illustrated by the whole history of the Indian trade. It appears, from the account of the exports and imports, how the commerce of the two countries expanded, as with an elastic bound, when this dead weight was partially removed in 1810. The wall of separation has now been entirely thrown down. By the late great and enlightened measure of Mr Grant, a free trade is established to India, and a free intercourse with the natives; and from this liberal policy we may anticipate a still greater extension of the trade. But there are other barriers yet to be removed. Although British goods may be introduced into the markets of India, certain staple articles of that country are excluded from Britain by heavy and unequal duties; and this for the purpose of favouring the trade of the West Indies. Thus sugar, which might be cultivated to any extent in India, pays a duty of thirty-two shillings per cwt. in place of twenty-four shillings, the duty levied on West India sugar; and this, with the heavier charge of freight and insurance, is a serious bar to its importation into Britain. Accordingly, while only 700,000 cwts. of sugar are annually imported from India, the annual importation of the West Indies amounts to between 4,700,000 and 4,800,000 cwts. In like manner, coffee, which has only been of late cultivated in India, though it might be produced to any extent, pays a duty of ninepence per pound, in place of sixpence, the duty on West India coffee; and the tobacco of India pays threepence more of duty, namely, three shillings per pound, on being imported into Great Britain, than the tobacco of Mauritius, or of any other British colony. No reason can be assigned for this unjust distinction. The mother country ought to dispense equal justice to all. If the West Indian colonies have been of late depressed by the low price of sugar, the native manufactures of India have been nearly ruined by the competition of British goods, and justice as well as policy imperiously demands for the produce of Hindustan a free access to the markets of this country.

The following tables contain a general view, 1*st*, of the extent and value of the trade of India to all parts of the world; and, 2*dly*, of the extent of its trade to the different countries of Europe and Asia, with the exception of that to China, of which a more detailed account will be given.

Imports and Exports of Hindustan to and from all Parts of the World.

IMPORTS.

	Private Trade. Rupees.	Company's Trade. Rupees.	Total Rupees.	
Bengal.				
Merchandise	3,00,40,816	1,51,916	3,01,92,732	
Treasure	51,68,390	17,33,984	69,02,374	
Total	3,52,09,206	18,85,900	3,70,95,106	L.4,633,238
Madras.				
Merchandise	93,91,228	4,18,117	98,09,345	
Treasure	36,28,467	......	36,28,467	
Total	1,30,19,695	4,18,117	1,34,37,812	L.1,511,753
Bombay.				
Merchandise	2,50,55,237	......	2,50,55,237	
Treasure	1,20,04,989	......	1,20,04,989	
Horses	5,01,800	......	5,01,800	
Total	3,75,62,026	......	3,75,62,026	L.4,225,727
Total Imports	8,57,90,927	23,04,017	8,80,94,944	L.10,370,718

EXPORTS.

	Private Trade. Rupees.	Company's Trade. Rupees.	Total Rupees.	
Bengal.				
Merchandise	3,39,10,365	1,63,71,594	5,02,81,959	
Treasure	14,63,193	3,00,000	17,63,193	
Total	3,53,73,558	1,66,71,594	5,20,45,152	L.5,204,515
Madras.				
Merchandise	1,40,64,835	22,62,868	1,63,27,703	
Treasure	10,12,726	44,66,376	54,79,102	
Total	1,50,77,561	67,29,244	2,18,06,805	L.2,453,265
Bombay.				
Merchandise	2,89,64,478	......	2,89,64,478	
Treasure	20,40,178	......	20,40,178	
Horses	4,47,200	......	4,47,200	
Total	3,14,51,856	......	3,14,51,856	L.3,538,333
Total Exports	8,19,02,975	2,34,00,838	10,53,03,813	L.11,196,113

General View of the Commerce of Hindustan with Europe, North and South America, the Eastern Isles, and Arabia, with the exception of China; from Papers ordered to be printed by the House of Commons, June 1833.

	IMPORTS.			EXPORTS.		
	Merchandise.	Bullion.	Total.	Merchandise.	Bullion.	Total.
Great Britain	L.3,614,138	L.1,310	L.3,615,448	L.3,545,100	L.570,571	L.4,115,671
North America	146,696	95,382	242,078	1,348,907	37,764	1,386,671
South America, Brazils	60,680	10,440	71,120	6,744	...	...
Lisbon	4,180	...	4,180	......	...	...
France	138,289	990	139,169	319,421	337	...
Sweden	17,229	...	17,229	11,962	...	...
Hamburg	2,968	..	2,968	......	...	...
Total	L.3,984,180	L.108,122	L.4,090,882	L.5,232,134	L.608,672	L.5,502,342
All India.						
Eastern Isles	L.45,403	L.39,624	L.850,277	L.690,098	L.62,244	L.752,342
Arabia, Persian Gulf, New South Wales, &c	45,527	263,237	308,764	817,387	3,172	820,559
Total	L.90,930	L.659,261	L.393,791	L.1,507,485	L.65,416	L.1,572,901

An extensive commerce is carried on between Hindustan and China, and one of the great staples in this trade is opium, which being a contraband article, is smuggled into China in great quantities by private traders from Hindustan. This trade is either carried on in armed boats, in defiance of the Chinese authorities, or they are paid largely for their connivance. We subjoin the following account of the trade between Hindustan and China.

Account of the Trade carried on with China by the East India Company, or in their Ships by their permission.

Exports from India to China.			Trade carried on with China by Private Ships.	
Articles.	Value in Dollars.		Articles.	Value in Dollars.
Cotton	1,086,480		Opium	11,304,018
Privilege trade in Company's ships	781,863			
		1,868,343	... ...	3,061,072
Metals	194,806			
Privilege trade	148,318			
		343,124	... ...	31,755
Quicksilver	......	12,460		
Pepper and spices	......	74,284	... ...	36,113
Rattans	......	11,690	... ...	5,769
Betel nuts	......	18,849	... ...	1,224
Putchuck, a dye for nankeen	......	2,808	... ...	3,172
Stock-fish	......	10,075		
Drugs	......	14,444	... ...	9,964
Saltpetre	......	5,257	... ...	44,219
Sandal wood	......	27,941	... ...	46,530
Woollens	2,123,730			
Privilege trade	174,546			
		2,298,276	... ...	138,517
Cotton goods	132,883			
Privilege trade	84,997			
		217,880	... ...	89,642
Cotton yarn	146,886			
Privilege trade	9,156			
		156,042	... ...	43,428
Diamonds, pearls, carnelians,	......	3,000	.. ..	212,475
Watches and clocks	......	11,786	Sharks' fins and maws	136,740
Sundries	6,543	......	Elephants' teeth	26,913
Privilege trade	42,730	......	Rice	128,740
		49,273	Sundries	88,116
		5,125,531		15,808,405
			Add Company and privilege trade	5,125,531
				20,933,936

Imports from China to British Dominions in Hindustan.

By East India Company, or in their Ships by permission.		By Private Ships under British Flags.	
Articles.	Value in Dollars.	Articles.	Value in Dollars.
Tea	8,542,343	Tutenague	19,200
Raw silk	449,328	Raw silk	2,205,360
Nankeen	844	Nankeen	160,941
Sugar and sugarcandy	1,233	Sugar and sugarcandy	560,349
Drugs	4,254	Tea	212,783
Silk piece-goods	26,400	Cassia and cassia buds	57,040
Block-tin	12,096	Drugs	155,903
Mother-of-pearl shells	12,529	Silk piece-goods	221,461
Tortoise-shell	5,767	Tortoise-shell	13,250
Mats	3,829	Mother-of-pearl	25,466
Bamboos	5,846	False pearls	48,094
		China-ware	43,179
Total	9,179,170	Writing paper, toys, &c.	83,840
Bullion	1,902,082	South American copper	96,810
		Cotton goods	14,250
	11,081,252	Cotton yarn	73,536
		Total	6,123,166
		Add Company and privilege trade	11,081,252
			17,204,418

An accurate census of the population is still a desideratum in the statistics of Hindustan. Partial estimates have indeed been made in different districts, by the industry of British judges and magistrates; but these do not agree with subsequent and more accurate inquiries. In 1801, returns were made at the desire of the supreme government, of the population of several districts in Bengal, by the magistrates and collectors, which are generally believed greatly to underrate the population. In 1808, Dr Buchanan, by the direction of government, framed, from the most careful inquiries, an accurate census of certain districts of Bengal, which created astonishment, as his estimate was more than three times that of the collector, and more than double that of the magistrate. It was confirmed, however, by the careful investigations of Mr Bayley in 1814, and is now generally relied on for its accuracy. An estimate has been published by authority, of the number of the villages and houses in Lower Bengal; from which, reckoning five inmates to a house, the population has been computed at 37,238,265 souls. Other computations, made on different data, produce nearly the same result. From an accurate survey of one district, the inhabitants on each square mile were found to amount to 2003; and this principle of computation being generally applied to Bengal, will give a population of 33,590,770. But it is only in particular provinces that there is even this approximation to accuracy. In the remote districts and provinces we have no data for a confident estimate; and there is no general census of Hindustan which rests on any higher authority than plausible conjecture, and which may not be erroneous by many millions. We subjoin the following population table, which seems to be as accurate as any that has yet been constructed.[1]

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[1] Notwithstanding the ravages committed by incessant wars and revolutions, as well as by famine and pestilence, their usual concomitants, India has, from the earliest times, been a densely-peopled country. In different states of society, the law of the increase of mankind will vary according to their relative circumstances and position, and the same or nearly the same principle will be found to apply to those classes who are placed at the opposite extremities of the scale. Amongst a people who are possessed of affluence, or the means of commanding the necessaries and comforts of life, the exercise of moral restraint is unnecessary; amongst those who are reduced to a mere physical subsistence, without the possibility, and consequently without the desire, of improving their condition, it will be disregarded; and hence the same results will follow from causes in their own nature diametrically opposite. But in India the great mass of the population have for ages been placed in a situation which excludes all idea of improvement; and religion has lent its powerful aid to obstruct the operation of those natural causes which, in other countries, have served to ameliorate the condition of the people. Confined to the use of vegetable food, inhabiting a country the nature of whose climate renders the greatest simplicity of attire and of household accommodation sufficient for all purposes absolutely necessary to mere existence, and prevented by the law of caste from ever passing beyond the condition in which the accident of birth may have placed them, the natives of India, habituated to a minimum of the simplest fare, or what in other countries would be considered as a famine allowance, have, in spite of all the grinding exactions of despotism, and the devastations of war, conquest, and anarchy, continued to increase and multiply, and, at every period of their history, the population has been found to press harder than in any other part of the world upon the means of subsistence. Amongst a people so circumstanced, with a religion which tends at once to inflame the animal passions, and to debase the understanding, it would therefore be vain to expect that those moral considerations which operate as a restraint amongst other communities of mankind, should have any effect whatever in controlling the impulses of nature, or checking that tendency to excess, which has originated the most difficult problem connected with the science of government. Of all productions, that of human beings is the least susceptible of regulation; and as it is frequently found to advance most steadily in countries where poverty and misery have reached the extreme point of depression, and become almost universal, the only checks which can prove even temporarily effective, are those great and wide-spreading desolations to which we have alluded, combined with that permanent disregard of life which is found to prevail wherever mankind generally are reduced to the condition of the Hindus, and which, amongst the latter, is fostered by the barbarous rites of a cruel and sanguinary superstition. But it may be permitted to hope, that though India always has been, it will not always be, what it now is; that the extension of commerce, under the protection of a vigorous and impartial government, will awaken new ideas in the minds of the people; that security to person and property will give a strong stimulus to industry; that the habitual contact with a higher and more rational form of civilization will serve to mitigate their prejudices, and, in time, to destroy the influence of a debasing superstition; and that, in proportion as their wants are multiplied, their efforts to ameliorate their condition will be increased.

Relative Area and Population of the Modern States of Hindustan for A. D. 1820.

	British Square Miles.	Population.
Bengal, Bahar, and Benares	162,000	39,000,000
Additions in Hindustan since A. D. 1765	148,000	18,000,000
Gurwal, Kumaon, and the track between the Sutledge and Jumna	18,000	500,000
Under the Bengal presidency	328,000	57,500,000
Under the Madras presidency	154,000	15,000,000
Under the Bombay presidency	11,000	2,500,000
Territories in the Deccan, &c. acquired since 1815, and not yet attached to any presidency	60,000	8,000,000
Total under the British government	553,000	83,000,000
British Allies and Tributaries.		
The Nizam	96,000	10,000,000
The Nagpoor rajah	70,000	3,000,000
The king of Oude	20,000	3,000,000
The Guicowar	18,000	2,000,000
Kotah 6500, Boondee 2500, Bopaul 5000	14,000	1,500,000
The Mysore rajah	27,000	3,000,000
The Satarah rajah	14,000	1,500,000
Travancore 6000, Cochin 2000	8,000	1,000,000
Under the rajahs of Joudpoor, Jeypoor, Odeypoor, Bicanere, Jesselmere, and other Rajpoot chiefs; Holcar, Ameer Khan, the Row of Cutch, and innumerable other petty native chiefs; Sikhs, Gonds, Bheels, Coolies, and Catties, all comprehended within the line of British protection	283,000	15,000,000
Total British and their allies	1,103,000	123,000,000
Independent States.		
The Nepaul rajah	53,000	2,000,000
The Lahore rajah (Runjeet Singh)	50,000	3,000,000
The Ameers of Scinde	24,000	1,000,000
The dominions of Scindia	40,000	4,000,000
The Cabul sovereign	10,000	1,000,000
Grand total of Hindustan	1,280,000	134,000,000

Other calculations, on data sufficiently plausible, swell the population under the dominion of the British, including the allied and protected states, to 200,000,000. There is of course considerable uncertainty in all these accounts.

Races.

A country of such vast extent, under one common appellation, and subdivided by many impassable tracts of mountain and jungle, comprises, as may readily be imagined, numerous races, differing in their origin, in their physical aspect and frame, in their manners, customs, in their respective advances in civilization and pursuits, as well as in their modes of faith and language; and accordingly Bishop Heber, who excels all other writers in the delineation of Indian manners, observes, that "it is a great mistake to suppose that all India is peopled by a single race, or that there is not as great a disparity between the inhabitants of Guzerat, Bengal, the Doab, and the Deccan, both in language, manners, and physiognomy, as between any four nations of Europe;" and in another passage he says, "the inhabitants of the presidencies of Madras and Bombay, and of the Deccan, are as different from the nations I have seen, and from each other, as the French and Portuguese from the Greeks, Germans, and Poles."[1] A minute account of the various races and castes, with the still more various subdivisions into which the inhabitants of Hindustan are distinguished, would fill a volume, and would besides be exceedingly tedious. A general description, however, of the most remarkable tribes which compose the mixed population of this extensive country, forms an essential part of its history. The great division of the people is into Hindus and Mahommedans, in the proportion of about seven to one. And these two great classes are distinguished not more by their religion than by their peculiar disposition and character. The Hindu is careful, penurious, and abstemious in his habits; timid, obsequious, and fawning in his manners; chiefly attaining his ends by deceit and cunning, the usual resource of weakness; whilst the Mussulman still retains the haughty and irascible character of a conqueror, and his hostility to the English, which he is at no pains to conceal, like the Hindu, by an obsequious demeanour. He is withal prodigal, luxurious, fond of ease and pleasure, and dissolute to excess in his morals; more courageous and martial, however, with more energy of purpose and elevation of sentiment, and more cultivated, than the Hindu of Bengal. In the population of Bengal these two races may easily be distinguished from each other; and amongst the Mahommedans, the Mogul, the Afghan, and their immediate descendants, may be known amongst the native Mussulmans. The features of the Bengalee distinguish him from the other inhabitants of Hindustan. He is stigmatised as of a cowardly disposition, and, from whatever cause, is not esteemed throughout the country. With these two principal classes are intermingled, in very small proportions, British, Armenians, a peaceable race, and highly honourable in their dealings, Portuguese, and other Christians. The Parsees are numerous in the island of Bombay, where they amount to 10,738; they are descendants of the Guebres or fire-worshippers, are a fine race, being generally engaged in traffic, and distinguished in their dealings by the highest integrity and intelligence. The Jews are numerous in India, and many are to be found in the Bombay army, where they have often behaved bravely. The Asiatic Jews are distinguished by a large Roman nose. The Mahrattas, a powerful tribe, have been long distinguished in the wars and politics of India. They are chiefly found in the Deccan, which contains about 3,285,985 inhabitants, of whom they compose about three fifths. They were originally a pastoral and warlike people from the mountains of Berar, who with a host of cavalry invaded and desolated the adjacent provinces with fire and sword, and at length acquired an extensive empire. Minute shades of difference prevail amongst them, but no distinctions of caste; every Mahratta eating with his neighbour, unless, which often happens, he be expelled from his caste. They are not a military caste, as appears from the names of farmer, shepherd, and cowherd, by which their principal tribes are known; and also from their exterior, which marks an origin different from that of the military Rajpoot. They are of a diminutive size, generally badly made, and of a mean look and rapacious disposition; whilst the Rajpoot has both personal grace and dignity. The memorable battle of Paniput, fought in 1761, gave a blow to the Mahratta power, from which it never recovered; and the confederacy was entirely dissolved in 1817, when the peshwa, the great feudal chief of the empire, surrendered to the British, and was by them confined as a state prisoner. The nation derives its name from Mahrat, a province of the Deccan; though it is the opinion of some that the Mahrattas migrated from Persia about 1200 years ago.[1] The Mahratta language is widely spread over India. It is remarkable, that in proceeding northward into Northern and Central India, and into the Rajpoot states, the people far excel in strength and stature the feeble Hindu of the southern provinces, being fully equal in their bodily frame to Europeans. "They despise," says Bishop Heber, "rice and rice eaters, feeding on wheat and barley bread, exhibiting in their appearance, conversation, and habits of life, a grave, proud, and decidedly a martial character, accustomed universally to the use of arms and athletic exercises from their cradles, and preferring very greatly military service to any other means of livelihood." The character of the Rajpoots, the Sikhs, and the Jauts, fully answers to this animated description of a warlike race. The tribe of Jauts or Jats was little known in India till about the year 1700, when they migrated from the banks of the Indus, and became industrious cultivators in the Doab, or the country between the Ganges and the Jumna. During the civil wars which ensued on the death of Aurungzebe, they acquired a large extent of territory, in which they built forts, and accumulated wealth. They were noted plunderers; and it was out of the spoil taken from Aurungzebe's army in its retreat from the Deccan that the fortress of Bhurtpore was erected, in the gallant defence of which against the British they fully sustained the character of brave soldiers. Their claim to the distinction of a military caste has, however, been disputed; and it is said, that though success has emboldened them to assume that honourable title (*khetri*), they were originally a low tribe of sudras or labourers. They also affix to their name *singh*, a lion, which probably belongs only to the Rajpoots. The Jauts are said by Bishop Heber to be the finest people in bodily advantages and in martial spirit which he had seen in India, and their country one of the most fertile and best cultivated. They have a high character for valour throughout Hindustan; insomuch, adds the writer above quoted, "that when I was passing through Malwah, 'gallantee shows,' like those carried about by the Savoyards, were exhibited at the fairs and in the towns of that wild district, which displayed, amongst other patriotic and popular scenes, the red coats driven back in dismay from the ramparts, and the victorious Jauts pursuing them sabre in hand."[2] The lower classes of Jauts found in the barren tracts of Ajmere, and in Northern India, are however differently described, being of small stature, ill-looking, and black in complexion, and their condition that of squalid poverty. The Sikhs were originally a religious sect, of which the founder, Nanak, was born A. D. 1419, in the province of Lahore; and the word Seik, properly Sikh or Siksha, in the old Sanscrit, signifies a disciple or devoted follower. He left two sons, from whom are descended 1400 families, called Shahzadehs, who live at Dera, in the Punjab, highly respected. His successors were spiritual chiefs, until the year 1675, when Gooroo Govind, a warrior, succeeded. He converted the Sikhs from religious sectaries into ferocious soldiers; he changed their name from Sikh to Singh, signifying a lion, the title claimed and highly prized by the Rajpoots; and enjoined his followers to cut off their hair, or to shave their beards. The tribe consider this chief to be the founder of their political independence, and Nanak of their religion. The Sikhs acquired power during the convulsions that followed the death of Aurungzebe, and after the invasion of Nadir Shah. They were severely checked by the Mahommedans, and were nearly exterminated by the victorious Afghans after the battle of Paniput in 1761. But their valour still triumphed in the struggle, until they acquired and consolidated their present possessions under Runjeet Singh, who has reduced under his own powerful sway all the petty principalities in the country. The eagle eye, Roman nose, and flowing beard, of the Sikh cavaliers, give them a noble appearance; and in horsemanship they are not excelled by any other nation either of Europe or Asia. Colonel Todd, in his great work on Rajast'han, describes the appearance of the Rajpoot cultivators in the valley of Odeypoor, who came to meet him in a body, "as being so striking as to draw forth the spontaneous exclamation from his friend, 'what noble looking fellows!" "Their tall and robust figures," he adds, "sharp aquiline features, and flowing beards, with a native dignity of demeanour, though, excepting their chiefs, who wore turbans and scarfs, they were in their usual labouring dresses, immense loose breeches, and turbans, compelled admiration and respect."[3] Their cast of countenance is Hindu, somewhat altered by their long beards; they are active, and more robust than the Mahrattas, owing to better living and a healthier climate; and rival in courage the most renowned tribes of India. They evince in battle the most determined contempt of personal danger, and are easily roused to desperation by prejudice or religion; they act as infantry in foreign armies, and as cavalry at home. Their address is bold and somewhat rough; they speak invariably in a loud bawling tone of voice; and are dissolute in their habits, indulging so freely in spirituous liquors, which their religion allows, though tobacco is prohibited, and in opium and bang, an intoxicating drug, that a Sikh soldier is rarely sober after sunset. The Sikhs are allowed to eat the flesh of all animals except the cow. They are strict in their religious observances; and converts, whether Hindu or Mahommedan, must give up all customs which infringe the tenets of Nanak, or the military institutes of Gooroo Govind. The military class highly relish the flesh of the jungle hog, of which they compel Mahommedan converts to partake, and also to abstain from circumcision. The Sikh merchant or cultivator, if he be a Singh, is still a soldier in his habits, as he wears arms, and is well trained from his infancy to the use of them. The original followers of Nanak, the Kalasa Sikhs, differ widely from the warrior tribe. They are as pliant, versatile, and insinuating in their manners as the lower class of Hindus, whom they so much resemble in their dress and appearance as not to be readily distinguished. The descendants of Nanak are a mild, inoffensive race; and the other religious tribes retain their peculiar manners.

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[1] Heber's *Journal*, vol. iii. p. 349.

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[1] *Indian Recreations*, vol. i. p. 20. Hamilton's *Description of Hindustan*, vol. ii. p. 483.

[2] Heber's *Journal*, vol. iii. p. 369.

[3] *Annals and Antiquities of Rajast'han*, vol. i. Personal Narrative, p. 687.

The Rajpoots inhabit the Rajpoot states of Mewar or Odeypoor, Marwar or Joudpoor, Bicanere and Kishenagur, Kotah, Boondi, Amber or Jeepoor, Jesselmere, and the Indian desert to the valley of the Indus. They are the children of the sun and the moon; and, in memory of their great ancestor the radiant Surya, or Apollo, many of them wear badges of gilt metal round their necks with the image of a sun and moon on horseback. The lineage of both the solar (Soorya) and lunar (Indu) tribes is given by Colonel Todd, on the authority of the Puranas (sacred books), a copy of which, obtained from the library of the Rana of Odeypoor, he carefully consulted, in the presence of a body of learned pundits. This work contains the valuable results of his learned researches into the antiquities and history of the Rajpoot tribes, which were conducted with all the patience and perseverance that an enthusiastic devotion to the subject can alone inspire; and being guided by philosophy, and the most profound knowledge of oriental literature, have thrown great light on the history and character of the ancient inhabitants of Rajpootana. Vyasu, the Hindu historian, gives fifty-seven princes of the solar line from Menu to Rama; and fifty-eight from the same period of the lunar race, from Buddha, its founder, to Krishna. The establishment of these two grand races in India is fixed by Colonel Todd at about 2256 years before the Christian era. From Rama all the tribes termed Sooryavansa or Race of the Sun, claim their descent, namely, the present princes of Mewar, Jeepoor, Marwar, Bicanere, and their numerous clans; whilst from those of Buddha and Krishna the families of Jesselmere and Cutch, extending over the Indian desert, from the Sutledge to the ocean, deduce their pedigrees. Colonel Todd draws a parallel between them and the ancient Scandinavians and Scythians; and the striking resemblance that appears in the manners, customs, and religious opinions of the two nations, he insists, strongly suggests the idea of a common origin. These ancient tribes were devoted to the god of war; and the Rajpoot, he observes, "delights in blood; his offerings to the god of battles are sanguinary, blood and wine. The cup of libation is the human skull. He loves them because they are emblematic of the deity he worships; and he is taught to believe that Hor loves them, who in war is represented with the skull to drink the foeman's blood, and in peace is the patron of wine and women. With Parbutti on his knee, his eyes rolling from the juice of the p'foot and opium, such is this Bacchanalian divinity of war." "Is this Hinduism," he adds, "acquired in the burning plains of India? Is it not rather a perfect picture of the Scandinavian heroes."[1] This hypothesis of a common origin Colonel Todd further supports from the Rajpoots slaying the buffalo, hunting the boar and the deer, shooting ducks and wild fowl; from their ancient use of the war-chariot, as appears from the inscriptions and engravings on their monuments; from the order of the birds common amongst them; from their passion for gaming and intoxicating liquors; from their sensual and slothful habits; from their funeral ceremonies, particularly from their immolation of females; and from other peculiarities of manners and customs common to these ancient tribes. The Rajpoots claiming so splendid a descent are distinguished above all other tribes by rank and pride of birth, and high aristocratic feeling; and hence has arisen the barbarous custom among the chiefs of putting to death their female children as soon as they are born, lest they should contract any base alliance. Others say that this custom is occasioned by the practice amongst the Rajpoot princes of providing splendid dowries for their daughters, by which they are frequently impoverished, and to avoid which they murder them in infancy. Colonel Todd, the depth of whose researches into the ancient literature of the Hindus appears in his accurate and lively delineation of the national character and manners of the Rajpoots, ascribes to their chiefs a more ancient and chivalrous descent than many of the royal houses of Europe. "From the most remote periods," he observes, "we can trace nothing ignoble, nor any vestige of vassal origin. Reduced in power, circumscribed in territory, compelled to yield much of their splendour and many of the dignities of birth, they have not abandoned an iota of the pride and high bearing arising from a knowledge of their illustrious and regal descent. The poorest Rajpoot of this day," he adds, "retains all the pride of ancestry, often his sole inheritance; he scorns to hold the plough, or to use his lance but on horseback. In these aristocratic ideas he is supported by his reception among his superiors, and the respect paid to him by his inferiors." These honours and gradations of rank are supported by peculiar privileges, each of the superior orders being entitled to a banner, to kettle-drums, preceded by heralds, and silver maces, with peculiar gifts and personal honours in commemoration of some exploit of their ancestors. Armorial bearings are used by the martial Rajpoots; a golden sun on a crimson field adorns the great banner of Mewar; those of the chiefs bear a dagger, whilst others display a fine coloured flag; and the lion rampant in an argent field was the warlike emblem of the now extinct state of Chanderi.[2] The Rajpoots are divided into thirty-six royal races, described by Colonel Todd; to each is attached a bard, who is acquainted with all the peculiarities, religious tenets, and ancient history of the tribe. These are subdivided into an infinite variety of lesser clans, each more or less honourable as they can trace their pure descent from the original and illustrious founders of their race. The character of the Rajpoots, as given by Bishop Heber on the authority of Captain Macdonald, the political resident of the Company in that district, is far from favourable. "The people," he observes, "who are generally oppressed, and have been, till very lately, engaged in incessant war, have the vices of slaves added to those of robbers, with no more regard to truth than the natives of our own provinces, exceeding them in drunkenness, fondness for opium, and sensuality, whilst they have a blood-thirstiness from which the great mass of the Hindus are very far removed. Their courage, however, and the gallant efforts they made to defend their territories against the Mahrattas, deserve high praise." They are extremely attached to their respective chiefs, to whom they yield a feudal obedience. The lands are let at low rents, on the condition of military service, every village furnishing its contingent of horsemen on the shortest notice. One of the chiefs who visited the above

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[1] See *Annals and Antiquities of Rajast'han*, by Lieutenant-Colonel Todd, p. 68.

[2] *Ibid.* p. 138.

Hindustan.

traveller, and who is said by him to have been a striking specimen of the tribe, is described as "young and handsome, but dirty in his dress, boisterous in his manner, talking with a great deal of gesticulation, many winks, nods, beckonings, and other marks of intelligence; and half drunk." Colonel Todd's work contains an accurate and instructive delineation of the manners and feudal relations amongst the Rajpootana chiefs; of their martial virtues, their romantic fidelity and honour, and their high pride, the parent at once of the noblest deeds and the deepest crimes; with which, according to their enthusiastic annalist, Colonel Todd, their history is stained. Family feuds are frequent amongst them, and last for centuries. They are handed down, as an inheritance, from generation to generation; and thus the debt accumulates with interest, "the deep reversion of delayed revenge," till it is extinguished in the blood of the hostile tribes. Hence murders, burnings, poisonings, mingle in their domestic annals with traits of generosity and romantic valour; and the modern Rajpoots, though they are certainly not improved, differ little in their manners and prejudices from their ancestors.[1]

The Bheels, another predatory tribe, inhabiting the mountains situated near the Nerbuddah and the Tuptee rivers, thence extending northward towards Rajpootana, westward towards the province of Gujerat, where they meet the Coolies, and eastward to Gundwana, where they come in contact with the Gonds, two other predatory tribes, are supposed to have been the aborigines of Central India. All these tribes are averse to industry, and subsist by plunder, by hunting, or by cultivation, when all other expedients fail. The Coolies near the sea-coast lived, until lately, by fishing or piracy. The Bheels inhabit the interior; and during the late unhappy era of disorder and rapine in India, terminated by the triumph of the British arms in 1817, they had by their inroads laid waste several districts, and were rapidly increasing in power. They were frequently hired by the native chiefs to assist in their desolating wars, as horsemen or as infantry, armed with bows and arrows, and nearly naked. Thieves and savages as they are, Bishop Heber found that the British officers stationed in that district thought them, on the whole, a better race than their conquerors. "Their word," he observes, "is more to be depended on; they are of a franker and livelier character; their women are far better treated, and enjoy more influence; and though they shed blood without scruple in cases of deadly feud, or in the regular way of a foray, they are not vindictive or inhospitable under other circumstances, several British officers having with perfect safety gone hunting and fishing into their country without escort or guide except what these poor savages themselves cheerfully furnished for a little brandy." The Bheels in the south of Malwah were partly reclaimed by the wise and conciliatory policy of Sir John Malcolm. But in Northern India, in the mountainous tract south of Odeypoor, they are differently treated, and severity has confirmed their primitive habits. To such extremities have they been inflamed, that they cut off the head of a messenger sent to them by the British with an offer of mercy, and fixed it on a bamboo, where it was found next morning, and fled further into the hills. The Gonds are a miserable race in Gundwana, who have been driven, like the Bheels, by their invaders, into the unwholesome fastnesses of the mountains. They approach nearly to a state of nature, and frequently descend from the mountains, especially during the harvest, to plunder their ancient inheritance in the plains. Having within the last fifty years acquired a taste for salt and sugar, they have begun to cultivate the land, in order to obtain these luxuries. The Gonds bear a striking resemblance to the African negro. The Grassias are another race of plunderers who are numerous in Gujerat, the most western province of India. They have or pretend to have ancient claims on the land, many portions of which were either surrendered to them by the proprietors for the secure possession of the remainder; or they received an annual payment in money (toda) in full of all demands, as black-mail was paid in Scotland to the Highland robbers during the disorders of the feudal times. The Grassias seldom levied these claims in person; but, assuming the character of chieftains, they rallied around them a band of adventurers, who levied their *grassia* claim, and who, under this authority, plundered and laid waste the country. These Grassias are of no sect or caste; they include Hindus and Mahommedans indiscriminately. But, of all these predatory races in Hindustan, the Coolies, who haunt the shores of the great salt marsh called the Runn, near the Gulf of Cutch, are the most untameable. They resist every approach to civilization, and pride themselves upon their mean and filthy dress. The tribes of thieves which are found in India, under the various designations of Grassias, Catties, Bhattics, or wandering outlaws who worship the sun and moon, Coolies, Bheels or Mewassies, Meenas, Buddicks, Cozauks, and the like, generally wander along the rugged banks of rivers, or among inaccessible mountains. The Bhats are a singular race, who are most numerous in Gujerat. Some are cultivators, others beggars and itinerant bards or traders; whilst a few are contractors for the payment of the public revenue, receiving a small per centage on the amount, or guarantee the observance of private agreements and awards. The Cherons are a sect of Hindus nearly resembling the Bhats in their manners and customs. They are carriers of heavy goods, such as grain and other articles, in which they are also dealers, and possess large droves of cattle for carriage. They are likewise engaged to protect travellers in the wild parts of the country, and take an oath to die by their own hands in the event of those who are under their protection being plundered; and the superstitious thieves of Hindustan are always overawed by this threat of the Cherons, whom they hold in great veneration.[2] The population of Hindustan contains other tribes or sects, too numerous and diversified to be described in detail, and differing, if not in language, at least in dialect, and in their manners, customs, and occupations. The Phasingars in the south of India, and the Thugs, are professional murderers; the latter are composed of men of all castes, even Brahmins, who, when murders are committed, are frequently the chief directors in the scene. Their practice is to decoy the traveller into the midst of their band, and then, drowning his cries by the noise of pretended revelry, to strangle him by suddenly throwing a noose round his neck, after which the body is cast into a grave previously dug for it. Another tribe, the Gwarriahs, who live by stealing women and children, are fast disappearing under the strict rule of the British. The Brinjarrees and Loodanahs, or carriers of grain, are a singular wandering race, who dwell in tents, and have no home; passing their whole time in transporting grain from one part of the country to another. They move about in large bodies with their wives, children, dogs, and loaded bullocks; and carry arms, with which they stoutly defend themselves against petty thieves. In war they are allowed to pass and repass quietly as neutrals between hostile armies, and to sell supplies of grain to either party. It was from the Brinjarrees that Lord Cornwallis received all the supplies for his army when he advanced against the capital of Mysore in 1799. The Oorians, a singular race, who inhabit Orissa, are distinguished by their feminine appearance, so that they are often mistaken for women. They are timid, dissolute in their manners, and more practised in low cunning than any other people in the East, though they are said to be honest and industrious. The pastoral tribes, the Todawars or Toderies, and the Koties, inhabit the table-land of Mysore; the first a manly race in features, and of a proud and independent character, strongly resembling the ancient Romans; the second more diminutive, with darker complexions, and less expressive features. They are considered as the aborigines of these highlands. The Toderies are herdsmen, wandering from pasture to pasture, and they and the Koties always go bare-footed and bare-headed. The Nairs in Malabar form a singular caste, from their peculiar manners and customs. Pretending to be soldiers by birth, they disdain all industry; and are often seen parading up and down fully armed, each man with a firelock, and with at least one if not two sabres, which they more frequently use in secret assassination than in open war. Amongst the Nairs marriage is a mere form, and both sexes indulge in a promiscuous intercourse. The women are married before they are ten years of age; but the husband never cohabits with his wife. He allows her a suitable maintenance, whilst she lives with her brothers, and cohabits indiscriminately with any person of an equal or higher rank. Owing to this irregular intercourse, no Nair knows his own father; and every man considers his sister's children as his heirs.[1] The Nestorian Christians are numerous in the south of India, and are a peaceful and industrious race. The Roman Catholics, the descendants of the Portuguese and French, or converts to their faith, amount to 600,000, and are sunk in idolatry not much superior to that of the Hindus. The foreign races in India are the mercenary Arabs, who are brave soldiers, ready to fight on any side for good pay; and the Chinese, who are fast increasing in Calcutta, and engross, by their skill as artisans, the principal business in the city. Another race has sprung up in India since the country was occupied by the British, who are known by the various names of Europeans, Anglo-Indians, Indo-Britons, half-castes, and the like, but who have now assumed the appellation of East Indians. They are the descendants of Europeans, either British or others, by native mothers, legitimate and illegitimate. They are estimated to amount, in the province of Bengal, to about 20,000, including men, women, and children. Nearly two thirds of this number reside in Calcutta, and there are about 10,000 more in the presidencies of Madras and Bombay. They speak the English language, and follow all the European habits, and the Protestant religion. But as they are an intermediate caste between Hindu and Mahommedan, they are not subject to, nor are protected by, the English law, and may, like the natives, be arrested by any of the courts, fined, imprisoned, and corporally punished at the discretion of the judge, without the intervention of a jury; though, in point of fact, no such severities are ever practised, being prevented alike by the force of public opinion, by the sentiments and feelings of the British rulers of India, and also by the respectable conduct of this mixed caste. They have been, since the year 1791, excluded by express enactments from the civil and military service of the Company, and are only eligible to subordinate situations in public offices; though of late years this exclusion was only applied in its rigour to the immediate descendants of European and Indian parents, all others being eligible to civil and military offices. Prior to 1791, the East Indians were freely admitted into the army, and several of them attained to the rank of generals and colonels, and commanded large bodies of troops with efficiency and success. Notwithstanding the restrictive law, there are still examples of their admission into the Company's service. Those who are not engaged in the public service follow other professions. Some have acquired high reputation and large fortunes by medical practice. Others are employed as planters, schoolmasters, architects, printers, carvers and gilders, or engaged in commerce. Mr Grant's measure, passed in 1833, for regulating the Company's affairs, abolishes these unjust and illiberal distinctions, and renders every class, of whatever caste or religion, eligible to all offices civil and military.[2]

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[1] *Annals of Rajast'han*, vol. i. chap. 3.

[2] For a more full account of some of these tribes, see the article on GUJERAT, a province in which they abound.

Such are some of the principal tribes who inhabit the low country of Central and Northern India, "whilst the mountains and woods, wherever they occur, show specimens of a race entirely different from all these, and in a state of society scarcely elevated above the savages of New Holland or New Zealand." It is finely observed by Sir John Malcolm in his history of Persia, that, in the conquest of a country, the rocks and the mountains often afford a last asylum to the brave and the free; and accordingly, many of the native tribes in Hindustan, flying from the destroying sword, have thus maintained for ages a savage independence, and all the distinct traces of an original race. The elevated tract which Bengal includes towards its western frontier, reaching from Rajamahal to Burdwan, is inhabited by several tribes of mountaineers, who are probably the aborigines of the country; and, from their features, language, civilization, and religion, are obviously of a different stock from those in the plains. Amongst the Puharrees, who inhabit this tract, the Hindu institution of castes is unknown; the Hindu deities are equally so; and they have no idols, being nearly in the condition of savages. They subsist by the chase, their arms are bows and arrows, and they are nearly naked. They formerly waged incessant war with the cultivators of the plains, whom they robbed and murdered, and were in their turn hunted by the Mahommedan zemindars like wild beasts. Having been kindly treated and conciliated by the British, they are so far reclaimed from their wild habits, that a battalion of sepoys has been raised from amongst them. The peculiar features of the rude tribes in the eastern hills of Bengal, and the adjacent plains, equally indicate a distinct origin. The Kookies, who live in the mountains to the north-east of the Chittagong district, have all the peculiar features of a Tartar countenance; the flat nose, the small eyes, and the broad round face. They are stout and muscular, though not tall; and they are hunters and warriors, armed with bows and arrows, clubs and spears. They live in the most inaccessible hills, in a state of constant warfare, and, like all savages, are cruel and vindictive.

Religio

The inhabitants of Hindustan rank much lower in the scale of civilization than the nations of Europe. They are far behind them in literature, science, and the arts, and in all the civil institutions of society; and their religion is that of a rude people, consisting in an endless detail of troublesome ceremonies, which are deeply interwoven with the whole system of life. The reason of man, in contemplating the wonders of creation, is directed by the light of nature to one great first cause, and in the structure of the universe are clearly seen the divine attributes of goodness, wisdom, and almighty power. Accordingly Brahm, or God, is declared, in many passages of the Vedas or sacred writings of the Hindus, to be the almighty, infinite, eternal, self-existent being, who sees all things, and is everywhere present; the creator and lord of the universe, its preserver and its destroyer, who can neither be described nor adequately conceived by the limited faculties of man. But with these elementary conceptions of the divine majesty other grosser ideas are combined, and a system of polytheism, accompanied by the most extravagant and obscene fables, and all the disgusting, cruel, and blood-thirsty rites of an abominable idolatry. Whilst Brahm, the Supreme Being, is supposed to remain in holy obscurity, he has distributed respectively to three other deities, Brahma, Vishnu, and Siva, the power of creating, preserving, and destroying the world. But it does not appear that these deities are strictly confined to their separate functions; Vishnu, the preserver, frequently employing himself in acts of destruction; and Siva, on the other hand, in acts of beneficence. In short, the Hindu creed presents no clear nor determinate ideas. All is vague, inaccurate, and confused. Brahma, the creator, is represented as a golden-coloured figure, with four heads and four arms. Vishnu, the preserver, is represented of a black or blue colour, with four arms, and a club to punish the wicked. The emblems under which he is represented refer to his vindictive character. He has three eyes, to denote the three divisions of time past, present, and future. A crescent in his forehead refers to the measuring of time by the lunar revolutions, as a serpent denotes it by years; and the necklace of skulls which he wears, the extinction of mankind in successive generations. The great ends of his providence are brought about by various incarnations of the Hindu deity. Of these visible appearances, denominated avatars in the Hindu mythology, there are ten, of which nine have already taken place; and although the Hindu account of what took place at these times is a tissue of absurdity, extravagance, and indecency, yet we may trace, under a mass of fable, the Scripture account of the deluge, with various other points of the Christian theology. But the history of the creation from a seed deposited in the waters, which became an egg, from which Brahma the creator was born, is in the highest degree absurd and profane. At the tenth avatar, which is yet to come, Vishnu, as is foretold, will appear on a white horse, with a scimitar blazing like a comet, for the everlasting punishment of the wicked who shall then be on the earth. Each earthly incarnation of the divinity gives rise to a new deity; and there are, besides, innumerable other minor deities, amounting, it is said, to 330 millions. All the great elements of nature are deified by the extravagant superstition of the Hindus; also the firmament of heaven, the sun, moon, and stars; every river, fountain, and stream, is either a deity in itself or has a divinity presiding over it, nothing being done without some supernatural agency; and there are, besides, innumerable myriads of demigods, to whose honour idols are erected and worshipped by all classes with much apparent devotion. Stocks and stones, or a lump of clay smeared over with a little red paint, are converted into a god, and reverenced, by the ignorant Hindu. Any figure, either of brute or man, or any monstrous combination of both, with a multiplicity of heads and hands, mark a Brahminical place of worship. In the lapse of ages, great changes have been introduced into the religious practices of the Hindus; and sectaries have arisen amongst them, each with peculiar objects of adoration and modes of worship. Five great sects worship exclusively a single deity; one recognises the five divinities that are respectively reverenced by the other sects, but they select one object for daily adoration, whilst they perform only occasional rites to the other deities. The Vedas, or the Hindu Scriptures, were revealed before the appearance of Buddha, the ninth incarnation of Vishnu, which is supposed to have taken place in the year 1014 before the Christian era. He appears to have borrowed his theology from the system of Capila, in which the unlawfulness of killing animals is inculcated as an essential point. But the overthrow of the Buddhists did not revive the religious system inculcated in the Vedas. The doctrines taught in these sacred books are now mostly obsolete, and in their stead new forms and ceremonies have been instituted, and new orders of devotees. In particular the goddess Kali, the consort of Siva, who delights in blood, has been propitiated by the sacrifice of animals; and the worship of Rama and Krishna, incarnations of Vishnu, and of Siva the destroyer, appears to have been introduced since the persecution of the Buddhists and Jains.

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[1] Buchanan's *Journey from Madras*, vol. ii. p. 412.

[2] Minutes of Evidence before Select Committee on the Affairs of the East India Company, on a Petition of certain Christian Inhabitants of Calcutta, &c. presented to the House of Commons on the 4th May last; 21st June 1831.

The worshippers of Buddha, though they believe in the incarnation of Vishnu, are regarded as heretical by the Hindus, and have been compelled, by persecution, to fly to other countries. They have now propagated their faith over the greater part of Eastern India, in China, and as far as Japan; also in Thibet and Ceylon. The Jains are another sect of Hindus, who acknowledge only as subordinate deities some, if not all, of the gods of the Brahmins, and the prevailing sects; and assign the highest place to certain deified saints, who, according to their creed, have risen to the dignity of superior gods. They neither address prayers nor perform sacrifices to the sun or the fire; and they reject the authority of the Vedas, as do also the Buddhists. The presence of umbrella-covered pyramids, or semi-globes, and of plain human figures sitting cross-legged, or standing in an attitude of contemplation, point out the temple or excavation of a Buddhist. The twenty-four saintly figures, without the pyramid, indicate a Jain temple.

The sacred books of the Hindus, though they inculcate generally all the moral duties of justice, mercy, and benevolence, yet seem, like every other system of false religion, to give the first place to the ceremonial law; and accordingly the devotion of the Hindus consists in mere outward observances, and is not inconsistent with the most scandalous crimes. Under the Christian system, there can be no piety to God without benevolence to man. But the troublesome ceremonies of the Hindu religion encroach, not only on all moral duties, but on the whole business of life; and confer such a stock of atoning merit that they seem to supersede the weightier matters of the law. The observances which are imposed upon a Brahmin commence when he rises in the morning, and consist in divers ablutions and prayers, in the worship of the rising sun, in the inaudible recitation of the gayatri, or the holiest text of the Vedas, in holy meditation, and in other ceremonies. He has then to perform the five sacraments, which consist in teaching and studying the scriptures, which is the sacrament of the Veda; in offering cakes and water, which is the sacrament of the manes; in an oblation of fire, the sacrament of the deities; in giving rice and other food to living creatures, which is the sacrament of spirits; and in receiving guests with honour, which is the sacrament of men. The whole day would not suffice for the punctual performance of these ceremonies; and they are of necessity abridged, to give time for the proper business of life. In almost all the religious traditions of the world we find traces of the Scripture revelation, however corrupted; and the Hindu system seems to have borrowed, and to have greatly extended, the typical impurities of the Mosaic law. The rules on this subject, pointing out the causes of defilement, and the modes of purification, are numerous, many of them to the last degree absurd and troublesome. The death or the birth of a child renders all the kindred unclean. Any one who touches a dead body, a new-born child, an outcast, &c. is unclean; or a Brahmin who has touched a human bone. The natural functions of the body give occasion to many minute and disgusting regulations; and the modes of purification are equally strange and ridiculous. Of these, bathing is the most rational; the other modes are by stroking a cow, looking at the sun, or having the mouth sprinkled with water. He who is bitten by any animal frequenting a town, or by a mare, a camel, or a bear, is unclean; and he is purified by stopping his breath during one inaudible repetition of the gayatri. Inanimate substances may also be unclean, and the various modes of purifying them rival in absurdity the other extravagances of the Hindu code of religious observances.

The expiation of sin by voluntary penance is another favourite doctrine of the Brahmins, by which they contrive to awe superstitious minds into subjection; and in their estimate of offences, with a view to suitable penances, they subvert all moral distinctions. "Acts naturally indifferent," says the author of *Indian Recreations*, "are put on the same footing with immoralities; eating certain articles of food, drinking certain liquors, or touching certain objects, are declared forfeitures, and are expiated by penance as immoral conduct. Forgetting texts of scripture is classed with perjury; eating things forbidden, with killing a friend; incest and adultery are compared to slaying a bull or a cow; drinking forbidden liquor, to killing a Brahmin. In several instances, actions highly meritorious according to our notions, are put on the same footing with a conduct implying great infamy. Working in mines of any sort, engaging in dykes, bridges, or other great mechanical works, is classed with subsisting by the harlotry of a wife, and preparing charms to destroy the innocent."[1] To these artificial offences, penances are either affixed by the Brahmins, or are voluntarily undertaken by their pious votaries; and these generally consist in fasts, mortifications, watchings, and other bodily privations. "If a Brahmin," says Menu, "have killed a man of the sacerdotal class without malice, he must make a hut in a forest, and dwell in it twelve whole years, subsisting on alms, for the purification of his soul. If the slayer be a king, he may perform sacrifices, with presents of great value; if a person of wealth has committed this offence, he may give all his property to some Brahmin learned in the Veda." In some cases the penances consist in eating what is filthy and disgusting. If a Brahmin kill by design a cat, or an ichneumon, the bird chisha, or a frog, a dog, a lizard, an owl, or a crow, he must perform the ordinary penance required for the death of a Sudra, one of the lowest caste, who are thus no more valued than a cat or a frog. A particular class of devotees, namely, the Fakirs, signalize their piety by enduring the severest tortures, and with a constancy worthy of a better cause. Bishop Heber describes, with his usual force, the appearance of these eastern monks as he entered the holy city of Benares. "Fakirs' houses," he observes, "as they are called, occur at every turn, adorned with idols, and sending forth an unceasing tinkling and strumming of vinas, byyals, and other discordant instruments; while religious mendicants of every Hindu sect, offering every conceivable deformity which chalk, cow-dung, disease, matted locks, distorted limbs, and disgusting and hideous attitudes of penance, can show, literally line the principal streets on both sides. Here," he adds, "I saw repeated instances of that penance of which I heard much in Europe, of men with their legs and arms voluntarily distorted by keeping them in one position, and their hands clenched till the nails grew out at the backs. Their pitiful exclamations as we passed, '*Agha Sahib, Topee Sahib*,' the usual names in Hindustan for an European, '*khana ke waste kooch cheez do*,' give me something to eat, soon drew from me the few pence I had; but it was a drop of water in the ocean; and the importunities of the rest, as we advanced into the city, were almost drowned in the hubbub which surrounded us."[2] The tortures which these fanatics endure exceed all belief. A penitent who went through the ceremony of sitting between five fires, is described by Fraser, who witnessed the penance at a public festival. Being seated on a quadrangular stage, after the sun began to have considerable power, he stood on one leg gazing stedfastly at its scorching beams, whilst fires large enough, says the traveller, to roast an ox were burning around him, the penitent counting his beads, and occasionally adding fuel to the flames. He stood upright on his head in the midst of these fires for three hours; and then seating himself with his legs across, he remained till the end of the day exposed to the scorching heat of both the sun and the fires.[3] Other cruel and bloody rites are contrived by those devotees, the worshippers of Siva or his consort the goddess Kali. At one of the festivals in honour of this goddess, Bishop Heber, who was present, relates, that one of these self-tormentors had hooks thrust through the muscles of his sides, which he endured without shrinking, and a broad bandage being fastened round his waist to prevent the hooks from being torn through the flesh by the weight of his body, he was fastened to a long pole, and, by means of another pole fixed in the ground, he was swung aloft and whirled round in the air; on a motion being made to take him down, he made signs for them to proceed, a mark of constancy received with shouts of applause by the ignorant multitude. Other devotees were seen going about with small spears thrust through their tongues and arms, or with hot irons pressed against their sides. Bishop Heber saw another of these penitents who was actually half roasting himself by a fire which he had kindled in a hole dug in the ground; another was seen hopping on one foot, having made a vow never to use the other, which was now contracted and shrunk up; and a third had held his hands above his head so long that he had lost the power of bringing them down to his sides. Some are seen buried up to the neck in the ground, or even deeper, with only a small hole for breathing. Some lie on beds of iron spikes, or tear their flesh with whips, or chain themselves for life to the foot of a tree, or remain in a standing posture for years, till their legs swell, and break out into ulcers, and become at last too weak to support them; others exhaust their bodily strength with long fasting, or gaze on the blazing sun, till their eyesight is extinguished. These devotees subsist entirely by charity; and Dr Buchanan mentions a class of them in the south of India, who wander about with bells tied to their legs and arms, in order to give notice of their presence as they approach the villages.[4] They are always naked, and filthy in the extreme, being covered with cow-dung and chalk; and for the tortures which they endure in public they indemnify themselves in private by the utmost license of sensual indulgence.[5] Amongst other observances, the Hindus have always been much given to religious pilgrimages; and their holy places have been generally established near the sea, the sources and junctions of rivers, which are held in peculiar veneration, the tops of remarkable hills, hot springs, caves, waterfalls, or any other place of difficult or dangerous access. A pilgrimage to Gangoutri, near the sources of the Ganges, is accounted the great achievement of Hindu piety. To the waters of this river the superstitious Hindu ascribes peculiar sanctity, and devoutly worships it throughout its whole course. But there are particular spots more sacred than others; and so great is the resort of pilgrims, and such their ardour to wash in the sacred stream, that numbers, in the crush and tumult, are hurried into the water and drowned, or trodden to death in the crowd.

It is not doubted that, at a period not very remote, the bloody deities of the Hindus were propitiated with human sacrifices, and some of the rites still in use amongst them confirm this suspicion. The Brahmins, in resisting any demand which they conceive to be oppressive, resort to a contrivance, in which a human victim is really sacrificed. They erect a circular pile of wood, on the top of which they place a cow or an old woman; and if the demand is insisted on, they set fire to the pile, and consume the sacrifice, which is supposed to entail on the oppressor the deepest guilt. Bishop Heber gives, in his narrative, an example of the sacrifice of an old woman, who, in a quarrel which her husband had with his neighbour respecting some land, was thrust into a Mahbout's hut, and there burned, in order that her spirit might haunt the spot, and entail a curse upon the soil. Children were also formerly sacrificed, by throwing them to the sacred sharks of the Ganges, till the practice was forbidden by the British government; and a voluntary sacrifice of themselves by individuals, in honour of the gods, is still reckoned meritorious. At the festival of Juggernaut, the idol is placed on a ponderous machine or chariot, and dragged forward by a crowd of devotees and priests, when numbers of the people, even fathers and mothers, with their children in their arms, throwing themselves in the way of the chariot, and being crushed to death under its ponderous wheels, amidst the fanatical cries of the multitude, are supposed to be conveyed immediately to heaven. Numerous victims of both sexes drown themselves annually at the junction of the sacred streams;[1] many strike off their own heads as a sacrifice to the Ganges, whilst others expiate their sins by casting themselves into the avenging flames. This act of devotion is accompanied by atrocities that are truly shocking, the devotee previously laying open his bowels with the stroke of a sabre, tearing out his liver and giving it to a byestander, conversing all the time with apparent indifference.[2] Many other enormities are practised at the festivals in honour of their gods, which it would be endless and disgusting to detail. The custom of a widow burning herself on the funeral pile of her husband is a noted rite of the Hindu religion, by which she is supposed to expiate all her husband's crimes, however great, and to secure for herself the joys of paradise. It is most frequent in Bengal and near Benares, and is much encouraged by the Brahmins. The Hindus in this, as in many other instances, evince a singular indifference about their own lives; which also appears in the frequent instances of suicide amongst them. "Men," says Heber, "and still more women, throw themselves down wells, or drink poison, for apparently the slightest reasons, generally out of some quarrel, and in order that their blood may be at their enemy's door." Obscenities mingle with these bloody rites, and the most indecent figures are pourtrayed on the chariots used at the temples, many of them large and richly carved. "These," says Dr Buchanan, "representing the amours of the god Krishna, are the most indecent that I have ever seen."[3] Equally indecent representations are carved on the sacred cars fixed at the temples, in which the musicians and dancing girls are all prostitutes to the Brahmins, and turned out to starve when they grow old, unless they have a handsome daughter to support them from the wages of iniquity. The state of morals among the Hindus is such as might be expected from a religion so impure, and from the gross emblems which are used on sacred occasions; their writings and their conversation are shocking to European ears; and even the Hindu women hear without a blush and join in language the most gross and disgusting. They are sensual in all their ideas, and pursue the intercourse of the sexes with little more discrimination than the brute creation. Fidelity to marriage vows is scarcely known amongst them, at least amongst the men.

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[1] See Tennant's *Indian Recreations*, vol. i. p. 155.

[2] Heber, vol. i. p. 373.

[3] Mill's *History of British India*, vol. i. p. 353.

[4] *Journey from Madras, through Mysore, Canara, and Malabar*, vol. i. p. 238.

[5] Martin, vol. i. p. 291.

A superstitious tenderness for the brute creation is a peculiar tenet of the Hindu creed, which prohibits the use of animal food excepting at the great festivals, when the sacrifices of beasts propitiate the bloody deities, and serve the natives for a feast.[4] But the same abstinence from animal food is not general throughout Hindustan. In the north of India it has already been mentioned that it is freely used by the inhabitants; and, according to Dr Buchanan, there are castes in the south of India who eat sheep, goats, hogs, fowls, and fish, though there are others who religiously abstain from these, and from all spirituous liquors.[5] Several animals, as the cow and the monkey, are objects of veneration. Bishop Heber, so often quoted, mentions, that on entering the holy city of Benares, "the sacred bulls devoted to Siva, of every age, tame and familiar as mastiffs, walk lazily up and down the narrow streets, or are seen lying across them, and hardly to be kicked up; any blows, indeed, given them must be of the gentlest kind, or woe be to the profane wretch who braves the prejudices of a fanatic population, in order to make way for the tonjon. Monkies, sacred to Hunimaum, the divine ape, who conquered Ceylon for Rama, are, in some parts of the town, equally numerous, clinging to all the roofs and little projections of the temples, putting their impertinent heads and hands into every fruiterer's or confectioner's shop, and snatching the food from the children at their meals."[6] To such a length is this superstition carried, that they have established an hospital for sick and infirm beasts, and for fleas, lice, and insects, though it does not appear, as reported by some travellers, that they feed these loathsome creatures on the flesh of beggars hired to lodge in the hospital for that purpose. An hospital for animals is to be seen at Broach in Gujerat, which has considerable endowments in land, and in which are monkies, peacocks, horses, dogs, cats, and little boxes filled with fleas and lice. This hospital was described to Bishop Heber by the British commercial agent resident at Broach. The funds, however, are said to be alienated by the avaricious Brahmins, and the animals allowed to starve. With all this veneration for animals, they are nowhere more cruelly treated. They are overworked and abused in a manner shocking to a European. "They treat their draft horses," says Bishop Heber, "with a degree of barbarous severity which would turn an English hackney coachman sick;" nor do they show any greater sympathy for human beings, who are allowed to perish before their eyes from hunger or disease. Lepers, according to their base and irrational superstition, are treated as objects of the divine wrath; they are cruelly neglected, and regarded with abhorrence rather than with sympathy.

The transmigration of souls is another favourite tenet of the Brahmin superstition. The souls of good men migrate in the next world into hermits, religious mendicants, Brahmins, demi-gods, genii, or other celebrated intelligences; and the best ascend to the condition of Brahma with four faces. The next gradation allotted to souls filled with passion is into men and not into deities, into cudgel players, boxers, wrestlers, actors, or those of a higher class into the bodies of kings, and the highest become genii, attendants on the superior gods; whilst souls filled with darkness are degraded into the lower animals, such as worms, reptiles, cattle, &c. or into elephants, horses, Sudras (the lowest caste), or into the still more degraded class of men of no caste, or into lions, tigers, &c.; to the highest are allotted the forms of dancers, singers, &c. birds, giants, blood-thirsty savages. Particular migrations are assigned as the punishment of certain enormities; but it is useless to pursue the system further into its absurd and disgusting details,

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[1] Tennant, vol. ii. p. 250.

[2] Mill's *History of British India*, vol. i. p. 358.

[3] *Journey from Madras, through Mysore, Canara, and Malabar*, vol. ii. p. 237.

[4] *Journey from Madras*, &c. vol. i. p. 262.

[5] *Ibid.* vol. i. p. 248.

[6] Heber's *Narrative*, &c. vol. i. p. 373.

Manners.

The religion of Hindustan is so closely interwoven with its customs, manners, and laws, that they can scarcely be described separately. The division of a Hindu community into castes is an institution, not of policy, but of religion, which embraces the whole detail and intercourse of life. There are four original or pure castes, namely, 1*st*, the Brahmins, or priests; 2*d*, the Cshatriyas, or military caste; 3*d*, the Vaisyas, or husbandmen; and, 4*th*, the Sudras, or labourers. Of these the Brahmins are declared to hold the first rank, and to be the lords of all the other classes. A want of due reverence to them, especially by the lowest or the Sudra class, is accounted one of the most atrocious crimes. The laws and manners equally concur to maintain the honour, and all the substantial privileges, of this sacred order. They are exempted from taxation, and from the sanguinary laws which affect the other classes. Neither the life nor property of a Brahmin can be touched, even though he commit the most atrocious crimes; and the whole scope of the Hindu religion is to heap gifts and wealth upon them. "Every offence," says Orme, "is capable of being expiated by largesses to the Brahmins, prescribed by themselves, according to their own measures of avarice and sensuality."[1] The duties of the Brahmins are to meditate on divine things, to read the Vedas, to instruct the young Brahmins, and to perform sacrifices and other religious acts. The Cshatriyas, or the military rank, is next in order to that of the Brahmins. Their duty is to bear arms in defence of the state, and they rank as high above the lower orders as the Brahmins do above them. The Vaisyas, the third caste of Hindus, tend cattle, or engage in trade and agriculture. They rank only above the Sudras, from whom, however, they receive the same deference and submission which they give to the higher castes. To the Sudra, or the lowest class, are allotted all the meanest and most servile duties; they are regarded with abhorrence by the other tribes, to whom religion prescribes their most abject submission, as well as every other species of degradation. They are in a manner excluded from the privileges of the social state. They pay a higher rate of interest for money than any of the other classes, they are more cruelly punished for crimes committed against them, whilst an injury to a degraded Sudra is a light and venial offence. They are held to be in a state of slavery, they cannot possess property, and at any time a Brahmin may seize the goods of his Sudra slave. So degraded are they, that under this gloomy, unsocial superstition, a Brahmin cannot lawfully read the Veda in presence of any of them, nor give them spiritual counsel or instruction, under pain of sinking with them into hell. To each of these classes, into which society is divided, are assigned, under the severest penalties, particular and hereditary employments. But the rigid severity of this law is softened by the following exceptions. A Brahmin who cannot find employment in his own spiritual line, may descend to the exercise of military duties, or to tillage and attendance on cattle, or to traffic, only avoiding certain commodities. In like manner, a Cshatriya in distress may have recourse to all inferior employments, though not to the higher duties of the Brahmins. The practice of medicine and other learned professions, of painting and other arts, common labour, menial service, begging, or serving, may be resorted to upon the plea of necessity. A Vaisya may descend to the servile work of a Sudra; and a Sudra may subsist by handicrafts, as joinery, masonry, painting, and writing, by which he may serve the higher classes; or by trade or husbandry. The loss of caste is one of the most serious calamities which can befall a Hindu, and may in fact be compared to the spiritual anathemas of the Catholic church during the dark ages of Europe. If the loss of caste were the penalty of immorality, the fear of it would impose a salutary restraint. But this is far from being the case. The most abandoned Brahmin retains his rank, notwithstanding his crimes; but he will entirely forfeit it and lose all countenance in society by touching impure food, or by some such petty delinquency. To sit down at a meal with one of an inferior caste, would be deemed a monstrous pollution; and a naked Hindu would think himself defiled by the presence of the first monarch of Europe at any of his meals. "While dinner is preparing," says Tennant, "and during eating, a small circle is drawn round the company, which an European, if he pass, infallibly defiles the meal; it is thrown to the dogs, and other victuals provided, though a single one be all the treasure of the family."[2]

Such may be considered as in theory the structure of a Hindu community. But since, in the progress of society, this strict division into classes with distinct employments could not long be maintained, we accordingly find that, by illicit connexions, the pure races are intermixed, and children born who, being of no caste, are therefore impure, and objects of execration to all the other tribes. This impure race, denominated the Burren Sunker, and classified into distinct tribes, have become artisans and handicraftsmen of every description. From the intermixture of these various races innumerable mixed tribes have sprung, and the pure blood of the four original tribes is scarcely to be found; so that Mr Rickards, in his accurate account of Indian manners, says, "I have never met with a person who could prove himself a genuine Cshatriya, Vaisya, or Sudra; whilst of those who pretend to be of pure descent, Brahmins and other respectable and intelligent Hindus have assured me that they have no right to the distinction; that the genuine tribes above named are extinct, and their descendants in this generation all of mixed blood. If, however, any do now exist, they must be too thinly scattered to affect the general interests of society by their privileges or numbers. "A real Cshatriya prince," he adds, "is not to be found in these days; all the greater princes of India, excepting the peshwa, a Brahmin, are base-born."[3] Nor, amidst this confusion of ranks, has it been possible to adhere to the strict allotment of certain employments to particular castes. The Brahmins no doubt still form a distinct order; their privileges are willingly conceded to them by the superstitious multitude, and the inferior castes have never encroached on their holy functions. But those of the other castes have been confounded. War has not been the exclusive employment of the Cshatriya caste; for the Indian armies are recruited from all denominations and castes. Nor have the Vaisya and the Sudra castes been more successful in the monopoly of their employments; seeing that all the various castes follow their allotted duties, and fill every branch of agriculture, commerce, handicraft, and menial service.[4] But the institution of castes, though it has not been strictly acted upon, being at variance with the fixed order of human society, has nevertheless deeply affected the aspect and structure of the Hindu communities; and whilst it exalts the order of priests, it degrades the lower classes to the level of the brutes. It is the source of cruel and anti-social prejudices, entirely opposite to those Christian feelings of benevolence by which man is bound to his fellow men; and by which the different orders of society, instead of being harshly separated, are softened and blended, as in the communities of Europe, into one harmonious whole.

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[1] Orme *On the Government and People of Hindustan*, p. 433.

[2] See *Indian Recreations*, vol. i. p. 121.

[3] *India, or Facts submitted to illustrate the Character and Condition of the Native Inhabitants*, &c. By R. Rickards, Esq. vol. i. p. 29.

[4] *Ibid.* p. 30.

Besides these degraded castes, whose condition is little better than that of slaves, numbers of unfortunate persons are reduced to actual slavery throughout India, especially in the southern provinces, and in the Mahratta states. In Mysore, Coorg, Cochin, and Travancore, slavery prevails. All the jaghiredars, zemindars, principal Brahmins, and talookdars employ domestic slaves in their establishment; and in every Mahratta household of consequence they are considered as indispensable. They are also employed in the labours of the field, in the cultivation of rice, and are in the lowest state of degradation, ill-fed and worse clothed, and most wretched in their appearance. They are often extremely ill treated, and may be flogged at the discretion of the master, imprisoned, or put in the stocks; and there is hardly a criminal calendar which does not contain cases of wounding or even murdering slaves. Many are born slaves; some are kidnapped by men-stealers of a particular class, or are made prisoners in battle; others are sold into slavery in times of famine by their parents. Numbers are imported from the Persian Gulf, the Red Sea, and the coasts of Africa; some bind themselves for a time, or for life, in discharge of a debt. The population of Canara, amounting to 600,000, and in 1827 to a million, according to the estimate of Mr Harris, the principal collector, included 80,000 slaves. In Malabar there were, in 1806, 96,386 slaves in a population of 700,000, and out of 1,003,466 in 1827, 20,000 were prisoners of war or their descendants. In the report of the commissioners of Bengal and Bombay, of which Mr Jonathan Duncan was president, it is stated, that on the first settlement of Malabar in 1793, the degraded castes were in a state of villenage, and attached to the soil. It was the practice of the British to sell these slaves off the estate in default of the public dues, and in many cases to separate parents from children, wives from husbands, and thus to rend asunder the ties of kindred. The sale of slaves in the southern Mahratta states has been prohibited by a regulation of the governor-general and council; and in 1819 the practice of selling slaves for arrears of rent was ordered to be discontinued by the board of revenue. Children are sometimes kidnapped and sold for slaves; and the superintendent of police at Madras says, "I succeeded in 1818 in restoring several such children to their parents amongst the lowest and poorest of the Hindus; and their anxiety to recover infants whom they in all probability found it very difficult to support, would have done honour to the highest classes of European society."[1]

The Hindus are by no means a moral people. Notwithstanding the gentleness and feminine softness of their manners and address, they frequently commit the most revolting acts of cruelty. The practice of murdering children for the sake of the silver ornaments in which, by the vanity of their parents, they are attired, is common among them; and the gang-robbers of India are noted for the horrible tortures which they inflict on their unhappy victims, in their eager search after their hidden treasures. "Pestilence, or beasts of prey," says Dr Buchanan, "are gentle in comparison of Hindu robbers." According to the observation of Orme, the politics of Hindustan would afford in a century more frequent examples of sanguinary cruelty than the whole history of Europe since the reign of Charlemagne. "How many princes," observes this writer, "have been stabbed in full durbar" (in open court). "How many have been poisoned in their beds. Chiefs of armies circumvented and cut off at conferences in the field. Favourite courtiers strangled, without previous notice of their crime, or while they thought themselves on the eve of destroying their masters."[2] Murders amongst the Hindus, even by poison, excite no feeling of deep abhorrence, as among the nations of Europe; and the cold-blooded villany of the Hindu is often remarkable. Mr Holwell mentions, that when he sat as judge at Calcutta, he had heard it stated in defence of the most atrocious murders, that it was the Cali age, when men were destined to be wicked.[3] The Hindus, like all the other Asiatics, are great masters of dissimulation; they are cunning and treacherous, addicted to falsehood to a degree that can scarcely be conceived by a more refined and moral people. Perjury in courts of justice is universal, amongst high as well as low, and amongst both the Hindus and Mussulmans, without the least remorse or shame. The Europeans in the office of judges in India complain of being perplexed by a host of perjurers on each side, swearing in the teeth of one another. They are acute dissemblers in all affairs of interest, and are the sharpest buyers and sellers in the world, maintaining through all their bargains a degree of calmness which no art can penetrate.[1] A want of sympathy with the sufferings of his fellow-creatures is another trait of the Hindu character, and a sure index to the low state of refinement amongst them. They treat their sick and dying with indifference, and in many cases with shocking inhumanity. The sick whose life is despaired of are carried to the banks of the Ganges, and their mouth, nose, and ears are closely stopped up with mud; water is then poured upon them from large vessels, and thus, amidst the agonies of disease and of suffocation, life terminates. The corpse is then burned, if the survivors can pay the expense, and the relatives retire with every appearance of insensibility.[2] The effeminacy of their persons, and their timidity, prevent them from fighting or boxing in their quarrels. But this forbearance seems to proceed from no want of malignity or passion, as, in the event of any misunderstanding between two persons meeting accidentally in the street, they upbraid each other with the foulest epithets, accompanied by the utmost violence of gesticulation.

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[1] See Papers relative to slavery in India; Return to the House of Commons, 6th March 1834; Evidence of Joseph Fenn, nine years a missionary in Travancore; Answers to Questions on Slavery, circulated by the Commissioners for the affairs of India; Evidence of T. H. Baber, Esq. thirty-two years resident in India; of the Honourable J. Harris, principal collector in Canara; and of Mr Warden, collector in Malabar. The evidence of T. H. Baber discloses a regular and shameful traffic in slaves, carried on by Mr Brown, a servant of the Company, and under the authority of the Bombay government. "How or whence," he observes, "this oppressive and cruel practice, not only of selling slaves off the estate where born and bred, but actually of separating husbands and wives, parents and children, and thus severing all the nearest and dearest associations and ties of our common nature, originated, it would be difficult to say; but I have no doubt, and never had in my own mind, that it has derived support, if not its origin, from the impolitic measure in 1798, of giving authority to the late Mr Murdoch Brown, while overseer of the Company's plantations in Malabar, from the difficulties he experienced, even with 'the assistance of the tchsildar' (the head native authority) and 'his peons' (armed persons with badges of office), to procure workmen, and 'of the price of labour being more than he was authorized to give,' to purchase indiscriminately as many slaves as he might require to enable him to carry on the works of that plantation; and of actually issuing orders to the European, as well as to the native local authorities, to assist him, and even to restore slaves who had run away and returned to their homes (without any orders to inquire the reason of their absconding), and who, as has been actually ascertained from the surviving slaves themselves, had been actually kidnapped by the doragha (head police officer), and sent up to North Malabar, to Mr Brown, which person had continued up to 1811, or for a period of twelve years, under this alleged authority, granted by the Bombay government, to import slaves and free-born children from Travancore, when, by the merest accident, this nefarious traffic came to my knowledge, and which, *after a considerable opposition on the part of the provincial court of circuit*, I succeeded in putting a stop to, after having restored to liberty and their country 123 persons who had been stolen, of whom 71 were actually found in Mr Brown's possession." Mr Brown's agent, Assen Ally, acknowledged, that during the time he was at Aleppi, at Travancore, in 1810, no less than 400 children had been transported to Malabar. The advocate-general's report alludes to "Mr Baber's perseverance in restoring the kidnapped children, in spite of very extraordinary opposition," and to the "extraordinary support Mr Brown appears to have received in these dealings in stolen children." (Fol. 788.) The still more objectionable practice of realizing the public dues by the seizure and sale of slaves off the land, must have confirmed proprietors in their idea of accounting the slaves their property. Mr Vaughan, collector, Malabar, in a letter dated 20th of July 1819, argues in favour of this inhuman practice, saying, "that the partial measure of declaring them not liable to be sold for arrears of revenue, will be a drop in the ocean; though, why government should give up the right every proprietor enjoys, is a question worthy of consideration." Par. 3, 4, 5, &c. Highest class slaves sold for 250 gold fananas, L.6. 5s.; average price, L.3. 6s.

[2] Orme's *Historical Fragments of the Mogul Empire*, p. 340.

[3] Mill, vol. i. p. 407.

Mr Rickards, in his valuable work upon India, seems to imagine that European writers have exaggerated the vices of the Hindus, and he exhibits them in a more favourable light. "Having lived," he observes, "twenty-three years in India, and passed much of that time in intimate intercourse with various natives, I have a different opinion of their character to that given in several printed works. I have constantly seen, in their acts and conduct, the practice of the most amiable virtues. I have experienced from many the most grateful attachment. I believe them capable of all the qualities that adorn the human mind; and though I allow many of their imputed faults (where is the individual or nation without them?) I must still ascribe these faults more to the despotisms under which they have so long groaned, and which unhappily we have but slenderly alleviated, than to natural depravity of disposition, or to any institutions peculiar to themselves."[3] No writer ascribes to the Hindus any greater natural depravity than other nations. But certainly their peculiar religion, its indecent and bloody rites, and the laws and usages founded on it, more especially the institution of castes, tend to extinguish in the breast all humane, enlightened, or moral feelings; and though, even amongst the Hindus, exceptions may be found, and the occasional practice of amiable virtues, yet the crimes which are proved to be committed openly and without shame or remorse sufficiently attest the want of morality, intelligence, and every humane and social feeling amongst them, and seem to place them in this respect entirely on a level with the other Asiatic nations. Ignorance is the parent of cruelty and vice, and with the progress of knowledge and of civil institutions certain crimes entirely disappear; and hence their existence amongst the Hindus bespeaks not so much any innate or peculiar depravity, as a low state of civilization, and a state of thraldom to a base superstition and to the dominion of priests, under which the social virtues are blighted in the bud, and selfishness and vice spring up in the congenial soil.

In every nation the condition of the female sex affords a sure index to the state of manners and the progress of civilization. Amongst savages, women are ill treated because they are weak and helpless, and there is no moral restraint on the tyranny of the men. In Hindustan, as over all the East, where polygamy prevails, they are a degraded caste, shut up in the harem or the seraglio, and not, as in Europe, the seat of a purer faith and more refined system of manners, the friends, the advisers, and equal companions, of their husbands. And both the laws and manners of the East lead to this unhappy effect. Whilst marriage is enjoined as a religious duty, not to be neglected except for the higher duty of becoming a devotee, the character of women is described in the Hindu books of law as stained with almost every vice. Pride, anger, envy, violence, deceit, falsehood, immoderate desires, infidelity to their husbands, and idleness, are pointed out as their ruling passions; and the treatment they meet with corresponds with those ideas. They are wholly uneducated, excluded from the sacred books, and from all knowledge of expiatory texts, and from any share in the paternal property; and they are held unworthy to eat with their husbands. They are the slaves of their domestic tyrants, and often receive the most barbarous treatment, being beaten and otherwise ill used; but they are not allowed to leave them, whilst the husband, on the other hand, may divorce his wife upon any plausible pretence. Such is the condition of women by the laws of Hindustan, which, we have no reason to believe, are softened in domestic life. Certain it is, that women, as long as they are uneducated, will be in a degraded state. It is only when they cultivate their minds that they can mix with advantage in society, and that, respecting themselves, and respected by others, they can acquire that ascendency to which they are entitled, and give, by the delicacy of their manners, that tone and polish to society which it cannot receive from the other sex.

The ceremonial of marriage is conducted amongst the Hindus with great solemnity and expense. The parties, who are of equal rank, and any other alliance would be accounted infamous, are betrothed during their infancy by their parents, but on a full consideration of their respective rank, skilful genealogists being consulted previously on this important point. These preliminaries being settled, the transaction terminates with an elegant feast; and when the wife comes of age she is conducted to her husband's home, with all due ceremony, and a concluding entertainment; another set of observances take place when she becomes pregnant, when she passes her seventh month, and when she is safely delivered. These festivals amongst the rich are extremely expensive.

The Hindus are ignorant and illiterate. The children of the poor seem to be mostly uneducated. Those in a higher station are taught by the Brahmins to read and write, and to cast accounts, the calculations being performed by pebbles or small shells. The pupil first begins to write upon the sand with his finger, and he afterwards uses palm leaves. After being thus initiated in the rudiments of literature, he enters on the course of his professional study, in which he has no choice, every one following the profession of his father. A student is instructed chiefly in the Vedas, and in the ceremonial of his religion; and his course of discipline in the three Vedas may be continued for thirty-six years, in the house of his preceptor, or for a half or quarter of that time, until he comprehend them. To the state of the student succeeds that of the married man or the housekeeper, when the youth begins to sustain his part in the business of life. He may, however, continue his whole life a pupil, waiting upon and serving his preceptor the Brahmin until his death. By this devotion to him he acquires a title to the highest rewards of religion. Of the common people, a few individuals only are taught to read or write. The great body of the people remain in ignorance. They can explain nothing of their own religious system, nor of the ceremonies which they attend. This gross and universal ignorance, whilst it is the parent of crime, exposes the Hindus to all the artifices of priestcraft, and of every quack who pretends to skill in any art or science whatever. The unbounded influence of the priests is highly inexpedient, and has in some instances been found dangerous to the public peace. On one memorable occasion, as related by Bishop Heber, this influence became a political engine, which was wielded with great effect, to the alarm of the local government. Among other superstitions of the Hindus, it is well known that they inflict evils on themselves or others, even to the sacrifice of their lives, under the idea that they will be avenged on their enemies. One of these practices is to sit “ dhurna,” or mourning, in a fixed posture, without food, and exposed to the weather, until the person against whom the religious rite is directed agrees to give redress. It is firmly believed, that if the person dies in this mourning state, his avenging spirit will ever afterwards haunt and torment him whose obstinacy may have occasioned his death. The Hindus resort to this practice in order to enforce payment of a debt, or forgiveness of one; and it is a notion amongst them, that whilst an aggrieved person sits at their door “ dhurna,” they can neither eat nor undertake any business. Brahmins are even sometimes hired to sit *dhurna*, and their sacred character is supposed to give a peculiar awe to the ceremony. It was in opposition to an unpopular and heavy tax on houses in the city of Benares, against which they had in vain remonstrated, that the whole population, far and near, resolved to sit “ dhurna” till it was repealed. On this occasion the leading Brahmins took their measures with surprising concert and unanimity. Handbills were circulated explaining the causes and necessity of the measures, “ calling on all lovers of their country and national creed to join in it, and commanding, under many bitter curses, every person who received it to forward it to his next neighbour. Accordingly,” adds Bishop Heber, “ it flew over the country like the fiery cross in the Lady of the Lake; and, three days after it was issued, and before government was in the least apprised of the plan, above 300,000 persons, as it is said, deserted their houses, shut up their shops, suspended the labour of their farms, forbore to light fires or dress victuals, many of them even to eat, and sat down with folded arms and drooping heads, like so many sheep, on the plain which surrounds Benares.” There was every reason to dread some violent issue to such an extraordinary transaction. The local government, exceedingly perplexed by so strange and vast an assemblage, acted with consummate prudence; and this motley multitude being let alone, gradually dispersed. The rulers of India, thus admonished, were fain to repeal the obnoxious tax. The ignorance of the great body of the Hindus exposes them to impositions of every description. In the medical art, charms, incantations, exorcisms, and the shallowest tricks, are substituted for professional skill; and other impostors, generally Brahmins, practise astrology, and cheat them out of their money by pretended prophecies, from the aspect of the skies. The belief of sorcery and witchcraft is universally prevalent amongst them, and leads, as it formerly did in our own country, to cruel enormities. Persons suspected of witchcraft are the objects of fear and hatred; and their neighbours often assume the right of trying them for this crime, by charms and incantations, such as planting a branch of the saul tree in water, with the name of the suspected person, and if it wither within a certain time, the accused is condemned to death as a witch.

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[1] Orme *On the Government and People of Industan*, p. 431.

[2] Rickards' *India*, p. 3.

[3] Tennant, *Indian Recreations*.

The Hindu is distinguished by the slenderness and delicacy of his corporeal frame, which is partly the cause of his peculiar timidity. His make, his physiognomy, and his small degree of muscular strength, convey a remarkable idea of effeminacy, especially when contrasted with the robust stature of a European who is making the observation. “ The sailor,” says Orme, “ no sooner lands on the coast, than nature dictates to him the full result of this comparison. He brandishes his stick in sport, and puts fifty Indians to flight in a moment.” The Indian, however, greatly surpasses the European in the sensibility of his touch, and in the flexibility of his limbs; and hence, with tools which would scarcely enable the clumsy fingers of the one to make a piece of canvass, he weaves the finest cambrics; and in all feats and contortions of the body, in the art of tumbling, and in juggling tricks, the Hindus excel all other nations. They are also patient of bodily fatigue, and in running or marching will distance more robust competitors. An Indian messenger will travel on foot fifty miles a day for twenty or thirty days without intermission. They are withal remarkable for bodily inertness, and the love of repose. “ It is more happy,” they say, “ to be seated than to walk; it is more happy to sleep than to be awake; but the happiest of all is death.” Their amusements are accordingly all of the sedentary kind. A game which resembles chess and draughts, though without either the variety or interest of the former, is one of their favourite amusements; and, like all rude nations, they are passionately fond of gaming, though it is contrary to the Gentoo code; also of feats of agility and legerdemain; and a juggler who erects a stage in any part of the East is sure to draw a crowd of spectators. Buffoonery, story-telling, music, consisting of simple melodies, and dancing, which they enjoy as spectators, complete the catalogue of Hindu amusements. Their extreme fondness for hunting forms an exception to their general indolence; all the different races in India, Europeans, Moguls, and Hindus, shaking off their natural supineness, are seen to concur in the ardour of the chase. Hawking is also keenly pursued by natives of distinction. Besides falconers, fowlers, and game-keepers, Hindus of rank employ persons to ensnare wild animals; and the contrivances they resort to are not less ingenious than successful.

Many have given credit to the Hindus for cleanly habits, from their frequent ablutions; but the reverse is the case. A taste for cleanliness is a proof of refinement; it is a sure mark of a highly civilized people; and accordingly it is not to be found in any part of Asia. Almost all the Asiatic cities are distinguished by narrow streets, into which, as there are no police regulations, all sorts of filth are indiscriminately thrown. The Hindus form no exception to this general censure. In all the great towns the streets are filthy. Nor are the Hindus more cleanly in their persons. Their linen, being dyed, is seldom washed; and, like the Chinese, they frequently allow their robes to drop off with filth before they think of changing them.

Government.

A simple and despotic monarchy is the only form of government which was established under the native princes of Hindustan; and it was a despotism in the true Asiatic sense of the word, under which neither laws nor manners restrained the excesses of absolute power. In the most despotic states of Europe, the authority of the monarch is controlled by the influence of manners, and life and property are perfectly secure. But this was far from being the case in India; the sovereign was supreme arbiter of the lives and properties of all his subjects. Nor was this power allowed to lie dormant; it was frequently enforced in cruel and arbitrary acts; and the annals of India are accordingly stained with the most revolting outrages of abused power. Wealth presented too tempting a prize to lawless violence; and its possessor, if he neglected to make large and seasonable presents, was sure to be accused of some pretended crime, thrown into a dungeon, and plundered. "Instead of giving him poison," says Orme, in his just estimate of the people and government of Hindustan, "which would not answer the end proposed, as his treasures are buried, he is beset with spies, who watch his minutest actions, and probably propose to him a commerce with the enemies of the province. If he avoid these snares, a profitable post in the government is proposed to him, which, if he accepts, his ruin is at hand, as the slightest of the villanies practised in every branch of it affords grounds for making him a public criminal. Should he have escaped this too, it remains that some more glaring and desperate measure of iniquitous justice hurry him to destruction." Mr Orme then proceeds to mention the case of a wealthy banking-house, the partners of which were personally known to him, who, having dexterously avoided all the snares laid for their property and life, were at length involved in an accusation by the accident of one of the dead bodies which are continually floating on the Ganges being thrown ashore under the walls of their house, on which it was surrounded by the officers of the civil magistrate, who dragged them to prison as the murderers of a son of Mahommed, and having ordered them to be severely scourged, extorted from them as the price of their liberty a present of 50,000 rupees. Another wealthy individual was forced to give in one present, to the nabob of Bengal, a sum equal to three hundred thousand pounds sterling.[1] Bishop Heber relates of the Rannee, or princess of Jeepoor, that she murdered a female attendant, a woman of character, and possessed of considerable wealth, who was believed, until that time, to stand high in her mistress's confidence. Eight other women of the Zenana believed themselves marked out for destruction. Another princess, who possessed a jaghire or landed estate near Meerut, frequently ordered the ears or noses of her attendants to be cut off for slight offences; and one of her dancing girls was imprisoned under ground, and starved to death, she herself keeping watch until she heard the last faint moans of her expiring victim.[2] Such enormities present a dreadful picture of Indian despotism, and fully bear out Mr Orme in his contrast between the manners of Europe under the influence of Christianity, and those of Hindustan, under which poisonings, treachery, and assassinations, are daily committed by the votaries of ambition, as are rapines, cruelty, and extortions, by the ministers of justice.

From the great extent of the Mogul empire, the influence of the supreme power was but feebly felt in its distant parts, and the kingdom was accordingly divided into distinct provinces, in which deputies or viceroys, called nabobs, ruled with delegated power. Those provinces were again subdivided into districts, which were committed to the subordinate administration of rajahs. These districts might consist of one town and its territory, or of a thousand towns; and hence the Hindu system of provincial government comprehended different degrees of princely dignity and dominion, according to the extent and value of the lands that were assigned. But all these various rulers, though each was amenable to the one above him, exercised supreme and despotic sway within their own districts. There was also a particular rank of princes called subahs, who ruled in the extremities of the kingdom, in which the rigour of the supreme authority was weakened by distance, with higher rank and greater powers than the rajahs. The Deccan was under the administration of a subah, as was also the extensive and distant province of Bengal. The absolute power of the Great Mogul descended without any loss of vigour to all its inferior delegates; and in this manner the whole of the country groaned under the dominion of numerous tyrants. From this extensive delegation of the superior power, it happened, that on the decay of the Mogul empire, the provincial rulers gradually acquired independence, and, in their warfare with each other for dominion, filled the country with rapine and bloodshed. "Hindustan," says Major Rennell, "even under the Moguls, may be considered as a collection of tributary kingdoms, each accustomed to look no farther than its own particular viceroy, and of course ever in a state to rebel, when the imbecility of the emperor, and the ambition of the viceroy, formed a favourable conjuncture;" and accordingly he observes that "rebellions, massacres, and barbarous conquests, make up the history of this fair country, which, to an ordinary observer, seems destined to be the paradise of the world."[3] And to the same purpose Orme remarks: "If the subjects of a despotic power are everywhere miserable, the miseries of the people of Hindustan are multiplied by the incapacity of the power to control the vast extent of its dominion; and thus," he adds, "the contumacy of vicegerents resisting their sovereigns, or battling among themselves, is continually productive of such scenes of bloodshed, and of such deplorable devastations, as no other nation in the universe is subject to."[4]

In the Mogul sovereign was vested the whole administration of the state, the executive as well as the legislative and judicial powers. In his executive duties the law assigned him a council of state, the functions of which generally devolved on some favourite minister. His legislative duties were simple, seeing that religion was the law, and that the sacred ordinances constituted the judicial code, which it would be impiety to alter. The Brahmins being the sole interpreters of the holy books, acted as assessors to the nabob or rajah, or his delegates in the judicial office. The mode of administering justice had an appearance of openness and fairness, and the forms of the court were extremely simple. The seat of justice was exposed in a large area, capable of containing the multitude; and here justice was administered by the duan or judge, in the absence of the nabob; the plaintiff having attracted attention by his importunate clamours, was ordered to be silent, and to advance before the judge, to whom, after having prostrated himself, he told his story in the plainest manner. He visited the judge in private, gave the jar of oil, and his adversary bestowed the hog, which broke it; the friends who had influence interceded, but it was the largest bribe that ultimately gained the cause. The forms of justice were no doubt preserved; witnesses were heard, but browbeaten, and removed if their evidence did not please the judge. "Proofs of writing," says Orme, "are produced; but deemed forgeries and rejected, until the way is cleared for a decision, which becomes totally or partially favourable, in proportion to the methods which have been used to render it such; but still with some attention to the consequences of a judgment which would be of too flagrant iniquity not to produce universal detestation and resentment." In Hindustan, accordingly, the judicial tribunals afforded no refuge to the oppressed; they were rather instruments of tyranny, by which the unhappy people were plundered under the forms of law. Avarice is the reigning vice of Hindustan, and power is used by all public functionaries as the means of its gratification. The havildar, the head of a village, calls his habitation the durbar, and plunders of their meal and roots the wretches within his jurisdiction; the zemindar fleeces him of the small pittance of silver which his penurious tyranny has scraped together; the phoosdar, or military commandant of the province, seizes on the zemindar's collections, and bribes the nabob's connivance in his villanies by a share of the spoil; the covetous eye of the nabob ranges over his dominions for prey, and employs the plunder of his subjects in bribing or in resisting his superiors. "Subject to such oppressions," says Orme, "property in Hindustan is seldom seen to descend to the third generation." Many suits are, however, decided amongst the Hindus with equal accuracy and despatch, by arbitration of friends, the heads of castes, or the chief inhabitants of the village.

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[1] Orme *On the Government and People of Indostan*, p. 450.

[2] Heber, vol. ii. p. 278, 279.

[3] Rennell, *Memoir of a Map of Hindustan*, p. xlix.

[4] Orme *On the Government and People of Indostan*, p. 309.

This important subject will perhaps be more properly considered when we come to treat of the political transactions of the British in India, and of their administration of the revenues of the Mogul empire. In the mean time it may be observed, that those revenues chiefly arose from a tax on the land, imposed by the sovereign, or from a share in its produce, which, according to some, he received as proprietor of the soil. The tax was immediately paid into the imperial treasury by the zemindar, who collected it from a variety of under tenants, holding by peculiar tenures, which will be afterwards more particularly considered. The proportion of the crop claimed by the government varied, according to the fertility of the land, from a sixth to a twelfth part; and being ascertained by the proper officers, it was either paid in kind or in money. Custom-duties were levied on imports by sea, and by land on the transit of goods at the different toll-bars in the country. These were sometimes farmed out by the local authorities. Other taxes are enumerated in the sacred books, on mercantile profits, on which was levied a fiftieth, or even a twentieth part; on the accumulation of property in gold, silver, precious stones, cattle; on the purchases and sales of merchants; and on mechanics and serving-men, who were liable for a contribution of labour at the rate of a day in each month. A trifling poll-tax was imposed on the meaner inhabitants. Exclusive rights of manufacture, and trade in certain articles, such as salt, arrack, betel-nut, and tobacco, were also granted to the inhabitants for an annual payment.[1] The Hindu rulers, however ignorant in other matters, thus appear to have been familiar with all the most approved modes of plundering their subjects; and these failing, they had recourse to open violence. It is mentioned by Mr Rickards, whose views of Indian manners seem to be equally judicious and accurate, that those revenue systems of India never were, "because they never could be, literally enforced, the real practice being to exact and plunder, without any fixed rules, all that could be squeezed out of defenceless subjects." After enumerating the various revenue officers who acted under the sovereign, such as nabobs, dewars, foujedars, amildars, tchsildars, jaghiredars, zemindars, polygars, talookdars, rajahs, naiks, wadeyars, &c., he adds, "swarms of harpies were thus spread in every direction, even to the mundils and potails of villages; and despotism established, as it were, in detail, in every corner of the land. Power was here a license to plunder and oppress. The rod of the oppressor was literally omnipresent; neither persons nor property were secure against its persevering and vexatious intrusions. The common transactions of life became objects of punishment or extortion. And no other principles being known or dreamt of in India than arbitrary power on the one hand, and abject submission on the other, a state of society was fixed and rooted in the manners, the poverty, and the ignorance of the people, of which no parallel nor resemblance is anywhere to be found in European states."[2]

Hindu laws.

The laws of the Hindus which apply to property, and which regulate sales or purchases, loans, transfers, and deposits of goods, though they are founded on the principles of justice, are frequently rude, loosely expressed, and such as, along with a corrupt judicature, must leave every thing to the discretion of the judge. The law fixes the price of commodities, regulates the interest on money, and on the loan of goods, such as grain, fruit, &c.; and, by a peculiar injustice, imposes a greater interest on the servile castes than on the Brahmins and soldiers. The modes of enforcing debts are the same as in all other countries. The creditor may seize upon the property or person of his debtor, whom he may beat or otherwise maltreat, and, if he be of an inferior caste, compel to labour for his profit. He may even confine his wife or children. Another mode of enforcing payment is by sitting dhurna, a ceremony already explained. The laws of inheritance form an important branch of the Hindu code, though it is justly remarked,[3] that "the slavery to which the rights of parent and husband subject the female, abolishes at once all suits of dowries, divorces, jointures, and settlements." On the death of the father, his property is divided amongst his children, who frequently live together, with the elder brother as their head. If they separate, the eldest receives one twentieth more than the others. Science and good conduct are mentioned as grounds of preference, as vice of exclusion; and thus is laid the foundation of endless disputes. In some cases the gross and cruel superstition of the Hindus subverts the principles of justice; the blind, the deaf, the dumb, or those affected with leprosy, or any other incurable disease, being deprived of their share in the paternal inheritance. Children of different castes inherit according to the rank of the mother, and those of concubines receive only half the share of legitimate children. All property in Hindustan is regulated by law, the Hindus having no idea of devising by rule; nor are any members of the family at liberty to alienate, except in certain particular cases, any part of the common stock.

The criminal code of the Hindus is distinguished, like that of all rude nations, by severity; and also by caprice and partiality. The offences of the low-born tribes against the higher receive a full measure of vengeance, whilst the latter are but slightly punished for the injuries which they inflict on their inferiors. It is enacted, that if a Sudra strike a Brahmin with hand or foot, the offending member shall be cut off; if he insult him with his tongue, it shall be slit, or a red-hot iron shall be thrust into his mouth. Murder is punished with death, theft with fine, and the more heinous cases with various degrees of mutilation, with impaling, burning alive, and crucifixion. The multifarious cases of offence which are detailed in the Hindu code, such as throwing ordure, or the refuse of victuals, on another, spitting upon him, &c., are many of them insignificant, and scarcely merit the minute enumeration which is given. The illicit intercourse of the sexes is a complicated subject, into the details of which it is unnecessary to enter. It seems principally directed against the want of chastity in women, which is punished as the most shocking of crimes, by burning on a heated plate of iron; or against the lower tribes, in whom adultery with a Brahmin woman is considered as the climax of human depravity, scarcely to be avenged by any punishment, however dreadful. On the other hand, crimes committed by the higher classes against the lower are very slightly punished; the scale of punishment being in all cases graduated in an inverse ratio to the rank of the offenders.

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[1] See *Fifth Report of Committee of the House of Commons*, 1810, p. 83.

[2] *India, or Facts submitted to demonstrate the Character and Condition of the Native Inhabitants*, by R. Rickards, Esq. p. 255.

[3] Orme *On the Government and People of Indostan.*

Architecture.

In architecture, in the fine arts, in painting and music, the Hindus are greatly inferior to the Europeans. The pagodas, the tombs, and other structures, the only remaining specimens of their architecture, are, according to some, more remarkable for the magnitude of their dimensions than for their just proportions or fine taste. "The columns and pillars," says Tennant, "which adorn their immense pagodas, are destitute of any fixed proportions; and the edifices themselves are subjected to no rules of architecture." He afterwards adds, that the celebrated mausoleum at Agra has little to boast of either in simplicity or elegance of design. "The immensity of its size, its costly ornaments, and the minute exactness of its decorations in particular parts, are worthy of notice; but they afford much stronger proofs of the wealth and magnificence of Shah Jehan, than the correctness of its taste." The tombs and religious edifices of Hindustan are, on the other hand, highly commended by Bishop Heber for delicacy, beauty, and taste. The mausoleum at Agra he celebrates as the most splendid building, in its way, that he had seen in India.[1] Humaion's tomb at Delhi he also praises as a noble building of granite, inlaid with marble, and in a very chaste and simple style of Gothic architecture; and of the imanbara or cathedral at Lucknow he remarks, "The whole is in a very noble style of eastern Gothic, and, when taken in conjunction with the Roumi Durwazu which adjoins it, I have never seen an architectural view which pleased me more, from its richness and variety, as well as the proportions and general good taste of its principal features."[2] There seems no doubt, from the splendid structures that are still found in different parts of Hindustan, that architecture and the kindred arts had flourished amongst the Hindus of a remoter age; though it is mentioned by Colonel Todd, that very few good specimens of the art have been executed within the last 700 years. His description, however, of the splendid Jain temples at Ajmeer and other parts, some of them erected long prior to the Christian era, and distinguished alike by chasteness and beauty of design, and by rich and exquisite finishing, must convince the most incredulous, that in these remote times the arts had made great progress in Hindustan. These structures are not merely monuments of labour, but of taste; they evince the perfection of art; and in symmetry, beauty of proportion, unity of design, and splendid ornament, they rival the noblest productions of classical Europe. The history of the people who have raised these structures presents a wide field for antiquarian research, on which Colonel Todd has entered with the brilliant promise of interesting results; and to his learned inquiries and eloquent and poetical descriptions we refer for a further account of those ancient monuments of Hindu art.[3]

Paintin

Of the Hindu paintings the chief merit is brilliancy of colour, rather than taste in the design or liveliness of expression. They imitate most exactly, and are excellent draughtsmen; and they draw specimens of natural history with much neatness and accuracy. "The laborious exactness with which they imitate every feather of a bird," says Tennant, "or the smallest fibre on the leaf of a plant, renders them valuable assistants in this department; but farther than this they cannot advance one step. If your bird is to be placed on a rock or upon the branch of a tree, the draughtsman is at a stand; the object is not before him, and he can't supply nothing.[4] Since this period, however, the Hindus have made great advances in the art of painting; and some of their portraits display taste and expression that would not discredit European artists.

Music.

The music of the Hindus is rude and inharmonious. They have numerous instruments, but those are preferred which make most noise; the beating of the great drum is reckoned an emblem of sovereign power.

Literat

The literature of the Hindus has been generally rated very low by European writers, and has been represented as consisting in long desultory poems, inflated and extravagant in their style, containing, under the idea of a history, a tissue of absurd fables, interspersed with passages or episodes that are tender and passionate, and possess all the sweetness of pastoral poetry. They are said to be totally destitute of historical annals, and their geography is a mass of errors. Nor has their astronomy those claims to antiquity which were at first allowed. Accurate inquiry has proved this science to be in its infancy amongst them.[5] The want of historical records by the Hindus is strongly denied by Colonel Todd, who has himself composed a history of the Rajpoots from native works, which he found in the libraries of their princes, and he asserts that in those depositories of Hindu literature many more works exist, which would reward the researches of the learned. "The works of the native bards," he observes, "afford many valuable data in facts, incidents, religious opinions, and traits of manners." "In the heroic history of Pirthi-raj, by Chund," he adds, "there occur many geographical as well as historical details, in the description of his sovereign's wars, of which the bard was an eye-witness, having been his friend, his herald, his ambassador, and finally discharging the melancholy office of accessory to his death, that he might save him from dishonour." The Brahminical accounts of the endowments of temples, of their dilapidation and repairs, supply historical and chronological details; also the legends respecting places of pilgrimage and religious resort. Much historical information lies hid in the controversial records of the Jains; and, says Colonel Todd, "those different records, works of mixed historical and geographical character, which I know to exist, *rasahs* or poetical legends of princes, which are common, local *puranas*, religious comments and traditionary couplets, with authorities of less dubious character, namely, inscriptions cut on rocks, coins, copperplate grants, containing charters of immunities, and expressing many singular features of civil government, constitute, as I have already observed, no despicable materials for the historian." Colonel Todd is of opinion that the ancient records of the Hindus are more complete than the early annals of the European states.

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[1] The following is his description of this monument of Hindu art:—"It stands in a square area of about forty English acres, enclosed by an embattled wall, with octagonal towers at the angles, surmounted by open pavilions, and four very noble gateways of red granite, the principal of which is inlaid with white marble, and has four high marble minarets. The space within is planted with trees, and divided into green alleys, leading to the central building, which is a sort of solid pyramid, surrounded externally with cloisters, galleries, and domes, diminishing gradually in ascending it, till it ends in a square platform of white marble, surrounded by most elaborate lattice-work of the same material, in the centre of which is a small altar tomb, also of white marble, carved with a delicacy and beauty which do full justice to the material, and to the graceful forms of Arabic characters, which form the chief ornament."

[2] Heber, vol. ii. p. 65.

[3] *Annals of Rajast'han*, vol. i. chap. xxv. p. 670; chap. xxx. p. 779.

[4] Tennant, vol. i. p. 299.

[5] For more full details on this subject, the reader is referred to Mill's *History of British India*, vol. ii. p. 85, *et seqq.*

story.

Prior to Alexander's expedition into India, which took place 327 years before the Christian era, the Greeks appear to have known little of these eastern countries, except from the confused accounts of travellers; and nothing whatever of the countries beyond the sandy desert of the Indus, which, with its tributary streams, was the limit of Alexander's progress eastward. The men of science who accompanied this warlike prince brought to Europe full and accurate accounts of the countries which he had conquered; and the spirit of inquiry, now awakened amongst the Greeks, was still further gratified by the ample accounts of Megasthenes, the ambassador sent to India by Seleucus, and who resided long at Palibothra, the capital of the Prasii, near the mouth of the Ganges. The Greek writers, drawing their information from those sources, describe the leading features of Indian society and manners, and with an accuracy which stamps authenticity on their narratives. It is unnecessary to dwell upon the particulars of Alexander's expedition, which are fully described in many other works; and from that until the period of the Mahommedan conquest, when the native records commence, there is nearly a complete chasm in the annals of Hindustan. The Hindus had either no records, or these had been destroyed during the intestine commotions which have always prevailed in India. The historical poem, the Mahabarat, is a tissue of extravagant fables. Ferishta's history, written early in the seventeenth century, is supposed to have been collected from Persian authors; and the most valuable part of it begins after the commencement of the Mahommedan conquests. It was about the year 1000 that Hindustan, formerly ruled by a pure Hindu monarchy, fell under the sway of the Mahommedan conquerors, who subdued all the provinces west of the Ganges, and formed them into one great empire. On the fall of this empire, India became one scene of commotion and war, and her finest provinces were laid waste. It was then that the Mahratta empire arose, like a meteor in the political sky, blazing for a while, and soon fading into obscurity; and by its fall paving the way for the ascendency of the British, whose powerful sway now extends from the Himalaya Mountains to Cape Comorin. We shall endeavour to sketch the leading and most eventful scenes of that political drama, which has thus terminated in the subjection of all India to one great ruling power.

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The Mahommedan powers having subdued Persia and the neighbouring countries, made occasional inroads into India; and, about A. D. 1000, Mahmoud entered Hindustan, in which he effected a permanent establishment. This prince was the grandson of Subuctagi, the ruler of Ghizni, consisting of the tract which composed the kingdom of Bactria after the division of Alexander's empire, namely, the countries lying between Parthia and the Indus, and south of the Oxus. He invaded India twelve several times, massacring in his intolerant rage the Hindus as infidels, and defacing and destroying their temples. "Nothing," observes Major Rennell, with his usual force, "offends our feelings more than the progress of destruction, urged on by religious zeal, as it allows men to suppose themselves agents of the divinity, thereby removing those checks which interfere with the perpetration of ordinary villany, and thus makes conscience a party where she was meant to be a judge." The last invasion of India by Mahmoud was in 1024, and in four years afterwards he died. His dominions comprehended the eastern provinces of Persia, nominally all the Indian provinces westward of the Ganges, to the peninsula of Gujerat, and from the Indus to the mountains of Ajmere.

The Punjab, or the tract watered by the Indus, and its five tributary rivers, was all that was subjected to the regular government of the Mahommedans. The rajpoots of Ajmere defended their rugged mountains and close valleys with obstinate valour. The Ghiznian empire was in the year 1158 divided into two; the western portion being seized on by the family of the Gaurides (so denominated from Gaur or Ghir, a province or city lying beyond the Indian Caucasus), whilst the countries on the Indus were possessed by Chusero or Cusroe, who fixed the seat of his empire at Lahore. The Mahommedans now extended their conquests eastward; and Mahommed Gori, in 1194, took the city of Benares, which he abandoned to pillage. He carried his arms to the south of the river Jumna, and took the fortress of Gualior; he also reduced the eastern frontier of Ajmere. He was succeeded in 1205 by Cuttub, who fixed his capital at Delhi, and founded in Hindustan the dynasty of the Patans or the Afghans, who inhabited the mountainous tract situated between India and Persia. The Emperor Altmush succeeded him in 1210, and extended his conquests over Bengal. In his reign the renowned Ghenghiz Khan subdued the western empire of Ghizni; and the Moguls, or the Monguls, his successors, about the year 1242, made frequent irruptions into the north-western provinces of Hindustan. The country was in the mean time a scene of intestine commotion, from the contests of rebellious chiefs aspiring to supreme authority, and from the irruptions of the predatory hill tribes into the plains below. In 1265, about 100,000 of these plunderers were put to the sword, and a line of forts constructed along the foot of the hills. In the mean time, the Patan monarchs of Delhi were prosecuting their conquests eastward, and the Moguls were making incursions into the western provinces; and a considerable number of them under Ferose II. were at length permitted to settle in the country in the year 1292. In 1293 this emperor invaded the Deccan, or the country lying to the south of the Nerbuddah and the Cuttuck rivers. He was deposed and murdered by Alla, the governor of Gurrah, who advised the expedition, and who extended his conquests in the Deccan. Cafoor, one of his generals, penetrated into the Carnatic, or the peninsula lying to the south of the Kistna river, in 1310. Rebellions breaking out in Tellingana, a principality in the Deccan, it was again subjugated in 1322 and in 1326, in which year Alla died, and the Carnatic was ravaged from sea to sea. Under a succeeding emperor, Mahommed III., the Mahommedans were driven from the Deccan and Bengal, and lost much territory in Gujerat and the Punjab. Ferose III., who succeeded, was more intent on domestic improvement, and in constructing canals, than on foreign conquest. He died in 1388, and Mahmoud III. succeeded, during whose minority great confusion ensued; and in 1398 the country was invaded by Tamerlane, who advanced to Delhi, which submitted without a struggle, and was abandoned to the fury of the soldiery, who continued for several days to massacre the defenceless inhabitants. The military irruption of Tamerlane into Hindustan was more for the sake of plunder than of conquest, though it added to the existing anarchy of the country. In 1413 Mahmoud died, and with him ended the Patan dynasty, founded by Cuttub in 1205. A period of great confusion followed, and numerous competitors contended for dominion. This state of anarchy, which came to a height under Ibrahim II. in 1516, paved the way for the conquest of Hindustan by Sultan Baber, a descendant of Tamerlane and of Ghenghiz Khan, who reigned over a kingdom composed generally of the provinces situated between the Indus and Samercand. Being dispossessed of the northern portion of his dominions by the Usbecks, he invaded India, and in 1525 defeated the emperor of Delhi, and conquered the north-eastern provinces of India. He was succeeded, after

Reign of Acbar;

of Aurungzebe.

a reign of five years, by his son Humaioon, who was driven from his throne by the rebellion of Sheer Khan, whose successful usurpation was succeeded by such a period of disorder, five sovereigns having appeared on the throne in the course of nine years, that Humaioon was recalled in 1554, and died the following year, leaving his son, the celebrated Acbar, only fourteen years of age, the heir to the throne. His was a long and glorious reign of fifty-one years, in which the revolted provinces were reduced from Ajmere to Bengal, and consolidated into one empire by the unlimited toleration of the Hindus and all others, and generally by a just and wise policy. In 1585 and the subsequent years he invaded the Deccan, which, by the dissolution of the Bahmenee empire, was divided among the sovereigns of Bejapoor, Ahmednagur, and Golconda, whilst another army was reducing the country of Cashmere in an opposite direction. At the time of Acbar's death in 1605, he had possession of the western part of Berar, Candeish, Telhyana, a division of Golconda, and the northern part of Ahmednagur, the capital of which was taken in 1601, after a long and bloody siege, and an unsuccessful attempt to relieve the place by the confederated princes of the Deccan.[1] Acbar died in 1605, at which time his empire was divided into fifteen viceroyalties, called subahs; namely, Allahabad, Agra, Oude, Ajmere, Gujerat, Bahar, Bengal, Delhi, Cabul, Lahore, Moultan, Malwah, Berar, Candeish, and Ahmednagur. He was succeeded by his son Selim, under the title of Jehanguire. It was in his reign, in 1615, that Sir Thomas Roe, the first English ambassador, was sent to the Mogul emperor of Hindustan; and the Portuguese had by this time acquired considerable settlements in Bengal and Gujerat. Shah Jehan, who disturbed his father's reign by constant rebellions, succeeded to the throne in 1627, and pursued his conquests in the Deccan with renewed vigour, filling the country with plunder and devastation. It was in this reign, in the year 1633, that the first serious quarrel took place between the Portuguese and the Moguls, when the former were expelled from Hooghly in the Ganges. In 1658 the country was again distracted by the civil wars of the emperor and his sons, and of the sons amongst themselves contending for dominion. Shah Jehan died on the 21st of January 1666, after being seven years confined in the castle of Agra. The Mogul empire at his death extended from Cabul to the Nerbuddah, westward of this river to the Indus, and eastward it comprehended Bengal and Orissa; and to the south the Moguls had reduced a large tract of country bounded by Berar on the east, westward by the hills towards Concan, and by the dominions of Golconda and Viziapore to the south. These convulsions, by which India was at this time distracted, ended in the elevation to the throne of the renowned Aurungzebe, the youngest son of Shah Jehan, whom he had deposed; he had also murdered or expelled his three brothers. In 1660, Aurungzebe, who took the title of Allumgere, or Conqueror of the World, was firmly seated on the throne; and from that period until the year 1678, Hindustan enjoyed more profound peace than it had ever before known. In the mean time Aurungzebe invaded the Deccan, which during the latter part of his reign was, with the exception of a few mountainous tracts, subdued by his victorious arms, and rendered tributary to the ruler of Delhi. He was afterwards engaged, in 1678, in quelling the rebellion of the Patans beyond the Indus, and the Rajpoot tribes, by whom he was hemmed in amongst the mountains, and narrowly escaped. He again invaded the country in 1681, and took and destroyed Cheitore, the capital, and all the objects of Hindu worship found there. The obstinate resistance of these gallant mountaineers at last extorted peace from the mighty monarch of the Mogul empire.

Prog s of th Mah tas.

But Aurungzebe had now to contend with another enemy for the dominion of India. In the south the Mahratta power was fast rising into importance. Sevajee, the founder of this new state, was a military chief, the illegitimate son of the rana of Odeypoor, the chief of the Rajpoot princes. In his youth he resided at Poonah, on a zemindary estate obtained by his father. Here he collected around him a numerous banditti, and plundered the country. The number of his followers gradually increasing, he extended his ravages still farther into the dominions of Viziapore, and acquired an immense booty, which enabled him to increase his force, and openly to resist the troops of Aurungzebe which were sent against him. He expired in his fortress of Raynee, of an inflammation in the chest, at the age of fifty-two, on the 5th of April 1682. His whole reign was one continued scene of war and political intrigue, in which he displayed the talents of a consummate general and an able and crafty statesman. "He met," says Orme, "every emergency of peril, however sudden and extreme, with instant discernment and unshaken fortitude; the ablest of his officers acquiesced in the eminent superiority of his genius, and the boast of the soldier was to have seen Sevajee charging sword in hand."[2] At his death, his empire, with the exception of the small territory of Goa on the south, Bombay, Salsette, and an inconsiderable tract on the north, comprised a tract of country about 400 miles in length and 120 in breadth. He was besides in possession at one time, towards the Eastern Sea, of half the Carnatic. By his own talents he had thus acquired a permanent sovereignty, "established," says Orme, "on a communion of manners, customs, observances, language, and religion, united in common defence against the tyranny of foreign conquerors, from whom they had recovered the land of their own inheritance." Sevajee was succeeded by his son Sambajee, who was afterwards betrayed into the hands of Aurungzebe, and barbarously put to death. Aurungzebe died in 1707, in the ninetieth, or, according to some, the ninety-fourth year of his age, at Ahmednagur, in the Deccan, in the subjugation of which he had been engaged from the year 1678 until his death. He was for the most part engaged in the field during the last fifteen years of his life. Whilst he was absent in the Deccan, the peace of the empire was disturbed by insurrections of the Rajpoots in Upper India, and of the Jauts, now for the first time known in any other character than that of banditti.[3] Under his reign the Mogul empire attained to its height. His dominions extended from the tenth to the thirty-fifth degree of latitude, with nearly as many degrees of longitude; and his annual revenue was equal to thirty-two millions sterling.

Inte al diso rs.

After the death of Aurungzebe, the sovereignty of the empire was disputed by his four sons, Munzum, Azem, and Kaum Buksh, who severally contended with their elder brother, and Acbar, who thirty years before had been engaged in rebellion, and fled to Persia. Munzum and Azem met in the field with armies of 300,000 men on each side, when the latter was defeated and slain, and Munzum ascended the throne under the title of Bahader Shah. He reigned five years, and the empire had been so distracted by civil wars and anarchy, that it required all his exertions to restore order. He was soon after his accession called into the Deccan by a rebellion of his brother Kaum Buksh, which was quelled by his death. He now turned his arms against the Rajpoots and the Sikhs, who for the first time appeared in arms in the province of Lahore. These insurgents he reduced after much trouble and delay; and he took up his residence at Lahore, where he died in 1712, after a short illness, having never during his reign visited either Agra, or Delhi his capital. He left four sons, who immediately commenced a contest for the throne. Azem Ooshawn, who took possession of the treasures, was killed in a battle with his other brothers. Jehan Shah, the youngest, next lost his life in a battle with Jehamder Shah, who was the eldest, and who successfully disputed the possession of the throne with the remaining brother. At the end of nine months, however, he was dethroned by Feroksere, a son of Azem Ooshawn, and great grandson of Aurungzebe, who was elevated to the throne by the influence of two brothers, Abdoola Khan and Hussun Khan, Seids by birth, or descendants of the prophet, whose talents had raised them to reputation and power. It was in this reign that the English East India Company obtained their famous firman or grant, by which they were exempted from all custom duties on the export and import of their goods. This was considered as the commercial charter of the Company as long as they required protection for their trade. In 1717 Feroksere was deposed and blinded by the two Seids, Hussun and Abdoola, to whom he owed his elevation to the throne. In his place they chose Ruffieh-ul-Dowlat, a son of Bahader Shah; and in less than a year deposed and put him to death. His brother, who by their means was also made king, met with the same treatment; so that in the course of eleven years from the death of Aurungzebe, four princes of his line had ascended the throne, whilst six others had met the usual fate of unsuccessful aspirants to that dignity. Mahommed Shah, the grandson of Bahader Shah, was placed on the throne by the Seids in 1718, from whose influence he contrived at length to free himself, though not without a rebellion and a battle, in which they were both slain. In the mean time Mahommed Shah was deficient in the vigour which his difficult situation required, and the provincial governors at a distance began to show symptoms of independence. Nizam-ul-Muluck, the viceroy of the Deccan, was the most formidable of those pretenders to sovereignty. He had reduced the province of Gujerat and Malwah; and having paid a visit to the imperial court, and observed the dissolute administration of affairs, he quitted the capital in disgust, under pretence of a hunting excursion, for his government of the Deccan. He was deprived of the administration of Gujerat and Malwah, the two provinces which he had acquired. In revenge he encouraged the rulers of these provinces to resist the imperial authority; whilst at his instigation also the Mahrattas invaded the country, and after a severe struggle succeeded, about the year 1732, in completely reducing this long-disputed territory.

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[1] Rennell, p. lix.

[2] Orme's *Historical Fragment of the Mogul Empire*, p. 94.

[3] Rennell, *Memoir of a Map of Hindustan*, p. 62.

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But a more dreadful calamity was now impending over the distracted empire. The sceptre of Persia had been long swayed by a feeble race of monarchs, and the country became an easy prey to the hardy mountaineers of Afghanistan, who in 1722 laid siege to Ispahan, when the feeble Hussun Shah surrendered the crown to the invader. He had a son Thamas, however, who escaped from the general massacre which ensued, and who was joined by many partisans, amongst others by Nadir, the son of a shepherd of Khorassan, who, with his band of followers, soon distinguished himself as a brave and active supporter of the fallen prince. In 1729 he retook Ispahan, and finally, by his talents, raised himself to the throne of Persia in 1736, having put out the eyes of the unfortunate son of the late monarch. Being afterwards engaged in an expedition against the Afghans, he advanced to the frontier of Hindustan, but without any ulterior views of hostility, when a messenger and his escort, whom he had despatched to the emperor at Delhi, were murdered at Jellalabad by the inhabitants; an outrage which being approved by Mahommed Shah, Nadir prepared for revenge. He gave up the offending city to be pillaged by his soldiers; and advancing to Delhi, was met by the imperial troops, who were totally defeated. The views of the conqueror, however, were not hostile, and two crores of rupees would have purchased his retreat from Hindustan. But this amicable arrangement was frustrated by a dispute between Saadut Khan, subahdar of Oude, and the nizam of the Deccan, for the vacant office of Ameer-ul-Omrah, formerly paymaster of the forces. Saadut Khan, the disappointed candidate, persuaded Nadir Shah that the proffered sum was no adequate ransom for Hindustan; on which Nadir advanced to the capital, which opened its gates to receive him; and for two days thereafter the Persian troops observed the most exact discipline. But in the course of the night a rumour was spread that Nadir was killed, on which the inhabitants rose against their invaders, and massacred many of them. Nadir took severe and immediate revenge. He dispersed his irritated soldiers throughout every quarter of the city, with orders to spare neither age nor sex; and in this indiscriminate slaughter 100,000 persons are said to have perished, whilst the city was set on fire in several places. The imperial treasure was plundered; plate, jewels, and specie, were carried off to the incredible amount of thirty-two millions sterling. Rich bankers and others were forced by torture to disclose their hidden wealth, and a heavy contribution of thirty millions was imposed on the city by the relentless conqueror. Nadir Shah departed from Delhi, of which he had held possession thirty-seven days, in the year 1739; and the nizam still retained possession of the whole power of the empire, which he sacrificed to his own views in the Deccan, where he established an independent kingdom. Nadir Shah died in 1747. In the subsequent confusion, the eastern provinces of Persia, and those bordering on India, were formed by Abdalli, one of his generals, into an independent state, which comprised the ancient empire of Ghizni, and was known under the name of the kingdom of the Abdalli. Mahommed Shah died the same year, after a reign of twenty-nine years. Every day disclosed the growing weakness of the empire, and strong symptoms of its early and entire dissolution. In 1738 Bengal became independent under Aliverdy Khan, and it was soon afterwards invaded by a numerous army of Mahrattas from Poonah and Berar. About the same time the Rohillas, a tribe from the mountains which separate India from Persia, erected an independent state on the Ganges, within eighty miles of Delhi. Mahommed Shah was succeeded by his son Ahmed Shah, and in the reign of the latter the Mogul empire was finally dismembered. A small territory around Delhi was all that remained to the house of Timur, and it was the scene of devastation, massacres, and famine. The last imperial army that ever assembled was defeated in 1749 by the Rohillas. The Jauts founded a state in the province of Agra; the nizam and Aliverdy ruled in Bengal and the Deccan; Oude and Allahabad were each seized by independent chiefs; Malwah was divided between the Poonah Mahrattas and several native princes and zemindars. Ajmere reverted to its ancient lords, the Rajpoot princes. The Mahrattas, who now contended for the dominion of India, possessed, in addition to their share of Malwah, the greatest part of Gujerat, Berar, and Orissa, besides their ancient domains in the Deccan. "The whole country of Hindustan proper," Major Rennell remarks, "was in commotion from one extreme to another, each party fearing the machinations or attacks of the other; so that all regular government was at an end, and villany was practised in every form. Perhaps in the annals of the world it has seldom happened that the bonds of government were so suddenly dissolved, over a portion of country containing at least sixty millions of inhabitants."[1]

Decay of the Mogul empire.

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[1] Rennell's *Memoir of Hindustan*, p. lxx.

Hindustan.

In 1753 the Emperor Ahmed Shah was deposed by Gazi, the son of Gazi o'Dien, vizir to Mahommed Shah, who placed on the throne Allumguire II., grandson of Bahader Shah, and invested himself with the office of vizir. His perfidious conduct to the family of the viceroy of the provinces of Moultan and Lahore, under Abdalli, the king of the Afghans, involved the emperor in a quarrel with that powerful prince, who advanced from Candahar to Lahore, and thence to Delhi, the gates of which were opened by the feeble emperor, and the defenceless city abandoned for weeks to a licentious soldiery. After the retreat of the Abdallis, the vizir advanced with an army to Delhi, which he entered after a siege of forty-five days. The Mogul emperor was now reduced to the most abject state of dependence, and was at last assassinated by order of the vizir, who was irritated by his correspondence with the Afghan monarch Abdalli Shah, the Rohillas, and the nabob of Oude, with whom he himself was at war. His son took the title of Shah Aulum; he escaped from Delhi when it was besieged by the vizir, and, after a series of misfortunes, at last surrendered to the British, who gave him an asylum, and a pension for his support; and with him, the last of the Mogul sovereigns who enjoyed independent power, closes for ever the glory of this renowned empire.

Contest between the Mahrattas and the Afghans.

In the mean time, amidst anarchy and desolation, the Mahrattas were daily increasing in power; they were engaged in every scene of politics and warfare, from Gujerat to Bengal, and from Lahore to the Carnatic; they possessed extensive sway and vast armies; and their ambition was now to reconstruct a new Hindu empire out of the decayed fragments of the Mogul power. The rising influence of the Afghans under the rigorous sway of Abdalli was the only obstacle to this patriotic or ambitious scheme; and the Mahrattas, in the progress of their conquests northward, encountered for the first time their great rival for the dominion of India. Ahmed Abdalli, king of the Afghans, was taken prisoner when very young by Nadir Shah; he was first his slave, afterwards his mace-bearer, and at his death, having collected a body of troops and other adventurers, he proceeded to his own country, and proclaimed himself king of the Afghans, with the title of Doordowran, or pearl of the age, which was corrupted into that of Dooranee, and became the name of one of the Afghan tribes. Ahmed had extended his dominion over the frontier provinces of Moultan and Lahore, which, in retiring from India, he had left under the administration of his son. These provinces were first invaded by the Sikhs, and afterwards by the Mahratta generals, who advanced to Lahore and expelled the Abdalli prince, and afterwards extended their conquests to the Indus. Ahmed Shah, roused by the loss of his provinces and the dishonour of his arms, collected his troops, and encountered the Mahratta army, amounting to 80,000 veteran cavalry, which was almost entirely destroyed, and the general Duttah Sindia slain. The news of this defeat spread alarm amongst the Mahrattas, and roused them to the greatest exertions. A vast army, consisting of 140,000 horse, besides a numerous train of camp followers, commanded by the most renowned chiefs, took the field, and being unable to cross the Jumna, still swollen by the rains, proceeded to plunder Delhi, the capital. Ahmed Shah, with 150,000 well-disciplined troops, now advanced, and, in his impatience to meet the enemy, plunged with his whole army into the foaming waves of the Jumna, which he crossed in safety. The Mahrattas, struck by this daring exploit, retired to the plain of Paniput, and the armies continued in sight of each other from the 26th October to the 27th January 1761, during which interval several bloody skirmishes took place.

Battle of Paniput.

On this latter day was fought the battle of Paniput, one of the most decisive and sanguinary recorded in history. The Mahrattas were overthrown with a dreadful carnage. The general, Bhaow, the nephew of the peshwa, the chief of the Mahratta nation, was killed early in the action; most of the other chiefs were slain, and those of the soldiers who escaped from the slaughter of the field were massacred by the irritated peasantry, in revenge for the depredations of the Mahratta cavalry. And of the mighty host engaged in this fatal conflict, only a small remnant, with three generals, returned to the Deccan. This great battle gave an irreparable blow to the Mahratta power, which from this time sensibly declined, and the victorious Abdalli sought no other fruit of his victory. He returned to his capital after remaining a few months at Delhi, having recognised the son of Aulungeer as emperor, under the title of Shah Aulum the Second.

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A new scene was now about to open in India. The Europeans, who as traders had long maintained establishments on the coasts, began to assume an entirely different character; to contend with each other in the field for dominion, and to mingle in all the wars and politics of the interior. It was necessary, for carrying on the domestic trade of India, and more especially in providing goods for the supply of Europe, that a body of experienced servants should reside on the spot, in order to collect and to purchase commodities for exportation; an employment which, owing to the poverty and abject state of the natives, and their peculiar customs, involved duties of the most minute and laborious detail. During the decline of the Mogul government, the tranquillity of India was frequently shaken by the contentions of rival chiefs; and the slight security afforded, even in the best times, to commerce, became in this manner more imperfect. For the reception of the goods which it was necessary to collect and store up, that cargoes might always be in readiness for the Company's ships, warehouses were built, which, with the counting-houses, and other apartments for the agents and business of the place, constituted the factories of the Company. These factories contained a valuable store of property, which, in the disordered state of India, it became necessary to secure from the rapacity both of governments and of individuals. They were therefore strongly built and fortified; their inmates were armed and disciplined; and, for better security, regular troops were occasionally maintained in those mercantile garrisons. In these defensive arrangements of the Company we may discern the rudiments of their future empire.

The territorial acquisitions of the European companies were, however, still inconsiderable. The English East India Company had in 1698 been permitted to purchase the zemindaryship of the three towns of Sootanutty, Calcutta, and Govindpore, with their districts, to which was afterwards added a district extending ten miles from Calcutta, on each side of the river Hooghly, containing thirty-seven towns. On the Coromandel coast the English possessed Madras, with a small adjoining territory five miles along the shore, also Fort St David, in 11. 40. north latitude, with other places, such as Vizigapatam and Balasore; and on the west coast their principal settlement was the island of Bombay. Factories were also established at Surat, Tellicherry, and several other places. The business of the Company was managed by the three independent presidencies of Bombay, Madras, and Calcutta. The presidency consisted of a governor and council of nine, twelve, or any greater number of members, as might seem expedient, in a majority of whom all power was vested. The members of the council were not excluded from other more lucrative offices, which were, in general, shared amongst them. These offices were chiefly in the gift of the president, and, by means of his influence, the council were, in a great degree, placed under his control. The governor and council exercised the most ample powers over the servants of the Company; and with regard to all others, they could seize and imprison them, and afterwards send them to England. The powers of martial law were bestowed on them at an early period, for maintaining the discipline of the troops under their orders; and, in 1661, a charter of Charles II. gave them the power of administering civil and criminal justice according to the laws of England.

Pondicherry, with a small appendage of territory, was the principal seat of the French power on the continent of India. It had under its authority three factories, one at Mahé, on the Malabar coast, not far south from Tellicherry; one at Rarical, on the Coromandel coast; and one at Chandernagore, on the river Hooghly, in Bengal. The form of government was the same in the French as in the English settlements.

In 1744 France and England, from being auxiliaries, became principals in the war which was then raging in Europe, and the flame soon communicated to their distant colonies. In India the two rival powers were quickly involved in hostilities, which, however, were followed by no important result; and the English settlement of Madras, which had been taken by the French king, was restored at the peace of Aix-la-Chapelle. It was soon after this that the French and English, in supporting the contending claims of the native princes, again came into collision. At the respective settlements of the two Companies, the number of troops assembled during the previous war was greater than was necessary for defence, and the servants of the Companies, with such means at their disposal, now began to meditate schemes of conquest. The intricacies of Indian politics, and the family connexions of the different claimants who contended for power and dominion, need not be described in detail, as it would neither be instructive nor acceptable to the general reader. A brief sketch is all that will be necessary to explain the nature of those transactions which so deeply affected the future condition of India, and the relations of the parties engaged in them.

When Nizam-ul-Mulk was appointed ruler of the Deccan, with the title of subahdar, by the Emperor Aurungzebe, a chief named Sadatullah was nabob of the Carnatic. At his death, his son Doost Ali succeeded him as nabob, which proved displeasing to the nizam, who claimed the right, as delegate of the emperor, to appoint the viceroy of the Carnatic. He accordingly chose, first his general Cojah Abdoolla, and afterwards Anwar ad Dien Khan, known to the English as Anoverdy Khan, to be governor of the Carnatic in 1745. It was between these two families that the contest now began for the government of the Carnatic; Chunda Saheb, a distant relative of the family of Sadatullah, being supported by the French under their aspiring and ambitious governor Dupleix. The death of Nizam-ul-Mulk, in 1748, at the extreme age of 104, occasioned another dispute in the succession to the government of the Deccan, between Nazir Jung, his son, who was supported by the English, and Mirzapha Jung, his grandson by a daughter, who was aided by Chunda Saheb and the French. The latter in 1749, with 40,000 native troops, 400 French, 100 Caffres, and 1800 Sepoys, advanced against Anwar ad Dien. His camp was gallantly stormed by the French troops, he himself was slain, at the age of 107, his eldest son was taken prisoner, and his second son, Mahommed Ali, with the wreck of his army, escaped to Trichinopoly. Nazir Jung, hearing that the nabob of the Carnatic was defeated, collected an army, and summoned Mahommed Ali from Trichinopoly to his aid. He also requested assistance from the English, who sent Major Laurence from Fort St David with 600 Europeans to join his army. When the armies approached each other, D'Auteuil the French commander, being deserted by some of his officers, suddenly retreated to Pondicherry, leaving to their fate Mirzapha Jung, who surrendered to his uncle, and was immediately put in irons, and Chunda Saheb, who followed with his troops to Pondicherry. But the enterprising Dupleix made new exertions, and having again taken the field, he attacked the camp of Nazir Jung, his former ally, who in the confusion was shot through the heart. Mirzapha Jung being now freed from imprisonment, assumed the authority of subahdar. He was afterwards shot dead with an arrow in an action with the rebellious Patan chiefs, and, by the influence of M. Bussy, who commanded the French troops, Salabut Jung, the eldest surviving son of Nizam-ul-Mulk, was raised to the government. After some unsuccessful operations, the English, with their allies, were compelled to take shelter under the walls of Trichinopoly, which was now besieged, though with little effect, by the enemy.

In this indecisive state of affairs at Trichinopoly, it was suggested by Captain Clive, who had already distinguished himself by desperate bravery and great military skill, that it would be advantageous to carry the war into the enemy's country; and being intrusted with the execution of his own bold designs, he began an attack on Arcot, the capital of Chunda Saheb. He had under him 210 Europeans and 500 Sepoys; and so secret and sudden were his motions, that he was master of the enemy's capital ere they were apprised of his march. Here he was soon invested, in the fort which defends the town, by a numerous army, and several practicable breaches being made, an assault took place, which was repulsed with loss; the assailants were finally compelled to raise the siege, and being pursued by Clive, were attacked and totally defeated on the plain of Arani, on the 3d of December 1751. The forts of Tinnery, Conjeveram, and Arani, immediately surrendered to Clive, who returned in triumph to Fort St David. He was soon recalled by the operations of the enemy, who were encouraged by his absence again to take the field. With a very inferior force he adventured on a battle, and by the well-concerted manœuvre of sending round a detachment to fall upon the rear of the enemy, whilst the English charged with the bayonet in front, he obtained a decisive victory, and the hostile army was saved from total ruin only by the darkness of the night. On his return to Fort St David, Clive was superseded in his command by Major Laurence, who detached him with 400 Europeans, a few Mahratta soldiers, and a body of Sepoys, to cut off the enemy's retreat to Pondicherry, in which he was, as usual, completely successful, having made the French commander M. d'Auteuil prisoner, with all his troops. The enemy were now greatly distressed for want of provisions; and Chunda Saheb, deserted by his troops, surrendered to the king of Tanjore, an ally of the English, by whom he was beheaded, in order to prevent all disputes with the Mysorean and Mahratta chiefs about the custody of his person. After the flight of Chunda Saheb, his army was attacked and routed by Major Laurence; and the island of Syringham, where his troops were encamped, was taken, with about 1000 French soldiers, under the command of Mr Law, the son of Law the author of the Mississippi scheme. Notwithstanding these disadvantages, Dupleix was not discouraged. The English resolved to commence the siege of Gingee, which was garrisoned by the French. In this operation they failed. But the French were afterwards defeated in an action near Bahoor, two miles from Fort St David; and the two forts of Coveling and Chingleput were reduced by Captain Clive.

Early in January 1753 the two armies again took the field. The French force consisted of 500 European infantry, sixty horse, 2000 Sepoys, and 4000 Mahrattas, commanded by Morari Row. The English had 700 European infantry, 2000 Sepoys, and 1500 horse belonging to the nabob. The two armies, avoiding a general action, watched each other's movements, when General Laurence was apprised that Captain Dalton, the commandant of Trichinopoly, had only provisions to serve him three weeks. He immediately marched with all his forces to his relief, and being followed by the French, this place became the object of an active contest, from May 1753 till October 1754. We have already stated that the two main points of dispute between the French and English were, first, the succession to the government of the Deccan; and, secondly, to that of the Carnatic; the English, in the first of the disputes, supporting the claims of Nazir Jung, the son of Nizam-ul-Mulk, against Mirzapha Jung, the grandson of the nizam, who was supported by the French. After the death of Nazir Jung, who was killed in the attack of the French upon his camp, Mirzapha Jung succeeded to the subahdarship of the Deccan. He was killed in battle, as already related, by an arrow, when, through the influence of the French commander, M. Bussy, Salabut Jung, the eldest surviving son of Nizam-ul-Mulk, was raised to the vacant throne. But on the death of Nazir Jung, his eldest son Ghazee ad Dien solicited and received from the Mogul the appointment of subahdar of the Deccan; and he appeared at Aurungabad in October 1752, to support his title, at the head of 150,000 troops. The Mahrattas at the same time supported him, and entered the province of Golconda with 100,000 horse. The French general Bussy and Salabut Jung now took the field to meet these armies, with very unequal numbers, when Ghazee ad Dien Khan suddenly died. The Mahratta generals continued the war, but in every encounter they were repulsed with such fearful loss by the French, that they agreed to conclude a peace on the cession of certain frontier districts, to which Salabut Jung willingly agreed.

In the other point in dispute, namely, the government of the Carnatic, the English espoused the cause of Mahommed Ali, the second son of Anwar ad Dien, who was appointed nabob by Nizam-ul-Mulk; and the French supported Chunda Saheb, the heir of the first deputy Sadatullah, appointed also by Nizam-ul-Mulk. On his death they claimed the right of appointment for Salabut Jung, the subahdar, and who, owing his throne to their powerful support, had become a passive tool in their hands. From him M. Bussy had obtained the cession of the four important provinces of Mustaphanagar, Ellore, Rajamundry, and Chicacole, called the Northern Circars. It was in these circumstances that a suspension of arms was agreed upon in October 1754; and on the 26th of December following a provisional treaty was signed at Pondicherry, by which both parties agreed to abstain from interfering in the internal affairs of the country, and to establish their territorial acquisitions on a principle of equality. These terms were entirely in favour of the English, as they left Mahommed Ali nabob of the Carnatic, and obliged the French also to the cession of the four Circars which they had obtained from Salabut Jung. But this treaty was in truth a dead letter; and the moment it was concluded the English, in virtue of their alliance with the nabob, proceeded to reduce to obedience, and to collect the revenues of the districts of Madura and Tinnevelly. Here, however, they encountered the Colleries, a fierce tribe inhabiting the hilly districts, who obstinately contested every inch of ground; so that they got abundance of hard blows, and little money, scarcely enough indeed to pay the expense of this plundering adventure. The English, when they made their first conquests in India, having conceived vast ideas of its wealth, set no bounds to their rapacity; they were eager to revel in the spoil of the country, and it was only stubborn facts and repeated disappointments that at last dispelled their dreams of avarice. The French, after remonstrating in vain against this conduct of the English, proceeded to follow their example, by reducing to obedience and plundering the petty chiefs of the country.

Whilst the two contending armies were maintaining this predatory warfare, the active and enterprising Bussy was in another quarter securing the ascendency of the French; and, whether in the cabinet or in the field, he still signalized his talents as a warrior and a statesman. Salabut Jung, influenced by his courtiers, had induced the French troops to quit his territories, which order Bussy speedily obeyed, and commenced his march. Finding that he was betrayed, and his progress intercepted by hostile chiefs, he skilfully selected a strong position, which he defended till succours arrived from Pondicherry; when the fickle prince again solicited his alliance, and he was restored to still higher influence than before. Salabut Jung, when he had resolved to dismiss the French troops, had applied to the presidency of Madras for a force to supply their place; and this opportunity of extending their influence would have been eagerly embraced by the English, but their power was now threatened in another quarter, by new and unexpected dangers. Bengal now became the great scene of Indian warfare, in which were concentrated all the resources of the English, from every part of their territories. This extensive province, with Orissa and the province of Allahabad and Berar, was governed, towards the latter end of Aurungzebe's reign, by his grandson Azeem Ooshaun, second son of Shah Aulum, who succeeded to the throne. Jaffier Khan was appointed his deputy; and, as frequently happened during the decline of the Mogul empire, from a deputy he became an independent sovereign. Sujah Khan, who was married to the daughter of Jaffier Khan, was appointed his deputy in the government of Orissa. In this elevated station, a distant relative, Mirza Mahommed, who had once been in the service of Azeem Shah, the second son of Aurungzebe, and had since fallen into poverty, resorted to his court for employment, and he was kindly received. He was followed by his two sons Hadgee Ahmed and Mirza Mahommed Ali, who both obtained employment; and, by their respective talents for business and war, they soon acquired favour and influence in the court of Sujah Khan. Jaffier Khan died in 1725, and was succeeded by Sujah Khan, who supplanted Sereffraz Khan, the destined heir. In 1739 he added to his dominions the province of Bahar, and intrusted its administration to Mirza Mahommed Ali, under the title of Aliverdy Khan. In 1739 Sujah Khan died, and was succeeded by his son Sereffraz Khan, who hated Aliverdy Khan and his brother, and took no pains to conceal it. Aliverdy in the mean time obtaining from the imperial court his nomination to the government of Bengal, collected his troops, and having defeated Sereffraz in a battle in which he was slain, he reduced the country to subjection, and governed it with a regard to justice and humanity very unusual in the East. His reign was, however, one continued scene of commotion, from the irruptions of the Mahrattas, who, though they were often vigorously repelled by Aliverdy and his troops, always returned with new vigour to the invasion of the country. Aliverdy died on the 9th of April 1756, at the age of eighty, and was succeeded by his nephew Suraja Dowla, who had all the vices of a regularly educated prince. His first act was to plunder the sister of Aliverdy Khan, who was reputed to possess great wealth; he gave orders to seize the treasurers of her family, one of whom, however, contrived to escape, and found an asylum in Calcutta. Incensed by the protection given to this fugitive, and jealous besides of the designs and growing power of the Europeans, he took the field on the 30th of May 1756, with an army of 40,000 foot, 30,000 horse, and 400 elephants. The factory at Cossimbazar was seized, and its chief, Mr Watts, and his surgeon, who accompanied him, were retained prisoners. Calcutta was invested on the 18th of June. It was feebly defended, and at last a retreat was resolved upon, which was executed so precipitately that numbers were left behind in the fort by the ships and boats. In this trying situation Mr Holwell was chosen commander, who, seeing no chance of a successful defence, proposed a capitulation in a letter which he threw over the ramparts. In the mean time the troops having gained access to the liquor, were so intoxicated as to be incapable of defence, and the enemy entered the fort without resistance. The subahdar appears on this occasion not to have intended any inhumanity to the garrison; and when Mr Holwell was brought into his presence with his hands tied, he ordered them to be loosed, and pledged his honour as a soldier to him and his companions that not a hair of their heads should be touched. But, notwithstanding these assurances, the tragical scene which ensued has no parallel in the annals of human misery. When night approached, it became necessary to secure the prisoners in some place of confinement; and for this purpose the common prison of the garrison was chosen, which was about eighteen feet square, with only two small windows barred with iron. Into this small apartment the garrison, 146 in number, were compelled to enter, by threats of being instantly cut down if they resisted. Their sufferings from want of air were dreadful, and bribes were offered to the guard to obtain a room for them in which they could breathe. But none dared to awake the sleeping tyrant whose prisoners they were; and, after a night of inexpressible horror, only twenty-three out of 146 were found alive in the morning. The presidency of Madras being apprized of these disasters, determined on sending Colonel Clive, who had now returned to India, to Bengal, with as large a force as could be collected; and an armament accordingly sailed from the roads of Madras on the 16th of October, consisting of five king's ships under Admiral Watson, besides transports having on board 900 European troops and 1500 Sepoys. Having arrived in the Ganges on the 20th of December 1756, they found the fugitives at Fulta, a town at some distance from Calcutta, down the river. The first operation was against a fort; and Clive, lying in ambush to intercept the garrison, was himself surprised by the troops of Suraja Dowla, and, after a conflict long doubtful, extricated himself from the dangers that surrounded him, by that admirable presence of mind which never deserted him in the hour of danger. On the 2d of January 1757, the armament arrived at Calcutta, which surrendered after a cannonade of two hours. Almost the whole property of the Company was recovered, having been preserved for the subahdar; but the houses of individuals were all plundered. On the 10th of January, the city of Hooghly, about twenty-three miles higher up the river, was attacked, and a breach being made, and an assault begun, the garrison sought safety in flight. In the mean time, intelligence was received from Europe of the commencement of hostilities between France and England, which placed in a very critical situation the Company's settlements in Bengal. The English were already engaged in a war with a powerful prince, who had a formidable army in the field; and a coalition with the French, who could muster 300 European troops, with a train of artillery, would have overwhelmed their infant power. Happily for them, the French were desirous of a neutrality, and refused the alliance of Suraja Dowla, who advanced with his whole army and surrounded Calcutta. The perils which now environed the English roused the daring spirit of Clive, and he resolved to surprise the enemy's camp before daylight. But this bold enterprise failed in the execution; the troops suffered severely, and a thick mist augmented the causes of confusion; still the boldness of the design produced the desired effect, by alarming the subahdar, and inclining him to peace. He accordingly concluded a treaty with the English, by which he agreed to restore to the Company their factories, and all their former privileges; to make compensation for the losses they had suffered, and to permit them to fortify Calcutta. The danger which now threatened the Company being averted, the active mind of Clive was directed to other objects; and as war was now declared between France and England, he resolved, in return for the neutrality observed by the French when the English were involved in hostilities with the nabob, to attack their settlement at Chandernagur. This scheme was opposed by the nabob, and was disapproved by the council and Admiral Watson. Reinforcements, however, arriving, the attack was resolved on, and the English force advanced. The French defended themselves with gallantry; and the nabob, alarmed, began to put his army in motion. But the fort was in the mean time reduced by the irresistible fire of the ships. The nabob viewed these proceedings with secret alarm and resentment, and refused to give up the other French factories and subjects in his dominions. He even afforded protection to the fugitives from Chandernagur, and evinced his decided hostility to the English, until he received intelligence of the progress of the Afghans in the north, when he became extremely desirous of peace. But the English were now dazzled with other schemes, and Clive strongly insisted on the rooted disaffection of the nabob to the English, and on the necessity of dethroning him, and of elevating Meer Jaffier, who had married the sister of Aliverdy Khan, to the throne in his stead. It is unnecessary to dwell particularly on the dark intrigues by which this scheme was carried into effect. It was concerted that, for the destruction of Suraja Dowla, the English should take the field; and that Meer Jaffier, who still had a considerable force under his command, should join them at Cutwa. The English, having arrived at Cutwa, found not their expected ally Meer Jaffier; only an intimation from him that he could not join them before the day of battle, but that during the action he would desert the nabob and join his enemies. This intelligence damped the ardour of the English, and it was deemed hazardous to advance further, and to risk a battle, when, "if defeat ensued, no one would return to tell it." But caution at length gave way to bolder counsels; the army crossed the river a little past midnight, at Plassy. Here also was intrenched the army of the subahdar, consisting of 50,000 foot, 18,000 horse, and fifty pieces of cannon. The English force consisted of about 1000 Europeans and 2100 Sepoys. During the battle, which took place on the 23d of June 1757, Meer Jaffier was observed moving off with his troops. Clive, now assured of his intentions, ordered an attack; the subahdar's army was dispersed, and he himself fled from the field with only 2000 attendants. Arriving at his palace, he found no friend on whom he could rely; and disguising himself as a fakir, he escaped, with a favourite concubine and a single eunuch, intending to make his way to the French. But he was discovered at Raje Muhl, dragged back to Moorshedabad, and placed under the custody of Meer Jaffier's son, who gave orders for his assassination. On the 25th of June, Clive arrived with his victorious army at Moorshedabad. Meer Jaffier took possession of the capital, and on the 29th was installed into his high office, in the presence of the rajahs and grandees of the court. Enormous sums were exacted from Meer Jaffier as the price of his elevation; for the Company 10,000,000 rupees, as a compensation for losses; 5,000,000 rupees to the English inhabitants, 2,000,000 to the Indians, and 700,000 to the Armenians; for the squadron 2,500,000; an equal sum for the army; and for the members of the council, which they actually received, namely, for Mr Drake the governor, and Colonel Clive, 280,000 rupees each; and Mr Becker, Mr Watts, and Major Kilpatrick, 240,000 each; the whole amounting to

L.2,697,750. The English, deluded by their avarice, still cherished their extravagant ideas of Indian wealth; nor would they listen to the ungrateful truth. But it was now found that there were no funds in the Indian treasury to satisfy their inordinate demands. They were in the end obliged to be contented with one half the stipulated sum, which, after many difficulties, was paid in specie and in jewels, with the exception of 584,905 rupees.

The Company's servants, whilst their force was so actively engaged in Bengal, were anxious to remain quiet in the Carnatic. In endeavouring to collect the land-rents of the nabob Mahommed Ali, they, however, undertook the reduction of Madura and Tinnevelly; but with no great success, Captain Calliaud being repulsed in an assault on the fort of Dindigul, and another division of the English force at Nelore. The French now resolved to take advantage of the division of the enemy's force, and to strike a decisive blow; and having collected every soldier that could be spared from garrison duty, they suddenly with their whole force invested the fortress of Trichinopoly. On the 14th of May 1757, Captain Calliaud being apprized of their design whilst he was besieging Madura, instantly began his march for the relief of this important place. It was surrounded by an army five times as numerous as his own force, and every avenue to it was strongly guarded. But the English commander, well acquainted with the localities, took his route through a large plain consisting of rice fields covered with water, which was deemed impassable by the French, and therefore left unguarded; and thus he entered the fort. The French general, disconcerted by this successful stroke, drew off his forces and returned to Pondicherry. Having thus secured Trichinopoly, Colonel Calliaud resumed the siege of Madura, and being repulsed, with heavy loss, in an attempt to storm, he turned the siege into a blockade. He was at last received into the town on payment of 170,000 rupees. In the mean time Bussy was eminently successful in all his operations within the Circars; he reduced the fortress of Vizigapatam held by the English; and, after some uncertainty in the unstable councils of Salabut Jung, he finally established an entire ascendency over that prince and throughout the Deccan.

On the commencement of the war between France and England in 1756, the French ministry resolved to send a formidable armament to India; and the Count de Lally, an Irishman, who had left his country with James II., and who had distinguished himself in the battle of Fontenoy, was appointed commander-in-chief of all the French forces in India. Count Lally, with his armament, arrived on the coast of Coromandel on the 25th of April 1757. The English Admiral Pococke had been previously joined by a squadron of five ships of war, and an engagement took place between the two fleets, which terminated to the advantage of the English. Another action took place after the ships were refitted, with the same result. But neither was decisive; and, notwithstanding these successes at sea, the French had a preponderating force on shore, which consisted of 2500 Europeans, and the same number of Sepoys. With this force they commenced, on the 17th of May 1758, the siege of Fort St David. The place capitulated on the 1st of June, and its fortifications were razed. Devicottah surrendered on the 7th of June, and the English now fully expected that Lally would next lay siege to Madras. But the want of money embarrassed all his operations; and in order to relieve his necessities, he undertook the siege of Tanjore. A breach was effected, and preparations made for an assault, when the arrival of the English fleet, after another engagement with the French before Carical, whence the besieging army derived all its supplies, determined Lally to raise the siege; and, after a disastrous retreat, his shattered force arrived on the 28th at Carical. The hostile fleets again encountered on the 2d of August, and after an hour's fighting the French bore away, and were soon beyond the reach of shot. Lally, to relieve his pecuniary wants, which were only augmented by the unsuccessful siege of Tanjore, now prepared for an expedition against Arcot. This place capitulated on the 4th of October, and the French force proceeded forthwith to Chingleput, about forty-five miles south-west of Madras. But the English, aware of its importance, reinforced the garrison, and Lally did not attempt its reduction. His situation was beset with difficulties, from the total want of money and all necessary supplies; and in order to retrieve his affairs, he resolved on the bold enterprise of laying siege to Madras. His force consisted of 2700 European troops, and 4000 Indians. In this attempt he signally failed, with great loss, after continuing the siege from the 16th of December till the middle of February 1759; and this disaster greatly contributed to depress his spirits, and to abate his vain confidence in his own schemes. The French army retreated in the direction of Conjeveram, whither they were followed by the English. Here the two armies manœuvred for some time in sight of each other, when the English marched upon Wandewash, and afterwards on Conjeveram, which they took by assault. On the 28th of May 1759 both armies went into cantonments.

In the end of September the campaign was resumed with spirit by the English, who laid siege to Wandewash, but were repulsed in all their attempts to carry it by storm. But it was attacked and taken on the 29th of October, as was also Caranjoly on the 10th of December. Bussy had been recalled from the Carnatic, where he had exerted himself so advantageously for the French cause, and he joined the army the day after the repulse of the English. Lally had resolved to divide his force; with one part to collect the rents of the southern, with the other to protect what belonged to the French in the northern districts. He contrived by skilful manœuvring to amuse the English, and in the mean time he surprised and took Conjeveram, and thence proceeded to the attack of Wandewash. The English army under Colonel Coote now approached, consisting of 1900 Europeans, 2100 Sepoys, 1250 black horse, and twenty-six field-pieces; and the French general determined to try the issue of a general battle. The French, including 300 marines and sailors, consisted of 2250 Europeans, and 1500 Sepoys. The battle commenced on the 22d of January 1760, at eleven o'clock, and terminated in the total defeat of the French, who lost nearly all their cannon. Lally retreated to Chittapet, about twenty-eight miles from the field of battle, and afterwards to Gingee and Valdore. The victorious general resolved on the reduction of Arcot, and having previously taken Chittapet, he arrived before that fortress upon the 1st of February, and upon the 9th the garrison capitulated. The affairs of the French now rapidly declined. The English had acquired a decided superiority in the field, and fortress after fortress fell into their hands; Tinery on the 1st of February, Devicottah about the same time, and Trincomalec on the 29th. To complete this train of misfortunes, Admiral Cornish arrived at Madras with six men of war; and there being no longer a hostile fleet in the Indian Seas, he readily agreed to co-operate with the land forces. The consequence was, the reduction of Carical on the 5th of April, of Valdore on the 15th, of Chittambaram on the 20th, and about the same time of Cuddalore; and on the 1st of May the whole French force was shut up in Pondicherry, which was their last remaining hope in India, whilst the English forces encamped within four miles of the town. It was in the beginning of September that the English laid formal siege to this place. The batteries were opened about the beginning of December, and it capitulated on the 15th of January 1765; and thus terminated for ever the power of France in this quarter of the world.

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throne.

Whilst the English were thus establishing their ascendency in the south of India, and also in Bengal, Meer Jaffier, the new nabob, was wholly unable to answer the exorbitant demands of the Company's servants, who, still deluded with the idea of eastern riches, refused to abate one iota of their demands. His situation thus became extremely difficult. His treasury was exhausted, his people impoverished, he had no funds for the expenses of government, and still less for the demands of his rapacious allies. He was compelled to extort money from his ruined subjects by cruelty and terror. He himself, and his son Meeraus, soon fell into universal odium and contempt, from their merciless exactions, and the weakness, negligence, and disorder of their administration. The troops mutinied for want of pay, the rajahs and nobles were discontented, and rebellions multiplied throughout his dominions. The nabobs of Oude and Allahabad entered into a dangerous confederacy with the eldest son of the Emperor Aulumgeer II. for supporting his claim to the imperial throne, and to the subordinate provinces of the Mogul empire; and their combined forces advanced to the invasion of Bengal. But European troops, though few in number, and European counsels, proved an overmatch for the ill-organized masses of Indian cavalry; they were accordingly defeated in every encounter, and Meer Jaffier secured in the undisputed possession of the throne. Lord Clive, who bore so conspicuous a part in these transactions, resigned the government in February 1760; and by his influence Mr Vansittart was raised to be president or governor of the council, consisting of from nine to twelve persons, by a majority of whom the affairs of the Company were now administered. The English, by their prompt and decisive measures, had defended the nabob against foreign aggression; and he had now to defend himself against their own domestic treason, which proved to be the more serious danger. In raising him to the sovereignty they were actuated by purely interested views; and being disappointed, they entered into schemes for dethroning him, and for again selling the throne to the highest bidder. Meer Cossim, married to his daughter, was the person now pitched upon to supply his place. The conditions were, that he should assign to the Company the revenues of the three districts of Burdwan, Midnapore, and Chittagong; that he should pay the balance due by Jaffier; and besides, make a present of five lacs of rupees for the war in the Carnatic. Mr Vansittart now proceeded, with a body of troops under Colonel Calliaud, to persuade, or rather to compel, the nabob to abdicate the sovereignty. At day-break his palace was surrounded with troops, and a letter was sent to him explaining the views of the English, which filled him with rage. He treated with disdain the assurances of safety for his person, and that a reform in his government under his son-in-law as his deputy was all that was proposed; and he finally preferred, rather than sway a barren sceptre, to retire to Calcutta under the protection of the English. Against the deposition of Meer Jaffier several members of the council protested, and this spirit of opposition for a considerable time distracted the English councils. The party who had elevated Meer Cossim highly commended his whole administration, which their opponents were equally solicitous to criticise and to condemn. Meer Cossim was a person of quite a different stamp from his weak and indolent predecessor. By the assistance of his new allies he cleared his dominions of all invaders, and strengthened his frontiers; he reduced the rajahs or independent Indian chiefs, who had rebelled against Jaffier, obliging them to pay the usual tribute, by which means he repaired his finances; he introduced order and economy into his whole administration, and by regular pay secured the discipline and fidelity of his troops. But his conduct was viewed in a sinister light by the members of the council who opposed his elevation; and four of them being dismissed by the directors at home for insubordination to their authority, this faction became the majority; and the most violent amongst them, Mr Ellis, was sent to superintend the factory at Patna, the residence of the nabob, where his whole conduct was one continued insult and defiance of his authority. He made no scruple of seizing and punishing the officers of the nabob, who acted under his express sanction; sometimes throwing them into prison, or sending them in chains to Calcutta, to be there punished at the discretion of the council. To these were added other and more extensive injuries; and at length the usurpations and tyranny of the English were carried to such a height, that the authority of the government either became a mere name, or an instrument of violence and extortion in the hands of the Company's servants. The causes of these disorders, which led to a new and important revolution in the political condition of India, we shall now briefly explain.

Disputes with Meer Cossim.

Cause of these disputes, and oppression of the country.

In India the transit of goods from one place to another was, under the native governments, subjected to a tax; and upon all the roads and navigable rivers toll-houses were erected, where this tax was paid. These toll-houses were multiplied, to the great inconvenience and oppression of the internal trade; and as the duties varied in different places, there was here a wide field for abuse, and the traders were frequently oppressed by the arbitrary extortions of the collectors. The East India Company had, at an early period, procured a firman, which exempted from all internal duties, both the goods which they imported from Europe, as they passed into the interior, and those which they purchased in the interior in their passage to the sea. They were, in fact, protected by a certificate signed by the president or chiefs of the factories, called a *dustuck*, and shown at the toll-houses or chokeys through which they passed. The servants frequently endeavoured to abuse the Company's privilege, by claiming an immunity from taxation for all their own goods, which they had neither imported nor were to export, but which, for the internal supply of the country, they were transporting from one place to another. The subahdars of Bengal, whilst they retained their power, restrained the Company's privilege within its appointed limits, and steadily refused to exempt the trade of its servants from duties to which all others were subject. But when, by the elevation of Meer Jaffier to the throne, the English acquired the undisputed ascendency, they broke through all the equitable restraints imposed upon them; in every district, in every market and village, they dealt in rice, the common food of the people, paddy, betel-nut, oil, fish, straw, bamboos, &c. and, without scruple, used the Company's passport to screen these articles from internal duties; and so dreaded was the English name, that the toll-house keepers no longer exacted the public dues on the transit of their goods through the country. In some cases where the demand was made and the goods stopped, the toll-keeper was arrested by a party of Sepoys, and carried prisoner to the nearest factories; and he was frequently exposed to even greater severities, being tied up and lashed. The confusion into which the country was thrown by the injustice, the violence, and the cruelty, of those rapacious intruders, can scarcely be imagined. The native merchant, still burdened with the heavy duties, which were rigorously levied on him, was undersold in every market; and the Company's servants in a short time engrossed the whole commerce of the country. The unhappy natives were subjected to various other oppressions. It was a common practice of the Company's servants to defraud them both in purchase and in sale; to force goods from them at a lower, and to compel them to buy their own at a higher rate than the market price. Nor did the ordinary tribunals afford any protection against their injustice; a band of foreign adventurers, to call them by no harsher name, had usurped the sovereign power, which they rendered wholly subservient to their own schemes of enriching themselves at the expense of the country.[1]

Just conduct of Meer Cossim.

Meer Cossim, the ruler who had been set up by the Company, was extremely displeased with the conduct of their servants, and he represented in the strongest terms to the president and council the enormities to which the private trade had given rise. But the majority of the council were too deeply interested in these enormities to be moved by this just appeal of the sovereign in behalf of his oppressed people. They all participated more or less in the profits of the private trade, and they had no disposition to part with or to restrict this lucrative abuse. They even refused to pay nine per cent. of transit duties upon their goods, though this rate was far inferior to that paid by the native traders; and all that they would agree to was, out of their own liberality and free choice to pay a duty of two and a half per cent. on salt alone. The nabob, when he heard of the proceedings in council, and of the injurious treatment of his officers for duly executing his orders, was naturally filled with indignation; and he came to the resolution of abolishing all internal duties. There could not possibly have been a more moderate or equitable measure. It gave freedom and equality to all parties; it threw down at once all the restraints to fair and open competition, and gave to the Company's servants the unlimited freedom of trade. This just and liberal policy, however, was far from corresponding with their views, and it excited amongst them the most violent clamours. They were discontented at losing so fair an opportunity of amassing enormous wealth. Their conduct, as Mr Mill justly observes, furnishes one of "the most remarkable instances on record, of the power of interest to extinguish all sense of justice, and even of shame." They first insisted on an exemption for themselves from all internal duties, now they cried out in the rage of disappointed avarice against the extension of the same privileges to the inhabitants; and thus they reversed all the usual maxims of fair policy, in seeking immunities for foreigners which were refused to natives.

Arbitrary conduct of the Company's servants.

The conduct of Meer Cossim, in claiming justice for his oppressed subjects, was highly displeasing to the majority of the council. The exaction of legal dues upon English goods was represented as a violation of the Company's rights, and as evidence of a design to expel them from the country; and, for this new species of treason against the offended majesty of usurped power, it was resolved to depose him, and to replace Meer Jaffier on the throne, as nominal ruler of Bengal, on the well-understood condition of subservience to their views. A treaty was concluded, confirming the immunity which they claimed from all internal duties, with the exception only of two and a half per cent. on the article of salt, whilst those duties were re-imposed on the goods of all other merchants. Large presents were bargained for, and other payments to a great amount, as compensation for losses alleged to have been sustained by the Company's servants, in the course of their illicit interference in the domestic trade. These sums, which at first were estimated at ten, but soon afterwards mounted up to fifty-three lacs of rupees, equal to about L.625,000, were rigidly exacted, whilst large payments to the Company were still undischarged, and the public finances were sinking under the burden of an expensive war, great sums having been borrowed by the Company from its servants, at an interest of eight per cent., and, with all these aids, supplies were wanting both for the war and for the investment, the Company's ships frequently returning, in consequence, half loaded to Europe. Meer Cossim, on his side, saw plainly that matters were fast approaching to the extremity of war, and he made preparations for the contest. He transferred his capital from Muxadabad, as being too near Calcutta, and under the inspection of the English, to Mongheer, a place 200 miles farther up the Ganges, which he fortified in the best and most expeditious manner. He introduced European discipline among the troops, and he recruited his ranks with all the Armenian, Persian, Tartar, and other soldiers of fortune whom he could collect, and especially with such wandering Europeans or Sepoys as had borne arms in the English service. He substituted European muskets for matchlocks, and formed a train of artillery.

Hosti es with er Cossi

Hostilities commenced sooner than was expected, with the surprise and capture of Patna by Mr Ellis; a violent and rash measure, disapproved by several members of the council. The nabob immediately gave orders to stop several boats laden with arms that had been seized, and released on the representation of the English. Resistance was made, and in the course of the struggle which ensued, Mr Amyatt, a member of the council, and several other Englishmen, were slain. The contending armies now hastened to take the field; and Meer Cossim was overwhelmed by one unbroken series of disasters, which terminated in his dethronement and flight. A division of his army, which had advanced for the protection of Moorshedabad, was totally defeated on the 19th of July, by the English army, which consisted of 650 Europeans, 1200 Sepoys, two troops of native cavalry, and was afterwards joined by a battalion of Sepoys and a hundred Europeans. In advancing to the capital, Major Adam found the enemy strongly posted, with intrenchments fifteen feet high, defended by a numerous artillery. These were stormed, and the city of Moorshedabad was entered by the conquerors. The English, pushing forward, encountered the Indian army on the 2d of August 1763, consisting of 20,000 horse and 8000 foot, in the plain of Gheriah, near Sootie. They resembled European troops in clothing and accoutrements, and in their division into brigades; and the battle that ensued was obstinately contested for four hours. But the discipline and steadiness of the European troops finally triumphed, and the enemy fled, leaving all their cannon behind them. From this time the English were no longer opposed on equal terms in the field. It was only in strong positions and intrenchments that the enemy made a stand. A strong intrenchment at Oodwa was carried on the 5th of September, after it had detained the English for nearly a month; and Mongheer, the last stronghold of Meer Cossim, capitulated, on which he fled into the dominions of the nabob of Oude, and afterwards into the Rohilla country. Irritated by his misfortunes, the nabob wreaked his vengeance on the unhappy English prisoners who were in his power. He had formerly put to death several Hindus of rank who were thrown into prison on account of their wealth; and he now gave an order for the execution of about two hundred English, who had been taken at Patna; amongst others, of Mr Ellis, who had formerly tyrannized over and insulted him, and Mr Lushington, also high in the Company's service. They were invited to an entertainment, and, according to the odious maxims of eastern treachery, were barbarously murdered. A German of the name of Sumroo was the chief agent in this scene of cruelty. Dr Fullarton, who had gained favour

Defea nd flight Sujah Dowl

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[1] See Ninth Report of the House of Commons on India Affairs; also a Letter of Meer Cossim, dated Backergunge, May 25, 1762, which states that the inhabitants who refused to sell to the Company's servants were flogged or confined.

by his medical services, was the only Englishman who escaped.

Meer Cossim was received in the most friendly manner by Sujah Dowlah, the nabob of Oude, who was far from being well disposed to the English. He considered them as rapacious usurpers, the natural enemies, as they fatally proved to be, of Indian independence, and who, under pretence of commerce, aspired to the dominion of the country. In reply to a letter from the English, threatening, that if he assisted the nabob of Bengal, they would carry the war into his own country, he remonstrated with them on their ambitious views, and on account of the disturbances which they had created in the country; and he added, "to what can all these wrong proceedings be attributed, but to an absolute disregard of the court (of Delhi), and to a wicked design of seizing the country to yourselves. If these disturbances," he continues, "have arisen from your own improper devices, deviate from such behaviour in future; interfere not in the affairs of government; withdraw your people from every part, and send them to their own country; carry on the Company's trade as formerly, and confine yourself to your own commercial affairs." To these reasonable remonstrances, which were repeated in another letter to Major Carnac, the president and council were so far from listening, that they determined upon commencing an immediate and offensive war against him.

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Major, afterwards Sir Hector Munro, who had arrived from Bombay with a reinforcement, was appointed to the command. His first care was to repress the mutinous spirit which had of late prevailed among the troops, and this he effected by the severe measure of blowing away twenty-four of the ringleaders from the mouths of cannon. He then advanced, with a force of 6215 Sepoys and 856 Europeans, towards the Saone, where the enemy, to the number of 40,000, with a train of artillery, were intrenched in front of the village and fort of Buxar. On the 22d of October 1764, a battle took place, in which the Indian army was completely overthrown, with the loss of about 2000 men. On the side of the British eighty-seven Europeans and 712 Sepoys were either killed or wounded. Major Munro followed up his success, though in two attempts to storm the fortress of Chanda he was repulsed with loss, and it was only through the mutiny of the garrison that it was at length taken by Sir R. Fletcher, who had succeeded to the command. Lucknow, the capital of Oude, was also occupied by the battalions of Sepoys; the fortress of Chunar was attempted, though without success, and that of Allahabad surrendered. Sujah Dowlah was abandoned in his reverses by his ally the Mogul, who concluded a treaty with the English. But he did not yet despair of his fortunes; and having received the aid of a Mahratta force, the combined armies encountered the English on the 3d of May 1765, when they were defeated; and Major Carnac, again attacking them at a place called Calpi, they were overthrown, and driven with precipitation across the Jumna. The vizir, Sujah Dowlah, seeing no hope of retrieving his affairs, resolved to trust entirely to the generosity of the English; and on the 19th of May he surrendered to Major, now General Carnac. The final settlement of terms was reserved for Lord Clive, who had arrived in Bengal, with full powers from the directors, as governor, to regulate all their complicated concerns, whether of sovereignty or of trade. It was agreed that, with the exception of Allahabad and Corah, he should still retain his dominions, which he was judged more capable of defending than the Mogul emperor, to whom they had been promised. For this concession the vizir agreed to pay fifty lacs of rupees as the expenses of the war; but he remonstrated so earnestly against the establishment of factories in his dominions, or any permission to trade free of duties, as the certain cause of trouble, that all such propositions were abandoned. He agreed not to molest Bulwunt Sing, who held the zemindaries of Benares and Gauzeepore, and who had assisted the English in the late contest, and never to afford an asylum to Meer Cossim, or the German soldier Sumroo. With regard to the Mogul emperor, he was told, that of the thirty lacs of annual tribute due to him from the subahdars of Bengal, not a rupee would ever be paid; that twenty-six lacs of rupees, which had been assigned him as the revenue of these provinces, would be continued; and that he should receive possession of Corah and Allahabad. In return, the Company received the imperial firman, dated the 12th of August 1765, granting the duannee, or the right of collecting the revenues of Bengal, Bahar, and Orissa, in which is implied, according to the laws and constitution of the Mogul empire, the right of sovereignty; and thus was this body of merchants constituted in form, as well as in substance, the rulers of a vast empire.

Company receives the sovereignty of Bengal.

Maladministration of the Company's servants.

To this issue affairs had been evidently tending for some time past. Meer Jaffier, worn out with anxiety and indulgence, died in the beginning of the year; and Jaffier, his son, was chosen his successor by the Company's servants. From each successive sovereign it was the custom of the electors to exact not only a large donation, but also an extension of power and privileges, so that the native ruler was at length left in possession of little more than a nominal authority. It was now resolved by the English that they should take upon themselves the whole charge of defending the country, and that they would only allow the nabob a few troops for the sake of parade, or for other necessary purposes; whilst, in regard to the civil government, he was to choose a deputy, with the advice of the governor and council, on whom the whole internal administration of the country should be devolved. So completely had the government fallen under the control of the English, that the accountants of the revenue could not be appointed without their approbation. In the mean time the directors were distracted by the contradictory reports of their affairs which they received from India; and it was because they were alarmed by the expensive wars so readily undertaken by their servants, by their rapacious proceedings in regard to the private trade, and by the general embarrassment of their affairs, that they had resolved to appoint Lord Clive to the supreme government of Bengal, conferring on him and a select committee of four, full authority to act and determine all matters, without any dependence on the council; of which authority they were not slow to avail themselves upon all occasions. They also sent along with him a strong representation against the rapacity and tyranny of their servants. In a letter to the governor and council they observe, "Your deliberations on the inland trade have laid open to us a scene of the most cruel oppression." "The poor of the country," they continue, "who used always to deal in salt, betel-nut, and tobacco, are now deprived of their daily bread by the trade of the Europeans, whereby no kind of advantage accrues to the Company, and the government's revenues are greatly injured." The directors accordingly issued the most peremptory instructions for the prohibition of the inland trade of salt, betel-nut, and tobacco, or rather of the monopoly held by the Company's servants, by which the country was so cruelly oppressed. The practice of receiving presents from the native rulers and princes, which had been carried to a great extent, was also prohibited. At a general meeting of proprietors, however, it was urged, in opposition to those wise and salutary restrictions, that the "servants of the Company in India ought not to be deprived of such precious advantages, which enabled them to revisit their native country with independent fortunes."

This reasoning convinced the majority of the proprietors, and a recommendation was moved in consequence to the directors, to re-consider their resolution in regard to the private trade. The governor and council were therefore instructed, after consulting with the nabob, to form a "proper and equitable plan for carrying on the inland trade." (Mill's *British India*, vol. ii. p. 217.) In other words, they were to contrive how they could oppress the country, and yet adhere to the rules of equity. This transaction places in a very strong light the corrupt nature of the Company's government. It was admitted on all hands that it was by extortion and rapine, that is, by compelling the oppressed inhabitants both to purchase and sell at prices fixed by the Company's servants, that such profits were gained, and that they were enabled to return to Europe with enormous accumulations of ill-gotten wealth. It was, indeed, as we have just seen, acknowledged by the directors, that the poor of the country were deprived of their daily bread by the trade of their European servants, who monopolized every profitable channel of business; yet, with these facts before them, we find the sovereigns of India delivering over their oppressed subjects to the rapacity of their servants, for the avowed purpose of enriching them with the spoils of the country.

Lord Clive assumed the supreme power in India in May 1765. At this period the servants of the Company, in defiance of the peremptory orders of the directors, still persisted in all the ruinous practices connected with the inland trade; and instead of abolishing these, and thus remedying some of those abuses of which he so violently complained, Lord Clive entered into a partnership for the monopoly of salt, of which large quantities were accordingly purchased, and sold for a profit of forty-five per cent., which was divided amongst three of his own dependents, his secretary, surgeon, and another friend, for whom he wished, as he expresses it, to realize a fortune. The plan of a more extensive monopoly, including salt, betel-nut, and tobacco, the chief articles of consumption in the country, was afterwards devised to be carried on exclusively for the benefit of the superior servants of the Company, amongst whom the profit, after setting apart L.100,000 per annum to the Company, was to be divided according to their rank in the service. At the time this corrupt scheme of monopoly was established, the select committee were in possession of peremptory orders from the directors for its abolition; but these orders, under various pretences, they delayed to carry into execution till September 1768.

Although the ascendency of the English had for some years been thoroughly established in Bengal, and although they were formally invested in 1765 with the sovereignty of the country, its affairs were still administered in the name of the native prince, and according to the forms and policy of the ancient constitution. Justice was still dispensed by the native courts, and by the nabob's officers; the revenues still flowed through the same channels into the public exchequer; and all transactions with foreign powers were carried on under the same authority as formerly. But such was the increasing power of the English, that the government, as far as regarded the protection of the people, was dissolved. Neither the nabob nor his officers dared to offer any opposition to their sovereign will; and the tribunals of justice, far from being a protection to the oppressed, became subservient to the rapacity of the Gomastahs, or Indian agents, employed by the Company's servants, and were converted by them into most efficacious instruments for plundering the people, and for punishing the wretched victims of their oppression if they dared to complain, and if they did not patiently submit to be fleeced and trampled upon by their foreign masters. The native tribunals had no power to afford protection, whilst the English had no legal authority beyond the presidency, either over the natives or over their own subjects; and hence the inhabitants lay entirely at the mercy of the Company's servants. Nor need we wonder that, during this period of anarchy and disorder abroad, the embarrassments of the Company's affairs continued to increase, even during the peaceable administration of Mr Verdst, who succeeded Lord Clive as governor when he left Bengal in February 1767. The Indian revenues were indeed large, but they were plundered by their servants. Lord Clive and the first adventurers were enriched by the presents or bribes of the native rulers. These they were now prohibited from accepting. "It was expedient for them," says Clive, "to find out some other channel, the channel of the civil and military changes. Every man now who is permitted to make a bill makes a fortune." In lieu of the enormous gains which accrued from the monopoly of salt and of other articles, the trade which the directors, early in 1768, sent peremptory orders to lay open, and also of one eighth per cent. of the revenues given to the governor, as a compensation for his share of the salt monopoly, the Company granted a commission of two and a half per cent. on the revenues. This sum was to be divided into a hundred shares, and to be distributed amongst the civil functionaries of the Company, and the military officers, according to their rank.

Embarr- ments the Co pany at home.

Whilst the local rulers of India were thus enriching themselves, their masters were reduced to great pecuniary distress. But, in the midst of all their embarrassments, the most flattering accounts of their affairs were circulated in Europe; and the directors and proprietors lent a willing ear to these golden promises, of which their servants were always liberal. The splendid acquisition which the Company had made of the territorial revenues of Bengal, the political events in which they had been involved, and the immense fortunes with which a few individuals had returned to Europe, confirmed the general delusion, and inflamed the impatience of the proprietors of East India stock to participate in the inexhaustible treasures of their new dominions. In pursuance of these views, the dividend on their stock was raised from six to ten per cent.; and India stock rose to 263 per cent. A higher dividend was called for, and it was in vain that the directors represented the heavy debts of the Company, and the general embarrassment of their affairs. The proprietors refused to listen to such disagreeable representations, and at a general court they voted a dividend of twelve and a half per cent. for the year 1767. The attention of government being now directed to the Company's affairs, this vote was rescinded by act of parliament, and the dividend limited to ten per cent.

In the mean time, every day's experience was refuting the fallacious expectations of annual treasures from India. So far from possessing any surplus revenue, the servants were involved in debt for the current expenses of their government; they drew largely on the directors, but they remitted little; and the whole of this complicated scheme of trade and sovereignty laboured in consequence under such pecuniary difficulties, that the directors, to avert a public bankruptcy, were compelled to apply to the bank for a loan of L.400,000, and afterwards of L.300,000. In consequence of this state of things, so different from the pleasing fancies of unbounded wealth, with which the proprietors of the Company and the country at large had been amused, great discontent and a violent clamour was raised against the Company's servants in India, who by their profusion or corruption had failed to realize those golden dreams. The situation of the Company was at length brought under the consideration of parliament by the minister, who introduced two acts for the regulation of their affairs. The first of these was intended to relieve the pecuniary embarrassments of the Company, and provided that the sum of L.1,400,000 per annum, at four per cent. should be lent to them, and that the stipulated annual payment of L.400,000 from the territorial revenue should not be required till the discharge of this debt; the dividend not to exceed six per cent. till the discharge should be accomplished, and not to exceed seven per cent. till the bond debt should be reduced to L.1,500,000. Other clauses related to the appropriation of the surplus revenue, which was always fondly hoped for, but never received. The other act, which was heavily complained of as an infringement of the Company's rights of sovereignty, as the first was said to be an invasion of their rights of property, raised the qualification to vote in the court of proprietors from L.500 to L.1000; gave two votes to every proprietor possessed of L.3000; three votes to those possessed of L.6000; and four votes to those possessed of L.10,000; and only six directors, instead of twenty-four, the whole number, were to be annually elected; and the administration of the provinces of Bengal, Bahar, and Orissa was to be vested in a governor-general with an annual salary of L.25,000, and four councillors with a salary of L.8000 each. The other presidencies were rendered subordinate to that of Bengal; and a supreme court of judicature was established at Calcutta, consisting of a chief-justice with L.8000 a year, and three other judges with L.6000 a year, appointed by the crown. The first governor-general and councillors were to be appointed by the king; and all the political correspondence of the Company with India was to be laid before the ministry. These acts received the royal assent on the 21st of June and 1st of July 1773. Under this act Mr Hastings was appointed governor-general, with General Clavering, Colonel Monson, Mr Barwel, and Mr Francis, members of council.

Af s of th arnatic

It will now be proper to revert to the affairs of the Carnatic. After the departure of Bussy from that province, and the decline of the French influence, Nizam Ali resumed his power, which he employed in dethroning and imprisoning, and afterwards murdering, his feeble brother Salabut Jung, the subahdar of the Deccan. The English having received from Shah Aulum, the Mogul emperor, a grant of the Northern Circars, a tract extending 470 miles along the coast of the Bay of Bengal, and uniting the English possessions in the Carnatic with their province of Orissa, proceeded to occupy it with a military force. On this Nizam Ali, or the Nizam as he is called by the English, made an irruption into the Carnatic, and greatly alarmed the presidency of Madras. After some operations of little moment, a treaty was concluded, by which the English agreed to pay a rent for the disputed territory, and to give him such military aid as he should require in the affairs of his government. The first operation in which this force was to be engaged was the reduction of the fortress of Bangalore, belonging to Hyder Ali, the sovereign of Mysore; and thus were the English brought into collision with that powerful chief. He was one of those bold spirits who rise to eminence in times of civil confusion. From a common foot soldier, or peon, employed in the collection of taxes, he rose to high command, to wealth and dominion, and finally to the rank of sovereign prince. The nizam, who had joined with the English against Hyder, soon became his ally, and their united forces made incursions into the Carnatic. Several battles were fought to the disadvantage of Hyder, but these were of little advantage to the English, owing to his superiority in cavalry, with which he laid waste the country to the very gates of Madras, and struck terror into the president and council. The nizam, however, wearied of the war, quitted the alliance of Hyder, which so elevated the confidence of the Madras presidency that they resolved on the invasion of Mysore. But Hyder anticipated their designs, and having by his masterly tactics artfully drawn the English army to a distance from Madras, he suddenly appeared at the head of 6000 cavalry before that city, having marched 120 miles in three days, and so alarmed the presidency, that a treaty, offensive and defensive, was concluded in April 1769, by which it was also agreed that all conquests should be mutually restored.

Destruction of the Rohillas.

At this time the Mahrattas, humbled for a time by the defeat of Paniput, now began to renew their incursions into the northern provinces, and greatly to the alarm of the subahdar of Oude, who dreaded any confederacy between them and the Rohilla chiefs or Afghans, a hardy race from the north, who having frequently aided the imperial armies, were rewarded with lands in the fertile district between the Ganges and the mountains, and to the west of the Oude territories. One of their chiefs, Nujeeb ad Dowlah, had been chosen by Abdallee Shah, on his departure from Delhi, after the battle of Paniput, as the imperial deputy. He had ruled the country with singular prudence and success, and had transmitted the government to his son, Zabita Khan, against whom a coalition was now formed by the Mahrattas and the fallen emperor Shah Aulum, anxious to regain his former power. By their assistance the emperor, in the year 1771, entered his capital of Delhi, with all the pomp of imperial dignity. Zabita Khan, unable to withstand their united attack, fled across the Ganges, leaving his fertile and flourishing territories to the devastations of the Mahrattas, to whom they afforded a rich booty. The Rohillas, alarmed by this aggression, proposed to form an alliance with the subahdar of Oude, who on his side was equally dismayed; and through the intervention of the English a treaty was accordingly concluded, offensive and defensive, by which the Rohillas engaged to pay annually to the subahdar forty lacs of rupees if he would expel the Mahrattas from their territories. He made no effort, however, to perform this service; and the Mahrattas, after retiring across the Ganges during the rains, soon returned to ravage the country, and actually extorted a sum of money from Hafiz Rhamet, chief of the Rohillas, as the price of their retreat. In 1772 they besieged the emperor, who had become weary of their alliance, in Delhi; and having entered the city, they extorted from him a grant of the two provinces of Corah and Allahabad, which he held by virtue of a treaty with the English. The subahdar was now really alarmed, and wrote the most pressing letters to the English for aid. A detachment was accordingly sent under Sir R. Barker, to assist in the defence of his territories, when the Mahrattas were recalled to their own country about the end of May 1773. The subahdar, freed from danger, now became ambitious in his turn, and was intent, either by force or fraud, upon gaining possession of the Rohilla country. With this view, in a meeting with Mr Hastings in October 1773, it was agreed that the English troops should assist in the conquest and extermination of the Rohillas, and that forty lacs of rupees should be paid for this service. In fulfilment of this iniquitous compact, the united forces, the British under Colonel Champion, entered the Rohilla territories in 1774, and on the 23d of April a battle was fought, in which the unfortunate Rohillas, after an obstinate defence, were defeated, and their gallant chief Hafiz Rhamet, slain while rallying his troops; the subahdar and his army, in the mean time, behaving with shameful pusillanimity. The whole country now lay at his mercy, and he proceeded to execute his diabolical purpose, which, as he had expressly informed the English, was the *extermination* of the Rohillas. Never, probably, says Mr Mill, were the rights of conquest more savagely abused; man, woman, and child were given up to the destroying sword, and the country was reduced to a desert.[1] At length it was agreed that Fyzoolla Khan, the remaining chief of the Rohillas, should surrender one half of all his effects to the subahdar or the vizir, and should receive in Rohilcund a jaghire of fourteen lacs and 75,000 rupees. With regard to the Mogul emperor, the twenty-six lacs of rupees hitherto paid to him as his share of the revenues of Bengal, Bahar, and Orissa, were withdrawn, because he had accepted the aid of the Mahrattas in his late attempt to regain the throne of his ancestors. He was also deprived of the provinces of Corah and Allahabad, granted to him in terms of a former treaty with the Company.

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[1] *History of British India*, vol. iii. p. 509.

Sketch of the Mahratta powers.

On the west coast of India, the presidency of Madras was at this period involved in disputes, which ended in a war with the Mahratta states; and, with a view to the subsequent history of India, it may be necessary here to give a brief account of these disputes, and of the different Mahratta powers who had now risen to political importance in India. In the Mahratta government, as originally constituted, the sovereign or rajah was assisted by a council of eight Brahmins, the chief of whom bore the title of peshwa; and in course of time this principal minister of state, on whom devolved the duties of government, usurped all the real power, and the sovereign became a mere pageant in his hands. In the reign of the rajah Sahoo, the third in succession from the brave and politic Sevajee, the founder of the Mahratta power, this revolution had been insensibly brought about. He was a weak prince, devoted, as most princes are, to ease and pleasure, and leaving to Kishwanath Balagee the chief powers of the state. He assumed the name of Row Pundit, or chief of the Pundits, or learned Brahmins, and was invested by the rajah with a *sirpah* or robe of office, with which ceremony the peshwas have ever since been installed into their sovereign dignity. Custom or policy had so completely sanctioned the usurpation of supreme power by the peshwa, that Kishwanath had quietly transmitted his dignity and influence to his son Bajerow, who confined the rajah as a sort of state prisoner to Satarah, whilst he himself resided at Poonah, the future capital of the Mahratta states. Bow, the son of Bajerow, being slain at the battle of Paniput, the office of peshwa descended to his nephew, who had two sons, Madhoo Row and Narrain Row, the eldest of whom, Madhoo Row, a minor, succeeded to his father's dignity at his death, and the guardianship of the peshwa now devolved on Ragonaut Row, more commonly known under the name of Ragoba. The council of state, consisting of the Brahmins, now made an effort to regain their lost influence; and intriguing with the mother of the peshwa, they succeeded in sowing division between the nephew and the uncle, and finally in stripping him of his power. Madhoo died at an early age in 1772, and appointed Ragoba to be the guardian of his brother Narrain Row. But he was by the same influence again stripped of his power; and dissensions having arisen amongst the council of Brahmins, or Mutseddies as they are also called, a conspiracy was formed, which ended in the murder of the young prince, when Ragoba was again acknowledged peshwa. But he was still thwarted by the ministerial factions of the Brahmins, and the consequence was a civil war, which was carried on with various fortune, but terminated at length in the flight of Ragoba from his dominions. The presidency of Bombay had been extremely anxious to procure the cession of the island and peninsula of Salsette and Bassein, as adding much to the security and value of Bombay. But all their efforts were in vain. Ragoba uniformly refused to give them up on any terms. He had now retreated to Surat; and in the low state of his fortunes the negotiation was renewed. In the mean time the presidency were informed by their resident at Goa that the Portuguese were making preparations for the recapture of their former possessions, especially of Salsette and Bassein. No longer hesitating, they sent a force from Bombay, which carried by assault the principal fort in Salsette on the 28th of September 1774, and afterwards took possession of the island; in March 1775 they concluded a treaty with Ragoba for the surrender of these places, with other advantages; and in return they sent a body of troops under Colonel Keating, which joined his army in April, about fifty coss from Cambay; and this combined force, amounting to 25,000 men, now advanced for the purpose of penetrating to Poonah before the commencement of the rains. The enterprise failed for the present, but the armies were quartered in convenient positions; and having concluded a favourable treaty with the rajah of Gujerat, who had agreed, amongst other conditions, to advance the sum of twenty-six lacs of rupees, they prepared, with a friendly country in their rear, and greatly increased resources, to advance to Poonah the next campaign. But all these promising schemes were now frustrated by the interference of the Bengal council, which had been invested with supreme authority over the other settlements in India; and the alliance formed by the presidency of Bombay with Ragoba, the peshwa, and indeed all the other proceedings, were severely condemned by the governor-general and his council. The council at Madras were ordered peremptorily to retrace their steps, to withdraw their troops from those of Ragoba, and to give him no further aid; and they themselves proceeded to treat, by means of their own agent, Colonel Upton, with the opposite faction of the Brahmin ministers. A long and perplexed negotiation now ensued, which had nearly ended in war, when a treaty, that of Poorunder, was signed on the 3d of June 1776, by which the Mahratta ministers agreed to surrender Salsette, and the English Bassein; and the unfortunate Ragoba finally retired to Surat with only two hundred attendants.

War h the M rattas

The Mahratta power, which was spread far and wide in India, was now weakened by the same divisions which had occasioned the downfall of the Mogul empire. All indeed acknowledged their allegiance to the peshwa, the representative of Sevajee, their founder, and the nominal head of the whole confederacy. But there was no unity in the component parts of their wide-extended empire. They no longer obeyed one common impulse. The military chiefs to whom were confided the more distant provinces threw off the yoke of sovereign authority, as it was gradually relaxed; and thus, from the extension of the Mahratta power, arose various independent potentates, who, though united by a common tie, yet waged war with each other, or with the peshwa, their head, on any provocation or prospect of advantage. The most important of these independent states was, 1*st*, that of the Bhonslas, which included the extensive province of Berar, together with Cuttack, a part of Orissa; 2*d*, the province of Gujerat, broken off from the Mogul empire by Pillagee Guicowar, or the herdsman; 3*d*, the independent chiefs, Holkar and Scindia, whose names figure in the future annals of India, and who ruled over extensive territories in Malwah and in the regions bordering on the territories of Berar and Oude. Other inferior chiefs, offsets from the main stock, possessed smaller portions of territory in different parts; and the internal relations of Hindustan were thus more than usually complicated, and presented a wide field for politics and intrigue.

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The presidency of Madras, as well as the other two presidencies of Bengal and Bombay, were now deeply involved in the disputes of the native powers. The nabob of the Carnatic, Mahommed Ali, was incapable of ruling or of defending his country against the Mahrattas or Hyder Ali, and he relied entirely upon the English for protection and for the collection of his revenues. The disorder of his finances, already great, was much increased by the extortions of his allies, who were insatiable in their thirst of gold; and funds failing, as in Bengal, to supply their exorbitant demands, they anxiously sought elsewhere the means of relief. The kingdom of Tanjore, by the prudence of its sovereign, had enjoyed peace amidst the wars and desolations of surrounding countries; his powerful neighbours, supposing that he had amassed great wealth, mustered up against him a world of complaints, of which he readily showed the futility; and when he saw that his ruin was resolved on, that he was to be stripped of his dominions, and that he and his family were to be put to death or imprisoned for life, he pleaded for mercy with the most affecting earnestness; but avarice had extinguished every softer feeling in the breasts of his oppressors. The troops were ordered to advance; the rajah agreed to terms which he could not fulfil; and failing to pay within the exact time which the contribution imposed upon him, though he made the fairest offers, Tanjore, his capital, was taken by assault, and he and his family were delivered into the power of the nabob. This act of oppression, encouraged at first by the directors, was afterwards disapproved by a court of proprietors; and Lord Pigot was sent out as governor of the presidency, to restore the rajah, and to enforce economy and reform. The corrupt and dishonourable practices of the Company's servants were nowhere carried to a greater length than at Madras. They were in the habit of lending, or pretending to lend, money, to the nabob, at an exorbitant interest, and to receive in security assignments on the land. Paul Benfield, with a salary of some hundred pounds a year, had assignments on the lands of Tanjore to the amount of L.234,000; and Sir Thomas Rumbold, with a salary of L.20,000 a year, remitted to Europe the first year he was in office L.45,000, and in the two subsequent years a further sum of L.119,000, alleging that he had property to this amount in India before he left Europe. The lands belonging to the Company were let at an under rate to the renters, and large bribes received in return; and it was by such unworthy means that the servants of the Company so quickly acquired their enormous fortunes. Lord Pigot, in carrying into effect the views of the directors, by restoring the rajah of Tanjore, and opposing the existing abuses, was resisted by a faction. He was at last put under arrest by the members of his own council, and died after a confinement of about eight months. The authors of this violence were afterwards tried in England, and condemned to pay a paltry fine of L.1000, which was no adequate punishment for such an offence, and, to men of their fortunes, no punishment at all.

vasion the Car- tic by yder Ali.

The growing ascendency of the English naturally excited the hostility of the native powers; and Hyder Ali, irritated by their increasing influence, and by their breach of the treaty of 1769, in refusing the aid which he demanded, was now preparing to assail them with the whole weight of his power. He accordingly made peace with the Mahrattas, who formed, with the Nizam Ali and Hyder, a coalition for the expulsion of the English from India. In the year 1778, war having commenced in Europe between France and England, the presidency of Madras besieged and took Pondicherry, and Mahé, a small fort, the only remaining possession of the French on the coast of Malabar, and ranked by Hyder amongst his dependencies. Irritated by this new offence, he assembled his army, and having seized and guarded the passes of the Eastern Ghauts, through which alone the Carnatic would be invaded from Mysore, he suddenly poured down on the country below with a mighty host of 100,000 cavalry and 20,000 infantry, besides the European troops of Colonel Lally, of undoubted bravery and experience in war. Every thing gave way before this overwhelming flood of invasion; and the cavalry inundating the open plains, the inhabitants fled from their homes to the woods or the mountains, whilst the unresisted invader laid waste the country with fire and sword for many miles round Madras, and even threatened the city itself. The council were confounded by the intelligence of this sudden calamity. They were apprized on the 21st of July that Hyder had come through the pass, that he had next day plundered Porto Novo on the coast, and Conjeveram, not fifty miles from the capital. Each succeeding day brought its tale of calamity, and on the 10th of August Madras was alarmed by the approach of the enemy's horse, and the inhabitants of the open town began to take flight. The governor and council were very indifferently provided for the fearful struggle in which they were engaged. They were destitute both of money and provisions; their small force was scattered throughout the country; and, lastly, their councils were distracted by the dissensions of the civil and military authorities. Immediate action, however, was necessary, in order to avert impending ruin. The scattered troops were therefore directed to assemble at St Thomas' Mount, for the defence of the capital. Colonel Brathwaite's detachment from Pondicherry having joined the main body on the 18th of August, an express was sent to Colonel Baillie at Gumeroponda, about twenty-eight miles from Madras, directing him to repair to Conjeveram, whither the main army now advanced under Sir Hector Munro, consisting of 1500 Europeans and 4200 Sepoys, with a train of artillery, and arrived after a distressing march of four days, during which two hundred men belonging to the seventy-third regiment were left lying on the road. They found the town of Conjeveram in flames, large bodies of the enemy's cavalry advancing on both flanks, and no appearance of Colonel Baillie's detachment, which had been impeded in its march for a day by a small torrent swollen with the rains. Hyder Ali having learned from his spies the movements of the English army, abandoned the siege of Arcot, in which he was engaged, and, upon the 3d of September, the day on which Baillie's detachment crossed the river in its advance to the main body, he encamped at five miles distance in front of the English army, near Conjeveram; thus interposing between Colonel Baillie's detachment and the English forces; and he sent his son Tippoo with 30,000 cavalry, the flower of his army, and 8000 foot, with twelve pieces of cannon, to cut off the troops under Colonel Baillie, who had now arrived at a small village about fifteen miles distant from Sir Hector Munro's army, the movements of which he himself watched in the neighbourhood of Conjeveram. The troops under Colonel Baillie gallantly repulsed the repeated charges of Tippoo's numerous cavalry; and being now joined by a detachment under Sir R. Fletcher, sent to their aid by General Munro, they resisted long and bravely all the attacks of the overwhelming force by which they were surrounded; they even at times became the assailants; and an attack by five companies of Sepoys on the enemy's guns, which had begun to do great execution, spread amongst them such terror and confusion, that a seasonable and bold assault of their camp would, it is thought, have completed their route. The English commander maintained the same position till next morning, for which he has been much blamed; and when, at five o'clock, he began the day's march, he was assailed by the whole army of Hyder, who had left his ground without shifting his tents, to conceal his design. Colonel Baillie, with his handful of men, still maintained his ground in spite of the enemy's superior fire and the fury of his closer attacks, when, by an accident, the blowing up of two tumbrils, the English line was not only disordered, but the ammunition was destroyed, and the guns disabled. But though their fire was now silenced, they maintained a gallant resistance till three o'clock in the morning, when the commander, Baillie, despairing of relief, sent a flag of truce to the enemy; and the men having laid down their arms on receiving a promise of quarter, Hyder's troops rushed on them with savage fury; and, but for the humane inter-

Colonel Baillie's detachment cut off.

position of the French officers, would have massacred all who survived. After this disaster, Sir Hector Munro retreated to Madras, whilst Hyder returned to the siege of Arcot, which was taken by storm on the 31st of October, with an immense quantity of ammunition and military stores.

Progress of the war with Hyder Ali.

On the intelligence of Colonel Baillie's disaster, the supreme council of Bengal requested Sir Eyre Coote to take the command of the army in the Carnatic; and on the 17th of June 1781, the English force, consisting of 7000 men and 1700 Europeans, marched from the encampment at Mount St Thomas. Hyder now changed his plan of operations, and detached different divisions of his force against the strong places of the Carnatic. But he was so overawed by the arrival of a new commander with reinforcements, that he abandoned the siege of Wandewash, and of every place which he had invested, and retired without even disputing the passage of the Palaar. The English took the opportunity of this short respite to secure possession of Pondicherry, and to disarm the inhabitants, who had revolted. Hyder having received large reinforcements, resumed the offensive; and as the plan of the English was to march southward to protect the district of Tanjore and Trichinopoly, he resolved to oppose their advance to Cuddalore. A battle was fought on the 1st of July 1781, in which Hyder was driven from his strong position with great slaughter. On the 27th of August, another battle was fought on the ground where Colonel Baillie's disaster had occurred, when he was again defeated, after an obstinate action, in which the English suffered severely; and, some weeks afterwards, he experienced a third defeat, with greater loss than before. Far from being discouraged, this warlike prince proceeded to lay siege to Vellore, eighty-eight miles south-west from Madras. Sir Eyre Coote, though he had placed his army in cantonments, advanced to its relief, and forced his way through a strong pass guarded by the enemy's force. Returning by the same pass, he was again attacked at a disadvantage with the utmost vigour; but Hyder's cavalry suffered so severely from the English artillery that he retired with loss, while Sir Eyre Coote returned to his cantonments near Madras. Whilst the war was thus carried on with doubtful success in the eastern districts of the Carnatic, hostilities now commenced on the opposite coast of Malabar. The English detachment, by which the French settlement of Mahé was captured in 1779, had since that period occupied the fortress of Tellicherry, when it was besieged by a superior force of Hyder's tributaries. Major Abingdon, the commander, having received a reinforcement from Bombay on the night of the 7th January 1782, assaulted the enemy's lines, and threw their whole army into confusion; and he soon afterwards gained possession of Calicut. Here he was joined by Colonel Humberston Mackenzie with a thousand Europeans, and offensive operations were undertaken with vigour and success, when the army returned in May, as the rainy season approached, to its cantonments at Patacalah, in Calicut. Operations were resumed in September with the reduction of a strong fort, and the army had arrived at Palacatcherry, when, being surprised in a narrow defile, the whole baggage and ammunition was captured. A retreat to the coast was the only alternative now left to the English, in the course of which they were attacked from every thicket, both on their flank and rear, and harassed in their march, by 20,000 horse under Tippoo. Arrived at the town of Paniany, on the Malabar shore, their lines were assaulted by the enemy's force in four columns, including Lally's corps, when the forty-second regiment advancing to the charge, repelled the enemy. Tippoo now hearing of his father's death, immediately departed to take the necessary measures for securing his succession to the throne.

In the south of the Carnatic a French fleet landed 2000 men at Porto Novo early in 1782; and Tippoo having arrived with a large detachment from Hyder's army, by a brilliant and successful movement surrounded Colonel Brathwaite's force, consisting of a hundred Europeans, five hundred Sepoys, and three hundred horse, encamped upon the Coleroon, before there was the smallest suspicion of his march. Forming a hollow square, this little band held out for twenty-six hours, and repulsed every attack, until, exhausted with incessant conflict, they were at last broken by a charge of the French under Lally, and would have been all massacred as formerly, but for his vigorous and humane interference. Hyder was now enabled, by the succours he had received from France, to invest Cuddalore, which quickly surrendered, when he determined to undertake the siege of Wandewash. Its importance brought the army of Sir Eyre Coote to its relief, when Hyder still declined the hazards of a battle. The English general then proceeded to the attack of Arnee, the great depository of the enemy's warlike stores and necessaries. But Hyder outstripping the slow movements of the English force, hung upon their march; and, whilst they were galled by the attacks of his cavalry, he dexterously detached a division of his army, which carried off all his treasure from Arnee, and reinforced the garrison. In the retreat to Madras, after these operations, a regiment of European cavalry, drawn into an ambuscade by the skilful tactics of the enemy, was either killed or made prisoners. Whilst the English army was cantoned in Madras, Hyder, ever active and enterprising, was concerting with the French admiral an attack on Negapatnam, a settlement of the Dutch, which had been conquered by the English at the commencement of the Dutch war in 1780. But the French fleet having been brought to an action by the English, was prevented from co-operating in this well-planned enterprise. On the return of the army to Madras, Lord Macartney, who had arrived as governor in December 1781, now concerted a plan for the recovery of Cuddalore. But the admiral steadily refused co-operation in this, or apparently in any other operations of the land forces. On the 15th of October, one of the most dreadful tempests ever known occurred at Madras; the shore was in a short time strewed with the wreck of a hundred trading vessels, and famine raged in the city, multitudes daily perishing for want. The enemy had fortunately no information of the helpless and starving condition of the place, and considerable supplies of provisions were received from Bengal and the Circars. Hyder Ali died in December 1782, at the age of eighty years; and this event produced a great and favourable change of affairs. The Mahratta war, undertaken in favour of the claims of Ragoba to the dignity of the peshwa, which had continued since 1778, was now also concluded by a peace. The capitulation by which a British force that had invaded the Mahratta country surrendered, having been violated, the Mahrattas joined the confederacy against the English. But by the great successes of General Goddard, who, in the course of three months, from January 1780, had reduced the province of Gujerat, and completely defeated Scindia, the Mahratta general, they were now detached from the alliance of Hyder, the great enemy of the English.

Tippoo, after he joined his army in the Carnatic, undertook no operation of consequence, and he was recalled to the defence of his own territories, which were assaulted by the enterprising movements of the English armies, both from the west and from the south. About the beginning of January 1783, a force concentrated at Merjee, on the western coast of India, about 300 miles north of Paniany, under General Mathews, after storming the forts of Onore, Aranpore, and Mangalore, on the sea coast, with the slaughter of every man taken in arms, laid siege to Bednore, a rich capital of one of the Mysore provinces, which soon surrendered. A vast treasure, amounting to L.800,000 in pagodas, besides jewels, was found in this place, which immediately occasioned disputes, in consequence of the general refusing to divide the booty among the captors. He was on this account superseded by the presidency, and the command given to Colonel Macleod. But the hope of spoil appears to have corrupted the virtue of the army, which was dispersed in plundering detachments over the country, when Tippoo suddenly took possession of Bednore, making prisoners of the English garrison, which capitulated, with General Mathews, and sending all of them in irons to the strong fortresses of Mysore. Mangalore was next besieged, and taken after a gallant resistance, on the 23d of January 1784. In the mean time Colonel Fullarton, who commanded a force in the Southern Carnatic, having reduced to order the districts of Madura and Tinnevelly, and taken, in April, May, and June, the forts of Caroor, Dindigul, and Daraporam, advanced to the strong fortress of Palacatcherry, which surrendered after a short siege. Coimbetore was taken possession of in November, and every preparation was made for advancing to Seringapatam, and terminating the war by the capture of the enemy's capital, when a treaty was signed on the 11th of March 1784, upon the general basis of a mutual restitution of all conquests.

The state of affairs in Bengal under the administration of Mr Hastings now claims our attention, and we shall endeavour briefly to describe the leading transactions of that memorable period. The new council, to whose care was committed the administration of India, and of which Mr Hastings was president, commenced its deliberations in October 1774, with an inauspicious appearance of mutual coldness and jealousy, which quickly broke out into open dissension. The Rohilla war was the first subject of deliberation, and it unhappily afforded too good grounds for doubt and for inquiry. Other subjects succeeded, equally difficult to handle without offence, as they involved the governor in a suspicion of corruption in the business of the revenue. The rannee of Burdwan, a widow who enjoyed an extensive district, accused her agent the duan of corruption, and the English resident of being bribed to support or to connive at his iniquities. In the accounts that were presented to the council, a sum of 15,000 rupees was charged to Mr Hastings, and 4500 to his native secretary. Another accusation of the same nature was preferred by one of the natives, namely, that the phouzdar of Hooghly, out of the salary of 72,000 rupees which he received from the Company, returned 36,000 to Mr Hastings, and 4000 to the native secretary; and Mr Grant, accountant of the provincial council of Moorshedabad, produced a set of accounts, from which it appeared that Munny Begum, a concubine of the late Meer Jaffier, who had been appointed to the guardianship of the nabob by Mr Hastings, had received 967,693 rupees[1] more than she had accounted for; and when pressed on this subject, she told that she had given 150,000 rupees to Mr Hastings for entertainment money, which was at the rate of L.73,000 per annum, and the like sum to Mr Middleton, the agent of Mr Hastings. A still more serious charge was brought forward by the rajah Nundcomar, who had been the agent of Mr Hastings in the prosecution of Mahommed Reza Khan, duan or manager of the revenues of Bengal, whose embezzlements, as well as those of Shitabray, he now accused the governor-general of overlooking; and further exhibited the particulars of a sum of 354,105 rupees, which he affirmed that he had accepted for the appointment of Munny and Goordass to their respective dignities and powers. In answer to these accusations, Mr Hastings chiefly pleaded his dignity as governor-general. He resented them as personal insults; and when it was proposed to inquire into them by the other members of the board, he lost all calmness, and accused them of a design to supersede him in his office. "I declare," he said, "that I will not suffer Nundcomar to appear before the board as my accuser. I know what belongs to the dignity and character of the first member of this administration. I will not sit at this board as a criminal." After this he dissolved the council, in virtue of a power which he assumed as president. The majority declared the dissolution void, and continued the inquiry, when Nundcomar declared the particular sums which he himself had paid to the governor-general, gave in the names of several persons who were privy to those transactions, and presented a letter from Munny Begum, which, on examination of the seal, was found to be authentic, mentioning a gift of two lacs (L.20,000) given to the governor by herself. The governor being called upon to refund, refused to acknowledge the authority of the council, and returned no answer. At this critical stage of the proceedings, a prosecution was instituted against Nundcomar, at the instance of the governor-general and his supporters in the council, which, after some ineffectual proceedings, was dropt. But a few days afterwards, Nundcomar, at the suit of a native, was arrested on a charge of forgery; tried before the supreme court by Sir Elijah Impey and a jury of Englishmen, though it was far from clear that the court had any jurisdiction over him, being a native of Hindustan; convicted on doubtful and contradictory evidence; and finally executed, amidst the tears and loud lamentations, and even shrieks of horror, of a vast assemblage of his countrymen. This transaction, viewed in all its bearings, leaves a stain on the character of Hastings, from which it has never been relieved by the zealous testimonials of his friends. In reviewing the whole evidence and circumstances of the case, we cannot well doubt, that if Nundcomar had not accused Mr Hastings, he would never have been arrested; that his real crime, therefore, was the charge which he had brought against Mr Hastings, and not the alleged forgery; and hence that he was tried and executed because he was a witness whose testimony it was more easy to put out of the way than to confute. If this be a just inference, Mr Hastings must be considered as guilty of murder, committed under the forms of law. This, we fear, is the character which must be fixed upon him by the impartial verdict of history; and his political merits, however magnified by his admirers, cannot be accepted for a moment as any palliation of his moral guilt.

In adverting, as we shall now do, to the transactions of the governor-general with the independent or tributary states of India, it may be observed, that when he assumed the government of Bengal, the Company still laboured under great pecuniary difficulties. Disorder and waste pervaded every department of the administration; the Company's servants were intent, as we have seen, on enriching themselves rather than their masters; and the consequence was a constant want of funds for the public service. The arduous duty of providing these now devolved upon the governor-general; and the necessities of the state, if they do not justify, afford at least a key to some of those dark, and, we must add, atrocious transactions, which distinguished his administration. Bengal had been exposed to such heavy exactions that the country was exhausted; and Mr Hastings, instead of adopting economy, and improving the revenue at home, sought relief in the plunder of foreign princes, who were now laid under contribution to the necessities of the state. The rajah Cheyt Sing, who ruled at Benares, was the son of Bulwunt Sing, who had sided with the English in the war with Sujah Dowlah, subahdar of Oude, and who had been confirmed in his inheritance by the British for a fixed tribute, which was paid with an exactness not very usual in India. Mr Hastings proposed in 1778 to increase this contribution; and because the rajah pleaded poverty, and required time, he became offended, replied to him in harsh and imperious terms, refused to allow time for raising the money, and threatened military execution in case of delay. These exactions were renewed from year to year, and increased, the rajah remonstrating in the most humble terms, and being treated on account of his remonstrances as a delinquent whom it was necessary to punish. "I was resolved," says Mr Hastings, "*to draw from his guilt the means of relieving the Company's distresses.*" This was truly his object, and he accordingly found out guilt in the whole conduct of the rajah, though it was meek and humble, such as the weak naturally assume when they are in the power of the strong. At last Mr Hastings proceeded to Benares, and, notwithstanding the supplications of the rajah, craving forgiveness if he had offended, on the ground of his youth and inexperience, he ordered him under arrest; a tumult arose between the Sepoys and the inhabitants, in which the former were all put to the sword; the rajah fled; war commenced, which ended in his discomfiture, and he was dethroned. His mother, the wife of Bulwunt Sing, the faithful ally of the British, took refuge in the fort of Bidgegur; she surrendered her treasure on condition of being allowed protection for herself and female attendants. But the articles were shamefully violated; and she and her followers were plundered of their effects, and their persons subjected to the rude examination of the licentious soldiery and the followers of the camp. In a letter, Mr Hastings says, "I think that every demand she has made to you, except that of safety and respect for her person, is unreasonable." He afterwards adds, "I apprehend she will contrive to defraud the captors of a considerable part of the booty, by being suffered to retire without examination. But this is your consideration, not mine. I should be sorry that your officers and soldiers lost any part of the reward to which they are so well entitled." The ideas implied in this hint not to suffer these illustrious females to pass without examination cannot be mistaken; it is sufficient to sanction the grossest outrages; and it appears, indeed, that those to whom it was addressed were not slow to profit by the instructions given them.

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[1] Nine lacs sixty-seven thousand six hundred and ninty-three rupees. A lac of rupees is 100,000, and a crore is 100 lacs, or ten millions. We have adopted the English mode of notation, as more familiar to the reader.

The treasures of Cheyt Sing and his widowed mother fell so far short of the expectations of Mr Hastings, that they did not even pay the expense of quelling the revolt which he had occasioned; and hence this transaction, impolitic as well as unjust, increased the embarrassments of the Company. The governor-general was therefore compelled to look elsewhere for treasures that might be profitable to the state, and he fixed his eye on the two princesses of Oude, known by the name of the Begums, the one the mother of Sujah Dowlah, the late nabob, eighty years of age, and the other his widow, and mother of the reigning nabob, who were possessed of treasures to a great amount, and of jaghires or estates, from which they maintained their own state and dignity, and the numerous families of the preceding nabobs, with a suitable train of attendants. The nabob of Oude, Sujah Dowlah, had long been unable to pay the contributions imposed on him by the English; he was in arrear to the amount of L.1,400,000, and Mr Hastings now entered into a negotiation with him for the seizure, or resumption, to use the official phrase, of the jaghires or estates which belonged to the Begums, for the purpose of enabling him to pay up this arrear. It is unnecessary to dwell on the proceedings by which a son was persuaded or compelled to aid in the spoliation of his mother and grandmother. Suffice it to observe, that Mr Middleton, the agent of Mr Hastings, in order to extort the surrender of the treasure from the princesses, ordered the zenana, the dwelling of the princesses at Fyzabad, with their numerous families, to be blockaded by troops; and these measures failing to obtain the treasures, the eunuchs Jewar Ali Khan and Behar Ali Khan, the confidential servants of the princesses, were imprisoned and put in irons, and were kept from all food, and exposed to secret tortures. These dreadful measures so wrought upon the feelings of the princesses, that the elder Begum surrendered the treasure to the amount of the nabob's bond given to the Company in 1779–1780. But another balance still remained, and new severities were applied to the ministers of the princesses, which drew from them an engagement to complete the demanded sum; but they were still tortured; and though the princesses now delivered their whole effects, even to their table utensils, and had paid upwards of L.500,000 before the 23d of February 1782, and the resident himself reported "that no proof had been obtained of their having more," yet the prisoners were not released, as they earnestly entreated. On the contrary, they were threatened with greater severities to enforce a payment of L.25,000, according to their account, and of L.50,000, according to the resident, still due on the extorted bond; and though they had now lain two months in irons, were sickly, and the officer who guarded them wrote to the resident Middleton, craving that their irons might be taken off, and that they might be allowed to walk in the garden, the nature of his orders allowed no mitigation of their sufferings; they were even threatened a few days after, on the 1st of June, with being removed, and were actually removed to Lucknow, where they were tortured in secret, of which the letter addressed by the assistant resident to the commanding officer of the English guard affords the odious evidence.[1] The cruelties to which the women and children of the zenana, composing the household of the late rajahs, were exposed, are truly shocking to humanity. They were distressed for want of food to that degree that they uttered the most piteous cries, and were even driven to the extremity of appearing publicly before the Sepoys, an exposure dreaded more than death by Hindu females of rank; and these barbarities were executed under the orders of Englishmen, a disgrace to the name, and by English officers, unwilling agents, we may well believe, in such cruelties, and whose letters describe the extreme sufferings of these helpless females. In the letter of the commanding officer, it is said, "they are in a starving condition, having sold all their clothes and necessaries, and now have not wherewithal to support nature." "Last night the women of the zenana assembled on the tops of the buildings, crying in the most

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[1] We subjoin the two letters. The first, dated January 1782, is addressed by the resident to the officer guarding the eunuchs: "Sir,—When this note is delivered to you, I have to desire that you order the two prisoners to be put in irons, keeping them from all food, &c. agreeable to my instructions of yesterday. (Signed) NATH. MIDDLETON." Letter of the assistant resident to the commanding officer of the English guard: "Sir,—The nabob having determined to inflict corporal punishment upon the prisoners under your guard, this is to desire that his officers, when they shall come, may have free access to the prisoners, and be permitted to do with them as they shall see proper."

lamentable manner for want of food; that for the last four days they had got a very scanty allowance, and that yesterday they had got none. The melancholy cries of famine are more easily imagined than described."[1] These cruelties were continued for nearly a year, and persevered in after all the treasures were surrendered, in the vain hope that some secret hoard might still be retained, which torture would compel them to bring forth. Amongst other particulars, it may be added, that Mr Hastings received from the nabob a present of L.100,000, and craved permission to accept it from the directors, whose orders were positive against the receipt of presents. These princesses were accused of aiding in the rebellion of Cheyt Sing. But of this charge no proof beyond mere rumour was ever adduced; and, in considering all the circumstances of the case, it appears to have been invented as a pretext for despoiling them of their wealth. Mr Hastings resolved to draw from the guilt of Cheyt Sing, to use his own words, the means of relieving the Company's distresses; and the same patriotic motive seems to have dictated the accusation against the Begums. In other countries it is the poor, those who are discontented and in debt, that are turbulent; but here it is the rich, aged women of fourscore and upwards, living in affluence and splendour under the protection of the English, that are accused of rebelling against their benefactors, and of raising disturbances which could bring no advantage, but, on the contrary, were fraught with danger, to them. The directors in Europe disapproved of these proceedings against the princesses; they saw no evidence of their rebellion; and they ordered their estates to be restored, and an asylum to be offered them within the Company's territories. But the authority of the directors was little respected in India, the governor-general never wanting a pretext for disobeying their express commands. It appears, however, that some provision was afterwards made for these princesses, and for the restoration of a portion of their estates. The remaining transactions of Mr Hastings before he quitted Bengal relate to Fyzoolla Khan, who survived the ruin of the Rohilla nation in 1774; and he now entered into a scheme with the nabob of Oude for dispossessing him of his dominions. In a journey which he afterwards undertook to the upper provinces, in order to regulate the affairs of Oude, he was a witness to the desolation of the country from the exactions of his own deputies, a country which was flourishing and happy under the milder sway of Cheyt Sing.

On the 8th of February he resigned his office and embarked for England. For a more full detail of the conduct and character of Mr Hastings, the reader is referred to the work of Mr Mill, which contains a clear and well-digested view of all the dark and complicated transactions of his stormy administration. The calm and philosophical tone maintained by Mr Mill; his impartiality and love of truth and justice; and the interest which he uniformly manifests in the cause of suffering humanity, give a peculiar value to his work as a history. In his estimate of Mr Hastings' character, he seems to consider it due to truth to state the difficulties and temptations under which he acted, as to a certain extent palliating his guilt. We may remark, however, that crimes, especially those of a deep dye, are never committed except under strong temptation; and when we consider that those of which Hastings is accused are tyranny, extortion, and corruption in his high office; cruelty, the secret torture by his agents of innocent individuals, by means of famine, stripes, and imprisonment; violence threatened to females by the same agents as the means of extortion, he chiding them all the while for delay; his bargain for the extermination of the Rohillas by fire and sword; and the provinces of Oude and Benares reduced, under his unhappy rule, from contentment and prosperity to desolation; we can scarcely admit the palliations suggested by the candour of the historian. Mr Hastings was impeached, on his return to Europe, before the House of Peers, of high crimes and misdemeanours, of which he was declared innocent by a great majority of his judges. But there were various circumstances which detracted from the value and authority of this acquittal. The House of Lords, from its constitution and character, is unfit to act as a judicial tribunal. It is a political assembly, consisting of the two opposite parties, the one against, and the other in favour of the ruling power; it is thus exposed to the corrupting influence of politics, and is generally ruled, even in its judicial capacity, by the minister of the day, of which, in our more recent history, we have had ample proofs. It wants impartiality, therefore, that essential attribute of a court of justice; and there were, besides, in the present case other sources of delusion. The hope of sharing in the wealth of India had now shed its baneful influence over the land; that hope swayed all the higher classes, including the peers, who lent an unwilling ear to the charges; and this, joined to the reputed favour of King George III. for the accused, rendered the prosecution unpopular. The value of the acquittal was also lessened by the mode of conducting the defence. Mr Hastings was far from courting inquiry; on the contrary, he availed himself of all the legal subtilties of a technical defence. He constantly objected to evidence, and to the production of papers. He acted wisely, if he was guilty, in screening his conduct under legal pleas; but not so if he was innocent, because by resisting inquiry he hindered his innocence from being made clear, to the confusion of his enemies.

The mal-administration of India had now become a standing topic of declamation at home, in which all parties in parliament eagerly joined; and as the privileges of the Company were to expire after the 25th of March 1780, some new arrangement became necessary for the future government of India. Negotiations for this purpose had been begun between the ministers and the directors; and an act was at length passed in 1781, which, besides regulating the dividend, and other financial matters, more fully detailed in the account given at the conclusion of this article, of the commercial transactions of the Company, ordained that the directors should communicate to the ministers all despatches sent to India with respect to revenues, and to civil and military affairs. In 1783 Mr Fox brought forward his celebrated measure for regulating the commercial concerns of the Company at home, and for the better government of their territories abroad. He proposed to supersede the two existing courts of proprietors and directors, by vesting the whole administration of the territories, revenues, and commerce of India, in seven commissioners, to be chosen by parliament; these to have the power of appointing and of dismissing all persons in the service of the Company; nine assistant directors, being proprietors of India stock to the amount of L.2000, to be named by the legislature, and to assist in the details of commerce, and to be under the authority of the superior board. This was the substance of Mr Fox's bill, by which the government of India was transferred from the directors and proprietors to these seven parliamentary commissioners. There were, however, numerous other provisions for securing the punishment of Indian delinquents, for ensuring publicity; and all the serious abuses which had been committed by the servants of the Company were specially enumerated and forbidden. Monopolies were abolished, the land-tax was to be fixed, and it was provided that the zemindars should be reinstated in their dignities and lands.

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[1] See *Hastings' Trial*. Letters of Captain Leonard Jaques, of 6th and 7th March 1782; also letter of Major Gilpin, dated 30th October 1782. At last the unhappy females became desperate from want, and resolved to break into the market-place; and with this view "they arranged themselves in the following order; the children in the front, behind them the ladies of the seraglio, and behind them again their attendants." They were, however, opposed in their intentions by the Sepoys. On the following day their clamours were more violent than usual. It was resolved to drive them back by force. "The Sepoys," it is added, "consequently assembled, and each one being provided with a bludgeon, they drove them by dint of beating into the zenana." (*Letter to the Resident at Lucknow.*)

In 1784 Mr Pitt introduced a new bill for the better administration of Indian affairs, the chief distinction of which from the other was the institution of a board of control, or of six commissioners, to be chosen, not by parliament, but by the king, who were not to supersede the court of directors, but only to "check, superintend, and control" all the acts and concerns which in anywise relate to the civil or military government or revenues of the Company's dominions; and with this view all letters and orders were to be submitted, before being sent out to India, to the inspection of the board, who might alter and amend these as they should deem expedient; and all communications from India were in like manner to be submitted to its inspection, and this board might even transmit orders to India without being submitted to the directors. The power of the court of proprietors was greatly diminished; a secret committee of directors was appointed; a provision was made for enforcing the disclosure by individuals of the fortunes brought home by them from India; and a new tribunal was erected for the trial of offences committed in that country. The nomination of the commander-in-chief was vested exclusively in the king; that of governor-general, presidents, and members of all the councils, in the directors, subject to the approbation of the king; which clause, rendering the approbation of the king necessary, was afterwards repealed, but he was still allowed the power of recall. The servants in India were forbidden to engage in war, to receive presents, or to disobey orders transmitted by the board; and provision was made for the restoration to the zemindars of the lands from which they had been ejected. In the year 1786 no less than three acts were passed for the amendment of this act, by one of which power was given to the governor-general to act without and even against the consent of this council; by another the military was subjected to the civil power; and by a third act, the most efficient clause of Mr Pitt's bill was repealed, which ordained every public functionary of the Company, on his return to Europe, to make a full disclosure on oath of the property he possessed. This was considered as too severe a test for the Company's servants, though it could not have affected those who acted honestly. It is the guilty only who suffer by inquiries of this nature.

Mr Pitt's bill defined rather loosely the respective powers of the board of control and the directors; and the consequence was, that they speedily came into collision. The first question which came under their joint consideration, was the settlement of the nabob of Arcot's debts. These debts were owing to the Company's servants, and it was not very clear that any equivalent had been given for them. Paul Benfield, a principal creditor, who, as we have already mentioned, acted as a junior clerk of the Company, with a salary of some hundreds a year, advanced a claim, which, with interest, amounted to L.592,000. Such transactions, therefore, were of so very doubtful a character, that they presented a *prima facie* case for inquiry; and Mr Pitt's bill accordingly provided that the court of directors "should take into consideration the origin and justice of such demands." But how great was their surprise when the board of control ordered that these debts, some of them contracted in 1767, should be all paid without inquiry, and with the addition of interest at the rate of twelve per cent. The directors remonstrated against this proceeding, but in vain. The board ordered the debts to be paid immediately, though, in a similar case in 1805, the commissioners appointed to inquire into the more modern debts of the nabob of Arcot, out of claims to the amount of L.20,390,570, allowed only L.1,346,796. These facts too clearly point to the parliamentary influence of the East India interest as the true spring of this corrupt transaction; and the same interest also prevailed in subverting the plan which Lord Macartney had adopted for the management of the Carnatic revenues, and in restoring the administration of the nabob, which was a system of misrule that impoverished the country exactly as it tended to enrich the Company's servants. This, and other differences which arose, induced the directors to question the powers of the board of control; and a declaratory act was in consequence brought forward by Mr Pitt explaining these powers, according to the interpretation, not of the directors, but of the ministers. This act vests the real power in the board of control, though in practice a large share both of power and patronage has been still left to the directors.

Lord Cornwallis assumed the government of India in September 1786. He had ample instructions both from the court of directors and the board of control; and he carried into effect several very important reforms, both in the management of the revenue and in the administration of justice, whilst in his arduous contests with Tippoo he fully maintained the honour of the British arms. To the native and dependent powers his conduct was moderate and just; and one of his first cares was to relieve the nabob of Oude from the extortions of the former government, by which the country was impoverished, and in many places deserted and desolate. The wretched condition of the people is described in strong terms by Lord Cornwallis; and he now reduced the annual payment of the nabob from eighty-four lacs, equal to L.940,000, to fifty lacs, and left in his hands the internal government of his country. But the mind of the governor-general was soon engrossed by other and more momentous concerns. Tippoo, who naturally viewed with jealousy the growing ascendency of the British, began to take hostile measures. He descended from the Ghauts with a large military force, and spread alarm along the whole western coast. At length, throwing off all disguise, he commenced an attack on the rajah of Travancore, an ally of the British, and invaded his dominions. Lord Cornwallis now prepared for war. He formed a league with the Mahrattas and the nizam, who agreed to aid with a military force in the approaching contest. The plan of the campaign was, that a division of the British under General Meadows should penetrate through the province of Coimbetore into the heart of the Mysore country, whilst General Abercromby should reduce the territory of Tippoo on the coast of Malabar, and Colonel Kelly remain to protect the Carnatic from the ravages of the enemy. The division of General Meadows marched from the plain of Trichinopoly on the 15th of June 1790, and all the fortresses in the line of its march, namely, Caroor, Daraporam, Erroad, Coimbetore, Sattimungul, Dindigul, and Palacatcherry, were necessarily occupied, by which the army was divided into three bodies, one at Coimbetore, another at Sattimungul, sixty miles distant, and a third at Palacatcherry, about thirty miles in the rear. In this situation, Colonel Floyd at Sattimungul, was attacked and forced to retreat with loss, and with great difficulty effected a junction with General Meadows. The sultan now resolved to attack, and, if possible, surprise the English chain of posts. He retook Erroad; approached Coimbetore, which had been previously reinforced; and afterwards turned to Daraporam, which capitulated. Colonel Maxwell with his corps being ordered to invade Barramahal, the sultan, leaving part of his army to watch General Meadows, hastened to attack, and, if possible, to cut off this detachment. The British, and a regiment of cavalry, inveigled in a defile, were driven back with great loss. But the able dispositions of Colonel Maxwell frustrated any further attempts on the part of Tippoo; and he soon afterwards effected his junction with General Meadows. The sultan having thus succeeded in defeating the original plan for the invasion of Mysore by a rapid march into the Carnatic, arrived before the English depôt of Trichinopoly, whither he was followed by General Meadows, and afterwards to Trincomalee; and thus ended this indecisive campaign. The Malabar country was in the course of three weeks completely reduced under the British power by the force under General Abercromby.

Lord Cornwallis now resolved to assume the command of the army, and, advancing to the Ghaut Mountains in the direction of Velore, to lay siege to Bangalore, and thence to proceed against Seringapatam, the capital of Mysore. Early in February 1791 he was on his march to Velore; and on the 5th of March the English army sat down before Bangalore, which on the 21st was carried by assault; an event which, fixing the seat of war in the enemy's territory, proved decisive of its success. On the 28th Lord Cornwallis began his march from Bangalore, in the course of which he was joined by the nizam's force, amounting to 10,000 cavalry, which were found to be of little service. On the 13th of May the British army reached Anika, about nine miles from Seringapatam, destitute both of provisions and of draught cattle. It was the intention of Lord Cornwallis that General Abercromby, ascending through the passes of the Ghauts from Malabar with the Bombay army, and the Mahratta force under Purseram Bhow, should penetrate into the centre of the sultan's dominions, and co-operate with the main army in the attack of the capital. Of the movements of this force Lord Cornwallis had received no intelligence; and having defeated Tippoo's army in the vicinity of Seringapatam, he now resolved, as the Cavery was too large to be crossed in safety, to ascend to a ford at Cansambaddy, eight miles above Seringapatam. In this march the troops were exposed to unexampled hardships; to disease, from scarcity of food, and of the means of conveyance owing to the complete failure of the draught cattle; and all their calamities were aggravated by the small-pox, which raged in the camp. It was now apparent that the army could only be saved by a timely retreat, and by the sacrifice of the battering train and all the heavy equipments. On the 21st of May, accordingly, the retreat was begun; and immediate orders were sent to General Abercromby to follow the same course, which occasioned a similar destruction of the battering train and other heavy equipments. So great was the destruction, that the ground on which the army of Lord Cornwallis had encamped at Cansambaddy was covered to an extent of several miles with the carcasses of the cattle and horses; and the last sight of the gun-carriages, carts, and stores of the battering train, left in flames, was the melancholy spectacle which the troops beheld, as they passed along, on quitting this deadly camp.

Fortunately for the British army, it was met, before the end of the first day's march, by the allied force of the Mahrattas, under Purseram Bhow and Hurry Punt. Every despatch sent to these chiefs had been intercepted by the vigilance of the enemy, and they were astonished when they learned the disasters which had been occasioned by their delay. Their arrival, which evinced their sincerity in the cause, produced general satisfaction in the British camp, and a conviction, that the ruin of the sultan, though delayed, was now certain and inevitable. Tippoo, overawed by this formidable confederacy, made overtures to Lord Cornwallis for the conclusion of a peace; but that nobleman would listen to no terms of accommodation in which his allies were not included, and which were not preceded by the release of all the prisoners that had been detained during the present and former wars. The arrival of the Mahratta troops, amounting to 32,000 cavalry, however fortunate it might be deemed at the critical moment in which it happened, brought little additional effective strength to the allied army. Their battalions were unwieldy, irregular, and ill disciplined; their force had declined as much as Tippoo's had advanced in improvement; and they were at present far inferior to those troops who, under Madha Row, had defeated Hyder Ali in 1772.

Treaty with Tippoo.

The combined armies amounted to about 80,000 men; and if to these be added four times the number of camp followers, brinjarries or grain carriers, and the carriage department, the number of strangers to be subsisted in the Mysore alone could not be much less than half a million. That no distrust, jealousy, or counteraction, should have disturbed the combined operations of such an immense multitude, must be ascribed to the unexampled moderation and the vigilant conduct of the commander-in-chief. Such a vast army had never taken the field in India in the British cause; yet no murmurs, nor even the slightest appearance of distrust, were ever manifested by the allies towards the British commander. They submitted with implicit confidence, not only to his arrangements in carrying on the war, but, which was little to be expected among allies so much alive to their particular interests, they acquiesced in his distribution of the conquered territories, with a deference which evinced the most perfect confidence in his liberality and justice. With these coadjutors, Lord Cornwallis set out in the month of June towards Bangalore. He determined on a new and circuitous route northward by Naggemungulum; and in order to facilitate the communication between the Mysore and the Carnatic, from which the supplies were chiefly to be drawn, the various hill forts which command the different passes were to be reduced. Amongst these forts, remarkable for natural strength, Oossoor, Rayacottahud, and Nundydroog, were assaulted and taken. There remained Kistnaghery, Savendroog, and Ootradroog, on the first of which an unsuccessful attack was made. Savendroog consists of a vast mountainous rock, which rises above half a mile in perpendicular height above its own base, which covers a space of eight or ten miles in circumference. This rock is surrounded by walls on every side, and defended by cross barriers wherever it was deemed accessible. Towards the upper part, the immense pile is almost precipitous, and has the further advantage of being divided on the top into two hills, which have each their defences, and are capable of being maintained independently of the garrison in the lower works. To the siege of this tremendous fortress, Lieutenant-Colonel Stewart, commanding the right wing of the main army, was appointed. The attempt commenced on the 10th of December. In three days a practicable breach was effected, and both hills were stormed, with only one private soldier wounded. Colonel Stewart's detachment marched in two days against Ootradroog, another fortress strengthened by five different walls, and so steep as to prove tenable by a handful of men against the largest army. After the refusal of a summons to surrender, the lower fort was escaladed with such rapidity, that the killadar requested a parley. But on some appearance of treachery in the upper fort, the assault was ordered; some of the gates were instantly broken, others were escaladed, till five or six different walls on the face of the steep rock were passed, when the troops gained the summit, and put the garrison to the sword. The assault of these fortresses, which had hitherto been deemed impregnable, made so serious an impression on the enemy, that in none of the hill forts, however inaccessible, did they afterwards make any attempt to resist the British troops. Hence the strong mountainous country between Bangalore and Seringapatam, which, studded with forts, had so much checked all communication, now afforded security to the convoys. These henceforth reached the army without opposition; and the supplies of warlike stores of every description were as completely re-established as they had been at the beginning of the last campaign.

To prevent any future scarcity of the great article of grain, the commander-in-chief encouraged the native brinjarries, a class of men of whom we have already given some account. They form a peculiar caste, who are traders in grain, and whose utility is so universally acknowledged that they are regarded as neutral in war, and are not hindered by either of the belligerents from carrying supplies of grain to the other. By constantly affording regular payment and a good price to these native merchants, they supplied the camp to an extent far exceeding what could ever be furnished by the most extensive carriage establishment. With such ample supplies, preparations were made for the commencement of the campaign. The Bombay troops, destined again to act from the same quarter as last season, marched from Cananore, and arrived at the foot of Poodicherrim Ghaut in the month of December. Several weeks of hard labour were necessary to drag the artillery through woods extending nearly sixty miles, and over mountains of immense height, when this force, consisting of 8400, with all their baggage and artillery, and a supply of rice for forty days, penetrated with safety into the Mysore frontier, which they reached on the 22d of January 1792. To facilitate the return of the army, batteries were constructed to defend the pass; a precaution which, if the sultan had not overlooked, he would have suffered no invasion on this quarter of his dominions.

The Mahratta forces, after taking the important post of Simoga, which, however, was soon retaken by one of Tippoo's generals, and defeating Reza Saib and nearly 10,000 of the sultan's cavalry, effected their junction with the Bombay army, though somewhat later than the appointed season. The main army under Lord Cornwallis, being joined at Ootradroog by the battering train under Colonel Duff, and the last convoys under Colonel Floyd, and also by the army of the nizam, was at last fully prepared to resume its enterprises against the sultan, who, in imitation of his father when formerly attacked in 1767, had encamped with the whole of his force in a strong position under the walls of his capital. On the 1st of February the allied armies marched from Hooleadroog, the last hill fort of which they had taken possession, lying at the distance of only forty miles from Seringapatam. The last march, of the 5th of February, stretched across a range of barren hills lying six miles north-east of Seringapatam. From these heights a view of the whole city was presented to the army, and the encampment of the sultan under its walls. Every circumstance was eagerly viewed by our troops; and, from the sultan's position, it was evident that he meant to defend the place in person, and to make it the grand concluding scene of the war. The camp of the allies was pitched on the north side of the island. The British formed the front line, and extended along both sides of the Lockany, a small river which at this place flows into the Cavery. The reserve was placed a mile in the rear, to afford space for the baggage and stores; and the nizam and Mahrattas were stationed still farther in the rear, to prevent interference with the British camp.

Opposite to Seringapatam, on both sides of the river, a large space was enclosed by a bound hedge, which marks the limits of the capital, and afforded a refuge to the peasants during the incursions of cavalry. Tippoo's front line, or fortified camp, lay immediately behind this hedge, where it was defended by heavy cannon in the redoubts, and by a large field train advantageously placed. In this line there were a hundred pieces of artillery, and in the fort and island which formed his second line there were above thrice that number. The redoubts on his left were intrusted to two of his best officers, and a corps of Europeans commanded by Monsieur Vigie; Sheik Ansar, a general of established reputation, was stationed on the right, and the Carighaut Hill; whilst Tippoo himself commanded the centre, having his tent pitched in the sultan's redoubt. The fort and island, where there was the greatest number of guns, were intrusted to Syed Saib and other commanders. The whole army of the sultan thus stationed consisted of about 50,000 men.

The whole attention of Tippoo, on finding that he could not keep the field, was directed to the fortifying of this camp, and the strengthening of his defences in the fort and island, under the idea that the want of supplies, or the approach of the monsoon, would again force his enemies to abandon their enterprise, as they had been compelled to do on former occasions. In these circumstances, Lord Cornwallis resolved on the bold enterprise of a night attack on the enemy's fortified camp. Accordingly, on the evening of the 6th of February 1792, just after the troops had left the parade, orders were issued for an attack at seven o'clock, of the enemy's camp and lines, in three divisions. The British camp was left to be defended by the artillery and cavalry; whilst the assailants, who were instantly furnished with guides and scaling ladders, marched in perfect confidence that muskets alone, for they were unprovided with artillery, would prove the fittest instruments for opening their way into the enemy's camp. The allies of the British, to whom this design was not communicated till after the columns had marched, were struck with surprise and consternation on learning that Lord Cornwallis, like a common soldier, was personally to lead the attack on the enemy's fortified camp. They not only deemed his success impossible, but they dreaded that the ruin of the allied army would be involved in the attempt.

The three columns into which the assailants had been divided marched with equal intrepidity to execute the different objects which had been allotted them. Many obstacles intervened; various conflicts ensued in different quarters of the enemy's camp; each party was uncertain of the fate of the rest, and each individual of his associates. The return of day at last removed their fears and uncertainty, by disclosing the complete success which had crowned their exertions throughout the whole line of attack. The enemy having lost all their positions on the north side of the river, where the siege was to commence, and almost the whole of the island, every material object of the assault was secured. On the side of the British, the loss, though considerable, amounting to 536 men, was small in proportion to the importance of the victory and the disasters of the enemy, of whom it afterwards appeared that 4000 had been slain in the various conflicts during this night of enterprise, danger, and death, besides a much greater loss which was suffered by desertion.

The British army, now in possession of the island and town of Seringapatam, and flushed with the pride of victory, immediately began to make the necessary preparations for the siege of the fortress or citadel. The mosques and religious buildings on this enchanting island, watered by the Cavery, and the seat of perpetual verdure, were converted into hospitals for the wounded and sick; and the trees, now for the first time assailed by the axe, furnished materials for fascines and gabions for the approaching siege. The sultan was now seriously alarmed; and after vain efforts to retard the siege by a distant cannonade, which occasioned little injury, he at last began to meditate seriously on the necessity of a peace. In order to smooth the way for his overtures, he previously liberated two British officers, who had been detained contrary to capitulation in Coimbetore. These officers, who had not been treated with his usual rigour, he loaded with presents, and made the bearers of a letter to Lord Cornwallis, suing for peace. He at the same time had recourse to another daring expedient, which might have been attended with fatal consequences. He despatched a small party of horsemen in the night to surprise the tent of Lord Cornwallis, and to put him to death. The party were detected by their eager inquiries after the commander's tent; and being fired upon, effected their retreat. The Bombay army, which was at this time approaching, effected its junction with the main army on the 16th; and on the second night after this event the trenches were opened, and a parallel formed within eight hundred yards of the north face of the fort. General Abercromby, stationed on the southern quarter with a strong detachment, was ordered to cannonade it from the heights. This attack being directed against the weakest part of the fort, occasioned the greatest alarm. Tippoo himself, therefore, at the head of his troops, marched to dislodge the general. Being supported by the guns of the fort, he maintained the action for the whole day; but towards evening he was forced to retreat. This desperate effort was the last that Tippoo made for his defence. His affairs hastened to a crisis; cabals were formed by the chiefs, and his troops deserted in multitudes during the night. He saw his capital blockaded on every side by a powerful army, plentifully supplied with provisions, which must infallibly reduce his troops by famine, should they even prove successful in repelling its assaults; even his last hopes of relief from the monsoon, and the swelling of the river, were thus finally cut off.

On the 23d of February, therefore, the preliminaries of peace were signed by Tippoo, amidst the conflicting emotions of pride, resentment, and fear; and orders were issued to the troops on both sides to cease from further hostilities; a stipulation of which the dread of an immediate assault alone enforced the observance.

By the terms of this treaty, Tippoo was compelled to pay, as an indemnification for the expenses of the war, three crores and thirty lacs of rupees, at two instalments, the first to be advanced immediately, and the second at the end of four months. Other articles of this instrument provided further, that all the prisoners taken from the allied powers, from the time of Hyder Ali, should be unconditionally restored; that no less than one half of his territories should be ceded to the allies, and that two of Tippoo Sultan's three eldest sons should be given as hostages for the due performance of the treaty.

About noonday on the 26th, the young princes, the one eight, and the other ten years of age, mounted on their elephants richly caparisoned, and attended with a splendid retinue, left the fort, the walls and ramparts of which were crowded with spectators. Amidst the vast multitudes whom curiosity or affection had drawn out to witness this scene, Tippoo himself was beheld standing above a high gateway, through which, as they passed, the princes were saluted by the guns of the fort; a compliment which they again received as they approached the British camp. They were seated in silver howdahs, attended by their father's minister and a numerous retinue. The procession which they thus formed was equally grand and interesting. It was led by several camel harcarras and standard-bearers, carrying green flags suspended from rockets, followed by one hundred pikemen, with spears inlaid with silver. Their guard of two hundred Sepoys, and a party of horse, brought up the rear.[1]

Lord Cornwallis, attended by his staff, and the principal officers of his army, and a battalion of Sepoys, received them at the door of his tent, and embraced them with a cordiality and tenderness that resembled parental affection. The manners, dress, and appearance of the young princes themselves, formed an interesting spectacle to their European hosts. They were clothed in red turbans and long white muslin gowns, everywhere sparkling with emeralds, rubies, and pearls. Thus attired, the young princes, immediately after their reception, were seated on each side of Lord Cornwallis, when Gulam Ali, the head vakeel of Tippoo, thus addressed the British general:—"These children were this morning the sons of the sultan my master; their situation is now changed; they must look up to your lordship as their father." The scene now became most interesting; the faces of the children brightened up; and not only their attendants, but all the spectators, were delighted to observe, that any fears they might have harboured were removed, and that they would soon be reconciled to their change of situation. After being regaled, in the eastern manner, with ottar of roses and betel-nut, the princes were presented each with a gold watch from Lord Cornwallis, a gift from which they seemed to receive great delight. Lord Cornwallis next day visited them in their tents; and each of them made him a present of a Persian sword, and he made them a present of some elegant fire-arms in return.

Some difficulty occurred in adjusting the terms of a definitive treaty. When the territory of the Coorga rajah, in particular, was required, the demand seemed unexpected both by the sultan and his ministers, and was at first received with astonishment and disdain. This rajah was considered as a chief cause of the war, and Tippoo, therefore, wished to crush him. Lord Cornwallis seemed equally resolute in his defence; for he again manned the works, and threatened to recommence the attack. Happily, his stock of provisions was ample; and although upwards of 400,000 strangers and half a million of cattle were daily to be fed, the supply was sufficient for the whole; whilst one million sterling of the fine imposed on Tippoo had already been paid. The firm determination of the commander-in-chief, aided by these circumstances, which were not unknown to the sultan, damped his resolution. His resentment cooled, and he finally acceded to the terms agreed upon, and copies of the treaty were delivered to the confederated powers.

Nabob of Oude.

From the conclusion of this treaty, dictated to Tippoo by an English army at the gates of his capital, no great event occurs in the history of India till the renewal of the war in 1798, during the administration of Lord Mornington. The affairs of the nabob of Oude, and his dominions, were both hastening to ruin under his own mismanagement and that of the English; and, with a full knowledge of this, his sway was now extended over the district of Rampore in the Rohilla country, granted to Fyzoolah Khan, the Rohilla chief, who survived the ruin of his nation, and who died at an advanced age in 1794, leaving the territory of which he was ruler in a high state of cultivation. On the pretence of the usurpation of the reigning prince, who had made his way to the throne by the murder of his brother, the British troops made war on the Rohillas, and defeated them. The treasures of the late chief, amounting to 332,000 gold mohurs (L.607,000), were given to the vizir or ruler of Oude, who returned twelve lacs of rupees (L.127,000) to the British army; ten lacs of revenue were assigned for the support of the lawful prince, now dethroned; and the unhappy country was handed over to be pillaged and destroyed by the vizir and his English allies. He soon afterwards died, and was succeeded by Mirza Ali or Vizir Ali, who was set aside by the English on the reputed spuriousness of his birth, and Saadut Ali, the eldest surviving son of Sujah Dowlah, was placed on the throne. The annual subsidy to the English was at the same time raised to seventy-six lacs of rupees.

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[1] For the substance of this account, see Major-general Dirom's narrative of this campaign.

Transactions at Madras.

The Nabob Mahommed Ali, the first ally of the English, died in 1795, at the age of seventy-eight, and was succeeded by Omdut-ul-Omrah, his eldest son. Lord Hobart, governor of Madras, now determined to interfere with a strong hand in the affairs of the Carnatic, and, if possible, to rescue the country from the merciless exactions to which it had been exposed. These evils he describes to arise from the numerous loans of the English to the nabob. "Some of the principal houses of business in Madras," he observes, "or even some of the Company's servants, enter into an agreement with the nabob for the payment of sums which may have become due to the Company's treasury. They receive a mortgage upon a portion of the territory. To render this availing, they stipulate for the appointment of the manager of the territory. It is also requisite to establish an understanding with the military commanding officer of the district. And then the chain of power is complete. Then the unhappy ryots (husbandmen) are delivered over to the uncontrolled operations of men who have an interest in nothing but exacting the greatest sums in the shortest time; of men hardened by practice, and with consciences lulled to rest by the delusive opiate of interest upon interest." Lord Hobart prepared to remove these evils by assuming the management of the nabob's revenues, and, in short, the internal government of the country. But these arrangements being opposed by the supreme government, were not at this time carried into effect.

Invasion of the nizam's territories by Scindia.

The British had now acquired an undisputed ascendency in India. The other ruling powers were the Mahrattas, under the peshwa and Scindia; the nizam of the Deccan, an ally and dependent of the British; and Tippoo, so greatly humbled and weakened by the late war as to be no longer formidable. Each of these powers was jealous of the others, though the balance of power was chiefly endangered by the ascendency of the British. The nizam, after the conclusion of the war with Tippoo, was extremely desirous of forming an alliance with the English as a defence against the encroachments of the Mahrattas, who, he was well informed, were planning an inroad into his dominions, for the purpose of levying the contribution of the chout, amounting to one fourth of the land revenues, to which they laid claim, on condition of guaranteeing the remainder. The English, though bound to the nizam by a treaty offensive and defensive, refused to join in any alliance against the Mahrattas, who, under the command of Dowlut Row Scindia, Mahadjee Scindia being lately dead, now invaded the nizam's territories, and having defeated his army and shut him in one of his fortresses, dictated a treaty of peace to him, by which he ceded a country yielding thirty-five lacs of revenue, paid them a large sum, and gave up his minister as an hostage for the performance of these conditions.

Admini tration Lord W lesley. War wi Tippoo, 1798.

Lord Mornington arrived in Calcutta as governor-general in May 1798, and he had scarcely been a month in India when he ordered "an immediate attack" on Tippoo Sultan, not upon any tangible ground of offence, for it was not asserted that he had violated a single article of the last treaty, but upon vague accusations of alleged hostility and correspondence with the French, against whom the new governor-general had so thoroughly imbibed the prejudices of the day, that the mere suspicion of such a connection seemed sufficient to justify an "immediate attack" on his once formidable but now humbled power. Tippoo, as the event too fatally for himself proved, was unprepared for war. Stripped of half his dominions and revenues by the last treaty, he had not the means of maintaining war; whilst the power of his rivals was formidably increased, and their numerous and well-appointed armies, and extended dominions, justly excited the dread and the jealousy of the native powers, and probably of Tippoo amongst others. But the humbled king of Mysore was no longer himself an object of jealousy and dread; the last treaty was dictated by a victorious army at the gates of his capital; its terms, from his unprovoked aggression of the British allies, were necessarily severe, and no circumstance had since occurred to justify the British in exacting additional securities from the fallen prince. That he was the enemy, the natural enemy, to use a common and much abused phrase, of the foreigners who now trampled on the independence of India, no one can doubt. They were his rivals in the great contest for the dominion of the country; they were the gainers, he the loser, in this game of ambition; and who can doubt, that in such a situation he should feel the stings of disappointed pride, and that he should hate the English, as it was clear that they hated him, from their continual and unmeasured abuse of him? But whatever might have been the feeling of Tippoo towards the British, certainly no hostile act was proved against him, nor any thing beyond vague surmise. The governor general, finding he could make no immediate attack on the sultan, secretly proceeded with his military preparations, and as these advanced, his surmises were converted into certainty, and he rose in his demands. His views were at first limited to the establishment of an English resident at Seringapatam, and to the dismission and perpetual exclusion of all the French from his armies and dominions. He now insisted, in order to prevent all communication by the sea-coast with the French, on the cession of the maritime province of Canara, and the payment of a considerable sum of money by Tippoo to defray the expense of the military preparations for his own destruction. In answer to these arrogant demands for additional securities, Tippoo referred to the existing treaty between the parties, and expressed the greatest surprise at the measures of precaution and self-defence adopted by the Company. The governor-general construed this reply into a new proof of hostility, and accused him of prevarication, falsehood, and criminal evasion; and Tippoo, alarmed, as he well might be, by the great military preparations of his known enemies, despatched two natives along with a French officer on a mission to the executive directory of France. The governor-general now resolved to commence the war, and to raise his terms; to exact as the price of peace the cession of one fourth, and, if any decisive military advantage should be obtained, one half, of Tippoo's whole dominions, and the payment, in addition, of two crores or twenty millions of sicca rupees, equal to L.2,250,000. Three armies were now assembled for the invasion of Mysore, namely, the army of General Harris at Velore, which was to advance from the east; the army of General Stuart at Cananore, on the western coast; and a force under Colonels Read and Brown in the southern districts of the Carnatic. On the 9th of March the army made its first united movement, and in the course of its advance experienced no serious resistance. The greatest obstacle to its progress arose from the want of provisions, and an adequate supply of carriages.

All these difficulties were, however, overcome; and on the 5th of April the united army took up its position for the siege of the capital, exactly one month after it had crossed the frontier. Tippoo made a last and vain appeal to his enemies. But the governor-general was now resolved on the conquest of the country. His views expanded with the success of his arms; and towards the end of April he declared his opinion, that "it would be prudent and justifiable entirely to overthrow the power of Tippoo;" and "that the power and resources of Tippoo Sultan should be reduced to the lowest possible state, and even utterly destroyed, if the events of the war should furnish the opportunity." On the 3d of May a practicable breach was made, and next day the assault took place, which, notwithstanding an obstinate defence, was successful at every point. The assailants, carrying every thing before them by the impetuosity of their attack, met over the eastern gateway; and the palace, in which were the family of the sultan and a body of his most faithful adherents, was the only place within the fort that still held out. From motives of humanity, the English were extremely averse to expose its inmates to the horror of an assault, and they at length succeeded in effecting its peaceable surrender. Major Allan, who was admitted to the apartments of the young princes, endeavoured, by every expression of tenderness, to soothe the agitation of their minds. They were conducted to the presence of General Baird, who assured them, in the kindest manner, of protection from violence and insult, and gave them in charge to two officers, to be conducted to the head-quarters of the general. The sultan lost his life in the defence of his capital, and his body was found amidst heaps of slain. He had been repeatedly wounded in the course of the conflict; and his attendants having placed him in his palanquin, he was observed by the English soldiers who first entered. One of them, in attempting to pull off his sword-belt, which was very rich, received a wound from the sultan, who still held his sabre in his hand; on which, putting his musket to his shoulder, he fired, and the sultan, receiving the ball in his temple, expired.

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The kingdom of Mysore, which was now in possession of the English, was partitioned amongst the allied powers. The English and the nizam received equal portions of the conquered territory, and a smaller portion was reserved for the Mahrattas. The possessions of the sultan on the Malabar coast, the district of Coimbetore and Daramporam, the whole country which lay between the Company's territory on the eastern and western coasts, the passes of the Ghauts, the district of Weynaad, and the city and island of Seringapatam, were surrendered to the British, who now occupied the country from sea to sea. A territory of equal revenue was ceded to Nizam Ali, in the districts of Gooty, Gurrumcondah, and the tract of country which lies along the line of the great forts of Chittledroog, Sera, Nundydroog, and Colar, with the exception of the forts. The territory ceded to the Mahrattas, from one half to two thirds of the other portions, was to include Harpoonelly, Soonda above the Ghauts, Annagoody, and some other districts; also the territory, though not the fortresses, of Chittledroog and Bednore. The remaining portion of the sultan's territories was erected into a separate state, over which was placed a descendant of the ancient rajahs, who had been retained in confinement by Tippoo and his father; with such provisions, however, as really vested the whole powers of the new state, both civil and military, in the hands of the English. The treasures of Tippoo, amounting to sixteen lacs of pagodas (L.640,000), and his jewels, valued at L.360,000, were divided amongst the troops. The fortress of Velore was commodiously fitted up for the future residence of the royal family, to whom, and to all Tippoo's confidential servants, such pensions were assigned, that they were no less surprised than gratified by the liberality of the conquerors.

Arbitrary conduct of the Company to the native powers.

The transactions of the East India Company's servants with the native princes of India consisted in continual encroachments, until at length they engrossed both the civil and military powers of the state, and reduced the sovereign to a mere pageant. The first step was the subsidiary alliance, by which they placed a resident at the court of the native prince, with a body of British troops for the defence of his dominions. Thus they acquired the power of the sword, and might at any time also usurp from the native ruler the civil administration of the country. Under this system of progressive ascendency, the native princes were seen in every stage of degradation. A treaty had been recently concluded with the nizam, by which he agreed to dismiss a force under French officers, which he had hitherto maintained, and to receive and to pay a British force in its stead, whose aid, it is certain, was absolutely necessary for the defence of his dominions. This was therefore the commencement of British ascendency in that country. In Oude the military power had long been vested in the Company; and the country was languishing, and in some parts reduced to desolation, by the mal-administration of the nabob, and the still increasing extortions of his English allies. The disorder of the finances, and the oppression and complaints of the people, always afforded a pretext for interference; and though the affairs of Oude, as the directors supposed, had been permanently settled by a definitive treaty which Sir J. Shore concluded at Lucknow in 1798, by which they expressed their satisfaction that not merely an immediate payment of twelve lacs of rupees had been secured, but an annual increase of upwards of twenty lacs, yet it was now resolved by the Marquis Wellesley to overturn all these arrangements, and to take from the nabob the whole civil and military power of the country in form, as had already been done in substance. The governor-general, that he might save appearances, and avoid any recourse to actual force, was desirous to obtain from the nabob an abdication of his sovereignty. But he manifested the strongest aversion to relinquish his dignity and power. He reasoned, he remonstrated, he entreated in the most humble terms; and though he was in the power of the British, he refused, in defiance even of threats, to commit such an act of flagrant dishonour as to sign away the inheritance of his fathers. The governor-general was highly incensed at this display of dignity by the fallen prince, which somewhat disconcerted his plans, and the nabob was alternately cajoled and threatened. He still remained firm, and repelled every proposition for the voluntary resignation of his dignity. At last a middle course was adopted. The annual contribution imposed on Oude by the treaty of Sir John Shore was seventy-six lacs, the additional expense of the troops which he was now to maintain was 5,412,929, together 13,012,929 rupees, equal to L.1,463,953 sterling. It was now agreed that he should cede in perpetuity to the English, a territory yielding revenue to this amount, which was not much less than two thirds of his dominions, and that he should still continue the nominal sovereign of his remaining possessions. A treaty to this effect was accordingly concluded. In this transaction we may trace throughout, the two parties, in their distinct characters of the oppressor and the oppressed; on the one side fear, supplication, humility, grief of heart; on the other coldness, cruelty, haughtiness, all the harsh features and austere policy of absolute power; and we have given this brief sketch as an illustration at once of the decided ascendency of the British in India, and of their policy in using or abusing that ascendency for the overthrow of the native powers. By the same authority, the nabob of

Surat, the nabob of Arcot, against whom a lucky discovery was made of a criminal correspondence with Tippoo, and the rajah of Tanjore, were all dethroned, and pensions assigned them for their support. The badness of the government was still urged as a reason for these measures; and if this was the motive, and the increased happiness of the people the consequence, they merit praise instead of blame. Yet some suspicion must attach to the motives of those who, after the death of Fyzoolah Khan, could transfer the flourishing country of the Rohillas from the mild sway of its lawful rulers to the misrule and oppression of the nabob of Oude. A bad was here substituted for a good government, and a happy people delivered over to merciless extortion. Besides, if good government was the object, how greatly would it have been promoted by a remission of the heavy contributions levied by the English? But these were still increased; and it was the amount of these exactions, as well as the mode of raising them, which oppressed the country.

The Mahratta powers.

The Mahratta powers, namely, the peshwa, the nominal head of the confederacy, whose capital was Poonah, the rajah of Berar, Holkar, and Scindia, now remained the only rivals of the English for the dominion of India; and it was the policy of the Marquis Wellesley, as he himself explains at large in his correspondence with the residents in India and the directors at home, to form subsidiary alliances with them, on the same terms as with the other states of India; namely, that a British force should be permanently stationed within their dominions, and that they should assign a sufficient quantity of land for its maintenance and pay. The effect of this alliance, as indeed its object, as stated by the marquis, was to secure the dependence of the different states of India on the British power. "The measure of subsidizing a British force, even under the limitations which the pasha has annexed to that proposal (namely, its being stationed without the limits of his dominions), must immediately place him in some degree in a state of dependence on the British power." This effect was very plainly seen by the Mahratta princes, as well as by the governor-general; and accordingly, though the arrangement was very zealously pressed upon the peshwa, as well as on Scindia, it was steadily rejected by both, until the former was reduced by necessity to accept the alliance of the British on their own terms. This necessity was brought about by contentions amongst the Mahratta chiefs, Holkar and Scindia, for political ascendency in the court of Poonah. Mahadjee Scindia, who was the founder of the family, was the son of Ramojee Scindia, whose humble employment at the court of Poonah was to carry the peshwa's slippers, but who afterwards rose to eminent rank, and was known as an enterprising soldier. Mahadjee was also a soldier, and was present in the fatal battle of Paniput, from which he narrowly escaped with a severe wound in his knee by a battle-axe. He afterwards acquired land and troops, and rose, as the power of the peshwa declined, to the rank of an independent chief. He died at Poonah in 1794, leaving to his grand-nephew, Dowlut Row Scindia, only thirteen years of age, vast possessions and a well-disciplined army.[1] Mulhar Row, the founder of the Holkar family, was born about the year 1693. He was at first a keeper of sheep, afterwards a commander of horse in the service of the peshwa, and at last one of the great military leaders of the Mahratta confederacy. He died in 1766, at the age of seventy-six years, with the character of a plain and generous soldier. Mulhar Row Holkar had only one son, Kundee Row, who was slain, some years before the battle of Paniput, at the siege of Kumbhere. This prince had married the renowned Ahalya Baee, by whom he had one son and one daughter, both of whom died, the daughter on the funeral pile of her deceased husband. Ahalya Baee succeeded to the sovereignty, and assumed as the commander of her army, and her minister for those duties which a female could not perform, Tukajee Holkar, the chief of the tribe, though not related to Mulhar Row. The administration of Ahalya Baee, who is celebrated by Sir John Malcolm as a shining example of great qualities and amiable virtues, was fraught with blessings to her subjects, the country enjoying under her rule more than thirty years of prosperity and peace. Tukajee Holkar, who reigned till the year 1797, left four sons, Cashee Rao, Mulhar Rao, Eithojee Holkar, and Jeswunt Rao Holkar. The succession was disputed by the two elder brothers, who repaired to Poonah for the decision of the peshwa. The influence of Scindia was at this time paramount at Poonah; and having made his terms with Cashee Rao, he surprised and murdered Mulhar Rao, with all his attendants, at Poonah, in September 1797. The wife of Mulhar Rao left a posthumous child, Khundeh Rao, of whose person Scindia got possession, and retaining Cashee Rao in a state of dependence, proposed to govern the dominions of Holkar in his name. The two brothers, Eithojee and Jeswunt Rao, who were at Poonah at the time of the murder, made their escape, the first to Kolapoor, where he was taken, sent to Poonah, and executed; the latter to Nagpoor, where he was arrested and thrown into confinement. Having made his escape, he fled to Mehysser on the Nerbuddah. Here he collected a band of adventurers, and in October 1801 was enabled to fight a battle with Scindia, in which he was defeated with the loss of his baggage and artillery. Before the middle of 1802 Holkar had assembled a new and well-disciplined army. He insisted on the release of the posthumous child Khundeh Rao, the head, as he proclaimed him, of the house of Holkar; and to enforce his demand, he advanced with his troops from Malwah towards Poonah. Scindia collected his army, and on the 25th of October a battle was fought, in which Holkar obtained a decisive victory.

Foreig policy Lord el- lesley.

It was during these transactions that the governor-general deemed the occasion favourable for drawing the Mahratta chiefs into a subsidiary alliance with the British; and it was proposed to Scindia that he should receive a British force into his dominions, that he should cede to the Company a territory sufficient to maintain this force, and that he should admit the arbitration of the British in all disputes with the nizam and with the other states of Hindustan; and the governor-general explains, that if he consent to receive a British force within his dominions, "the arbitration of the British government will necessarily be admitted to an extent proportioned to the ascendency which that government will obtain over Scindia under the proposed engagements, and to the power which it will possess of controlling his designs." Was this system, we may ask, of general alliance and subjection to the British, now proposed by the governor-general, a scheme of benevolence for establishing universal peace throughout India, or one of ambition? War is no doubt the great scourge of humanity; and if it could be superseded by the peaceable arbitration of neutral powers, a great blessing would be conferred on mankind. But it is vain to suppose that the potentates of the earth will voluntarily submit to the curb of reason; and vain was it therefore for the governor-general to endeavour, by persuasion or address, to draw the powers of India into an alliance which would reduce them from the rank of independent princes to mere dependents on the British. That the entire ascendency of the Company's government in India would, in preventing intestine war, have been, as it has since proved, highly beneficial to India, no one could doubt; though, before we can ascribe to the governor-general these benevolent views, we must be convinced that the peace of India was the end, and the ascendency of the British only the means. But, whatever may have been his motives, it is clear that the end, namely, the supremacy of the British, was to be gained, not by peaceable means, but by the sword; that the immediate tendency of his policy was war;—and, in point of fact, it is by war that all India, happily we sincerely believe for the people, has been at length brought under the control of one ruling power, and that universal peace now reigns over that vast continent. It was not yet time, however, for this desirable consummation; and the Mahratta chiefs, as might have been supposed, received with decided aversion the propositions of the governor-general, which amounted to nothing less than a renunciation of independent power. In the defeat of Scindia, however, by Holkar, and the advance of this latter chief to Poonah, the peshwa saw the overthrow of his power; and he quitted his capital, leaving in the hands of the British resident a preliminary engagement, by which he agreed to receive into his territories six battalions of troops, with their proportion of artillery, and to cede a territory for their support either in Gujerat or the Carnatic, yielding twenty-five lacs of rupees.

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[1] *Memoir of Central India*, by Sir John Malcolm, vol. i. chap. v.

T ty of B ein, a war w the M ratta c s.

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This treaty, in which it was further agreed that the peshwa should, by the aid of the British, be restored to his dominions and to his sovereign authority, was formally signed at Bassein on the 31st of December 1802; and immediately Sir Arthur Wellesley, on a report that Poonah was in danger of being burned, advanced on that city by a rapid and unexpected march, with a body of cavalry. At the approach of the British, Holkar's disorderly bands fled with precipitation, and soon abandoned the territory of Poonah; and the deposed prince returned in triumph to his capital, amid the acclamations of the people. The treaty of Bassein, and the entire ascendency of the British at the court of Poonah, excited the jealousy of the other powers; and Scindia and the rajah of Berar now entered into a confederacy for repressing this desire of encroachment on the native states. But their motions were narrowly watched by the British; and their armies having taken hostile positions, from which they refused to withdraw, the British were induced to take the field. A vast force was collected. An army under General Lake assembled on the north-western frontier of Oude, which on the 7th of August marched from Cawnpore, and crossing Scindia's frontier on the 28th, took by assault the fort of Allyghur, and on the 9th of September totally defeated, about six miles from Delhi, the Mahratta force, formerly under Perron, a French officer, and still commanded by one of his countrymen, with the loss of all the artillery and baggage. General Lake entered Delhi, evacuated by the enemy on the 14th, and paid his respects to the Great Mogul Shah Aulum, afflicted with age, infirmities, and poverty, in all respects a touching spectacle of fallen dignity. On the 4th he reached Agra, which was taken by assault after a severe contest; and on the 31st defeated, in the well-fought battle of Laswaree, the remaining force of Scindia; and thus in the course of three months overran all his territories in the region of the Jumna. Nor was General Wellesley, who now gave an early promise of that genius for war which was afterwards more fully displayed in the arduous conflicts of Europe, less successful in the south. His first operation was the assault and capture of the strong fortress of Ahmednuggur on the 12th of August; after which, being apprised that the combined armies of Scindia and the rajah of Berar meditated a march on Hydrabad, he concerted with Colonel Stephenson, who commanded a separate corps, a joint attack on the 24th. In the mean time, apprehensive that the enemy meditated a retreat, he attacked with his own division alone the combined Mahratta armies, encamped on the Kaitra river, near the village of Assye, and obtained the victory after a sanguinary conflict, in which, out of 4500 men, the British lost 428 killed and 1138 wounded, and were entirely disabled from pursuing the enemy. Colonel Stephenson, who joined on the 24th, was sent on this duty, and was also instructed to attack Boorhanpore and Asseerghur, of which, and of all Scindia's territories in the Deccan, he took possession. The British arms were now turned against the rajah of Berar; his army was entirely defeated on the plains of Argaun on the 29th of November. Colonel Stephenson, advancing to Ellichpoor on the 5th of December, laid siege to the strong mountain fortress of Gawilghur, near the source of the Taptee, which was carried by assault. The British were equally successful in every other quarter. The country of Bundelcund was speedily reduced; a force from Bombay attacked Scindia's possessions in Gujerat; and a division of the Madras army the maritime province of Cuttack. The Mahratta chiefs now bethought of peace as their only refuge from impending ruin. A treaty was accordingly concluded with the rajah of Berar, by which he ceded to the Company the province of Cuttack, with the port of Balasore, to their ally the nizam, the country lying between his own frontier and the river Wurda to the eastward, and between his own frontier and the hills, in which are situated the forts of Gawilghur and Nernulla to the northward. By the treaty concluded with Scindia, he ceded in full sovereignty the country between the Jumna and the Ganges, to the northward of the territories belonging to the rajahs of Jeepoor, Joudpoor, and Gohud, the fort and territories of Barooch, of Ahmednuggur, and all the possessions which he held on the south side of the Ajuntee Hills to the Godavery river. Provision was made for the independence of all those minor states in the region of the Jumna which had joined the English in the late war. Of these cessions, it was agreed that the territory situated to the westward of the Wurdah, and to the southward of the hills on which were the forts of Gawilghur and Nernulla, together with the territory between the Ajuntee Hills, should be given to the nizam; that the fortress of Ahmednuggur and its territory should belong to the peshwa, and that the English should have the remaining portion. The minor princes near the Jumna, namely, the rajahs of Bhurtpore, Joudpoor, Jeepoor, Machery, and Boondi, the ranah of Gohud, and Ambajee Rao Englah, now became dependents on the British, by whom they were guaranteed in the possession of their dominions, they defraying any charge which might be incurred. Scindia, now weakened by the loss of territory, was really anxious to secure a subsidiary alliance with the English for the security of his remaining dominions against the designs of Holkar. It was agreed that six thousand infantry, with the usual complement of artillery, should be allotted for his defence; that they should be maintained by the English from the revenues of the ceded territories; and that they should be stationed near the frontier, but not within his dominions. It was further agreed, as formerly in the treaty of Bassein, that the British should not in any case interfere between him and his subjects, but that the subsidiary force, if required, should aid in suppressing rebellion and internal disturbances; a condition of doubtful policy, since it evidently implies that the British were to stand still, the quiet spectators of any cruelties the Mahratta chief might inflict upon his subjects; but, the moment they took up arms in their defence, they were to aid in crushing them, as disturbers of the public peace.

Treaty with the Rajah of Berar and with Scindia.

Operations against Holkar.

The short period of tranquillity that succeeded the peace with Scindia was speedily interrupted by Holkar, who, though he kept aloof from the confederacy of his countrymen, with an indifference which seemed to argue at once a deficiency of patriotism and a want of sound policy, was, nevertheless, alarmed by the success of the British arms, and his whole conduct evinced his determination to try the fortune of war. His power and resources had gradually been increased, like that of the other chiefs, by the introduction of European officers into his army, and by an improved system of discipline, which he had established. He was, besides, protected by the nature of his country, which is very mountainous, and, during the rains, impassable from jungles and morasses. His skill in maintaining the predatory warfare, so congenial to a Mahratta army, was far superior to that of the other chiefs, whose ruin had so fully taught him the danger of any regular engagement with European troops. Thus, although his territories were invaded on all sides by detachments of the Company's forces, he constantly eluded their attacks; and, by the singular rapidity of his movements, he was enabled suddenly to assemble almost his whole force, and overpower whatever detachments he might find at a distance from support. In this situation, the troops under Colonel Monson were surprised. This officer, in concert with Colonel Murray, who invaded Holkar's dominions from Gujerat, and captured Indore, the capital, without much opposition, had advanced fifty miles beyond the Mokundra Pass, towards the Chumbul, when, alarmed by the fear of his supplies running short, he resolved to retreat. Being betrayed by his guides, and deserted by part of his troops, he was attacked by a superior force under Holkar himself, before which he was forced to retreat towards Agra, through a country impassable from the rains, and destitute of provisions. After several disastrous conflicts, during a retreat of seven weeks, which degenerated into a flight, the greater part of his guns, and the whole of the baggage and military stores, were lost. A few only of the troops reached Agra at midnight, in a state of extreme distress; the greater part had been overtaken in their flight, and were either massacred, or cruelly mutilated, by their ferocious pursuers.

Colonel Willot of the Bengal artillery was almost equally unsuccessful in an attack which he had planned against a strong post in the interior: he failed in the attempt, and soon after died of the wounds he had received. It was in Bundelcund, and the country of the Rohillas, that Holkar received the most considerable checks, which produced a reverse in his fortunes. From both those territories he was completely driven by Lieutenant-colonel Fawcet and General Smith. On the escape of Colonel Monson to Agra, Holkar advanced with his whole army to Muttra, whither he was followed by General Lake, who arrived at Muttra on the 1st of October 1804, Holkar retiring as he advanced. Here he put in practice a stratagem, which had nearly gained for him great advantages. Leaving his cavalry to engage the attention of the British general, he proceeded with his infantry in secret and by forced marches, and on the 8th he appeared before Delhi, on which he opened a heavy cannonade. Next day he erected breaching batteries, and made a determined assault. But this and a subsequent attack was repelled with such determined gallantry by the small garrison under Colonels Ochterlony and Burn, that he desisted from all further attempts, and departed during the night with his whole force.

Parties of his cavalry had been repeatedly defeated by Lord Lake; but the rapidity of their movements as often saved them from destruction, and it was not till the decisive battle of Deeg, on the 13th of November, that the main strength of this enterprising chief was completely broken. At this place his army, trusting to the great strength of its position, behind successive ranges of batteries, was induced to hazard a general action. From these different batteries, which extended to the depth of two miles, they were successively driven by the gallant General Frazer, who had the credit of forcing a post which had been deemed impregnable, and which at this period was defended by twenty-four battalions of infantry and 150 pieces of cannon. In this brilliant achievement the general received a wound in the leg, of which he afterwards died, and was carried off the field. The completion of the victory thus fell to Colonel Monson, who now saw complete vengeance inflicted for his past disasters, and for the unexampled cruelty of his enemy, 2000 of whom were killed, either in the battle or during the retreat. An immense number was wounded, and amongst these many considerable chiefs; whilst eighty-seven pieces of cannon fell into his hands, which partly consisted of the same guns which he had himself lost during his disastrous retreat to Agra. The important fortress of Deeg was besieged and taken at night, by assault, on the 23d of December.

Had Holkar confided merely to his effective force in the field, his cause might have now been regarded as desperate. His boldness, however, and his unexampled success, had gained him the support of several of the native princes. Among these he had seduced the rajah of Bhurtpore, an ally of the British, and the chief of the celebrated caste of the Jauts, the most warlike tribe in upper India. General Lake was therefore obliged to concentrate his army, and to employ it in the reduction of Bhurtpore, a fortress which experience has proved to have been the strongest and most impregnable in the whole peninsula. Whilst thus employed, the dispersed troops of Holkar had time to rendezvous in distant quarters, and were successful in cutting off his supplies of provisions, and in plundering the surrounding districts, by that predatory mode of warfare for which the Mahrattas have always been celebrated. Scindia, also, who had been engaged in continual disputes with the British respecting the treaty which had been concluded, now openly showed his hostile dispositions by invading the territories of the British allies, by attacking and plundering the camp of the British resident, and by his ill-concealed correspondence with Holkar, whom he now openly joined.

The reduction of Bhurtpore, defended by the indefatigable efforts of Holkar, by its intrepid garrison, and its own natural strength, proved the most arduous enterprise which the British troops had ever undertaken in Asia. The success of the besieged in repelling four different assaults animated them with fresh courage and intrepidity. The rajah and his whole tribe were united by the ties of blood, as well as of civil authority. They laid claim to a high caste among the natives, which they knew must be forfeited for ever by unconditional submission. Unfortunately these were the only terms which General Lake, in the peremptory instructions which were given for its reduction, was permitted to accept. The rajah, therefore, having collected in the fort his women, his children, and his treasures, resolved to bury them all with himself under its ruins, rather than submit to terms which were deemed as disgraceful to his religion and his rank, as they were mortifying to his feelings as a soldier. Compelled by the orders of his superior, and undaunted by all the past disasters which the troops had already suffered, General Lake resolved to hazard another attempt, which was equally unsuccessful with all the others. In the official account given of this last attack, it is said, "the bastion, which was the point of attack, was extremely steep, the resistance opposed to them was vigorous, and as our men could only mount by small parties at a time, the advantages were very great on the side of the enemy. Discharges of grape, logs of wood, and pots filled with combustible materials, immediately knocked down those who were ascending; and the whole party, after having engaged in an obstinate contest for two hours, and suffering very severe loss, was obliged to relinquish the attempt, and to retire to our trenches." The loss of the British army in this last assault, and that of the 20th, amounted to 300 killed, and 1564 wounded; its whole loss, during the different attacks, amounted to upwards of 3000 of the bravest of our troops, whilst the unconditional surrender of the place, though the ultimate object of all these perilous attempts, was never attained. The rajah, however, again proposed the terms he had formerly offered, and consented to pay three lacs of rupees to the army, and the expenses of the war. Hostages were given for the regular discharge of these sums, at different instalments. Thus the last prince in India who resisted the British arms was found to have made the most glorious defence of his independence, and to have secured for himself the most honourable terms. Holkar, unable any longer to face the British troops, was reduced to the condition of a fugitive; and flying from place to place, often beaten, and at last deserted by almost the whole of his troops, was obliged to escape with a retinue so scanty as was hardly sufficient for the protection of his person.

rival of rd Cornllis. Pa-ic policy.

The directors of the Company in Europe, though they were dazzled for a time by the splendid successes of the British arms, were at length startled by the warlike policy and prodigal expenditure of the Wellesley administration; and, with a view to retrieve their embarrassed affairs, the Marquis Cornwallis was sent out as governor-general to Calcutta, where he arrived on the 30th of July 1805. He entirely disapproved of the system of subsidiary alliances adopted by his predecessor, by which the British were entangled in the labyrinth of Indian politics. He censured in strong terms the treaty of Bassein, which reduced the British, as he states, to "the alternative of mixing in all the disorders and contentions incident to the loose and inefficient constitution of the peshwa's administration, or of suffering the government and dominion of his highness to be completely overthrown by the unrestrained effects of general anarchy and rebellion. Under such circumstances," he adds, "the alliance with the peshwa, far from being productive of any advantage to the Company, must involve us in inextricable difficulty, and become an intolerable burden to us." In pursuance of these views, he resolved, as soon as Scindia should release the British residency, to conclude a treaty with him, and to restore to him Gualior and Gohud, the points in dispute. At this critical period Lord Cornwallis, languishing under age and infirmities, expired. But his successor, Sir George Barlow, entered entirely into his views. A treaty was concluded with Scindia on the terms proposed; the British agreed to renounce all interference, by treaties or otherwise, with the rajahs of Odeypoor, Joudpoor, Kotah, and other chiefs, the tributaries of Scindia, in Malwah and Mewar. A treaty was concluded with Holkar, on the 24th of December 1805, by which all his former territories were restored to him, both on the north and on the south of the Chumbul. According to his system, Lord Cornwallis dissolved all the alliances which had been formed with the petty princes of India, several of whom had aided the British in the late contest. Lord Lake earnestly remonstrated in vain against this abandonment of the British allies, several of whom were now left, contrary to the faith of protecting treaties, to the vengeance of the Mahratta chiefs, Holkar and Scindia.

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From the year 1805, when a general peace was established by Lord Cornwallis, to the year 1813, when Marquis Hastings assumed the government, the political relations of the Company with the native powers had undergone little alteration. The tranquillity which prevailed was, however, more apparent than real; and it was naturally to be supposed, indeed, that the widely extending domination of a foreign power would excite the jealousy of the native princes of India. Such of them, accordingly, as retained any sense of national honour were naturally hostile to the British, and were well disposed to unite against them as the common enemies of Indian independence. In 1814 the war with the Nepaulese commenced, and in the outset the reverses sustained by the British in their attempts to penetrate into the hill country strongly excited the hopes of the native princes. In the following year, the valour and military talents of Sir D. Ochterlony brought that war to a brilliant close; and the bravery and discipline displayed by the troops in the course of the campaign renewed among the Indian princes the former impression of their invincible superiority. Whatever might be their ulterior views, therefore, they were compelled for the present to temporize, and to soothe their conquerors by an outward show of humility and peace.

Incursions of the Pindarees.

A more favourable opportunity, as they conceived, soon occurred for successful resistance to the British power. From the constant wars and commotions in which India had from time immemorial been involved, it happened that a great proportion of the native population were trained to habits of disorder and military license. At the general settlement concluded in 1805, it was naturally supposed that those bands of adventurers, having no longer any scope for their predatory enterprises, would betake themselves to pacific pursuits, and would thus be gradually dissolved among the mass of the people. It happened otherwise. Those hordes of freebooters, known under the general denomination of Pindarees, improved both in strength and union, and Scindia and Holkar, in whose neighbourhood they were settled, if they did not openly abet them, made no active efforts for their suppression. The nature of their force may be shortly described. It consists of a species of light cavalry, which was formerly attached to the native armies, in the same manner and for the same purpose as the Cossacks are to the armies of Russia. Their horses were trained to long marches and hard fare, it being their object to plunder the country, and to elude pursuit by the celerity of their movements. They were generally armed with a bamboo spear, from twelve to eighteen feet long; every fifteenth man carried a matchlock; about four hundred out of every thousand were well mounted; of the remaining six hundred, four hundred were indifferently mounted, and the rest were slaves, attendants, and camp-followers, mounted on wild ponies, and keeping up with the corps as they best could. About the year 1814, these predatory bands comprised about 40,000 horse, who followed plunder as their mode of subsistence, and were indeed a most formidable species of gang-robbers; but, like other robbers and murderers on a great scale, they assumed all the form and pomp of military array. The strength and numbers of this disorderly mass were daily increasing by deserters from Holkar's irregular bands, and from the loose cavalry establishments of Scindia and others, where they were retained by no tie but that of present advantage, and where their pay was always in arrear. The central situation of the Pindarees, at an equal distance from the three presidencies, rendered their hostility still more formidable, and enforced on the British the necessity of maintaining an extensive line of defence, which was always penetrated by those flying hordes, and the territories of our allies exposed, in consequence, to annual devastations. In 1808–1809, and in 1812, they carried their incursions into the British territories, and returned loaded with spoil. The fame of these successful exploits recruited their bands, and enabled them to extend their ravages. In October 1815, a force of 8000 Pindarees crossed the Nerbuddah in a north-west direction, and dividing into two parties, they penetrated to the Kistnah, though they were watched, and one party was surprised by a body of infantry and cavalry, which did them, however, little damage. They were only deterred from crossing into the Madras presidency by the swollen state of the river, along the fertile and populous banks of which they took their course, plundering as they went along, and committing every kind of enormity. In their return along the line of the Godavery and the Wurda, they passed the British positions, making good their retreat with an immense booty, and with utter impunity. A second expedition was soon planned, which, crossing the Nerbuddah, appeared on the western frontier of the district of Masulipatam, under the Madras presidency, on the 10th of March 1816. Next day they made a march of thirty-eight miles southward, plundering ninety-two villages, with every circumstance of unheard-of cruelty; and on the 12th they marched thirty-eight miles, plundering fifty-four villages. By the 17th May they had nearly all recrossed the Nerbuddah, loaded with spoil, and with scarcely any loss. During the twelve days that they had remained within the Company's territories, it was ascertained that 182 persons had been put to a cruel death, 505 were found severely wounded, and 3603 had been put to different kinds of torture.[1]

War with the Pindarees.

It now became necessary to adopt efficient means for protecting the country against these destructive visitations. For this purpose a defensive line of posts was extended along the Nerbuddah, and across the country for about 150 miles. This was, as usual, soon penetrated by the activity of the enemy, and various expeditions advanced southward for the purpose of plunder. By the singular activity of the different corps, and by a train also of fortunate accidents, almost all of these expeditions were intercepted, broken, and discomfited, so that very few of the plunderers made good their retreat. It was resolved, however, in the year 1817, to commence offensive operations; to attack the enemy in their native haunts, and either to exterminate them, or to drive them from the advantageous position which they occupied, in the very centre of India. The season of inaction was accordingly spent in making preparations for a great military effort; and, by the end of the rainy season of 1817, a numerous and well-appointed army was ready for the field. The plan of the campaign was, that the armies of the different presidencies should advance northward, and gradually converging to a common centre, hem in, on every side, the devoted territory of the freebooters.

War with the Peshwa.

But whilst this plan was in progress, it was interrupted, and part of the troops engaged in executing it were suddenly recalled, by the unexpected hostility of the native powers. Bajee Rao, the peshwa or prince of Poonah, who had long been impatient of the British yoke, availed himself of this opportunity to make a fresh attempt to recover his independence. With a view of more vigorously prosecuting the war against the Pindarees, all the troops had moved northward, with the exception of a brigade which had been left at Poonah; and it was to overpower this small body of troops that the peshwa's first efforts were directed. They were completely unsuccessful; he was repulsed at all points by the steadiness of the Company's troops. This action took place on the 5th of November. On the 13th, the British were joined by General Smith's division, which had advanced on the Godavery, on an understanding, that if he did not hear daily from the resident at Poonah, he should countermarch to that place. It was resolved to attack the enemy's camp next day; but it was found deserted. General Smith immediately commenced an unremitting pursuit of the peshwa, who was hunted from place to place by the different corps of the British army, until he at length deemed it prudent to surrender. He was deposed from his throne; a residence in a particular city was fixed upon for him; and a pension of about L.100,000 per annum assigned him for his support. His dominions were of course taken under the administration of the British.

War wit the Raja of Nagpoor.

The rajah of Nagpoor, Appa Saheb, who was held in the same thraldom by the British, pursued a similar course, and with the same results. On the 26th of November, at sunset, he attacked, with a great superiority of force, the brigade left at the residency, which was in consequence in great peril. A doubtful contest was maintained through the night, and next day the attack on the British was renewed with fresh vigour. Under every disadvantage those attacks were finally repulsed, and the weak prince, Appa Saheb, taking fright, sent to ask forgiveness from his enemies. The conditions offered him were, that his territories should be placed at the mercy of the British government; that he should give up all his artillery, disband his troops, and come in person as a hostage into the British camp; on an understanding that if he acceded to these terms, the former relations between him and the British would be restored; it being at the same time understood that he should cede part of his territory, and that due provision should be made for a greater degree of internal control over his future movements. Being threatened with an immediate attack, he came to the British camp with a few attendants. His troops, as if to shame their pusillanimous prince, fought an unsuccessful battle for his rights and independence; after which the city of Nagpoor, with its fort, was surrendered to the conquerors, and this second war was brought to a triumphant close. Appa Saheb, afterwards repenting of his spiritless conduct, began to plot new schemes, when he was arrested by the British resident, and detained in close confinement. He found means to escape in the summer of the following year, and making good his retreat to the hills, where he was joined by a band of irregular followers, he distracted the country for a time by desultory hostilities. Having thus fled from his dominions, the conquerors determined to invest Bajee Rao, a grandson of Raghojee Bhoonsla, with the sovereignty, and to take the internal administration wholly under their own control. It had been the professed intention of the Anglo-Indian government, according to its usual arbitrary mode of treating the native powers, to force the two independent chiefs, Scindia and Holkar, into an acquiescence with its views in regard to the Pindarees, and also the Patans, a species of infantry, better appointed, and more regularly disciplined, than the Pindarees, but associated together on the same unlawful principle of indiscriminate plunder. Scindia had been compelled to temporize, and finally to accede to the British propositions. The court and administration of Holkar were distracted by contending factions. The late prince, after the unfortunate issue of his war with the British, became deranged, and soon afterwards died. His heir, Mulhar Rao, was at the time under age; and Toolsye Bhye, the widow of Holkar, and now appointed regent, contended for supremacy with the Patan chiefs. Their views were entirely discordant, the queen-regent soliciting an alliance with the English, on condition of receiving a subsidiary force; a measure so strongly opposed by the military chiefs and the troops, that they conspired against Toolsye Bhye, and having seized her person, carried her to the banks of the river, where she was put to death. After this outrage, they prepared for war, and troops were concentrated in such hostile positions, that Sir John Malcolm judged it expedient to fall back. Having effected a junction with the corps under Sir J. Hislop, they attacked, on the 21st of December 1817, the army of Holkar, encamped at

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[1] *Narrative of the Political and Military Transactions of British India under the Administration of the Marquis of Hastings.* By Henry T. Prinsep, chap. i. and v.

Mehedpoor, and advancing to close action under a severe fire of artillery, the enemy's troops gave way at all points, and the camp, artillery, and baggage, fell into the hands of the victors. Peace was sought and obtained by the Patan chiefs, who ruled in the councils of Holkar; they accepted the protection and alliance of the British; and thus they enrolled themselves amongst the dependents and tributaries of the new sovereigns of India.

The main object of the war, which was the destruction of the Pindarees, was not, in any material degree, impeded by these incidental contests. According to the plan proposed, the different divisions of the grand army proceeded northward, converging as they advanced for the purpose of surrounding the haunts of these freebooters, and preventing their escape. They were driven out of the province of Malwah, retiring as the British advanced; but were at length so effectually hemmed in, that in attempting to retreat they were intercepted at all points, and the greater part of them destroyed. The remainder were so humbled by fatigue and misery, that they were glad to submit upon any terms; and at length the three principal leaders surrendered on condition that their lives should be spared.

tlement the ıntry.

All open resistance being thus successfully put down, the more important task still remained of quieting and conciliating the country, overrun by lawless hordes of troops or banditti. The history of Hindustan is, from its earliest period, one unvarying scene of intestine violence, of war, rapine, rebellion, and bloodshed. For twenty years prior to the Pindaree war, these disorders had been increasing; and to still this intestine storm, to overawe the turbulent, and to settle on a permanent and equitable basis the conflicting claims to dignity, power, and property, which had arisen in a long period of trouble, when might was the test of right, was a task that required unusual prudence, firmness, and patience. This difficult and all-important duty now devolved on Sir John Malcolm, who to his glory as a warrior now added the still greater glory of a legislator and a statesman. Whilst he distributed his troops in such positions throughout the disturbed districts, as entirely to overawe the fiercer mercenaries and turbulent Arab soldiers, he conciliated the peaceable inhabitants by mildness, moderation, and justice. To all ranks, to the head of a village as well as to the sovereign of a kingdom, to the leader of a gang of robbers as well as to the commander of an army, he explained that his sole object was to establish the peace of the country. By kindness and conciliation he succeeded in reclaiming the Grassia, Rajpoot, and Bheel freebooters, and the discharged Patan mercenaries, accustomed to prey on the country. Persecuted and oppressed as outcasts and robbers, they were won by the generous confidence of Sir John Malcolm, who offered them pay in the British service, and employed the most notorious of the Bheels to guard his person and treasure, in which they proved invariably faithful. Thus the disorderly bands amongst the Pindarees and Patan soldiery, for many years the disturbers of India, were gradually converted into its industrious cultivators; and a great and happy change was effected in the habits of the people and in the aspect of the country. The several princes and rajahs of Central India were enriched by increased revenues and diminished expense. The troops maintained by Scindia were reduced from 39,000 to 22,000; and those maintained by the rebellious chiefs and tributaries, always ruinous to the country, were disbanded. His revenues were increased twenty-five per cent., and the expenses of collection reduced fifteen per cent. The revenues of Holkar were increased from four lacs in 1817, to sixteen lacs in 1819–1820. The condition of all the other inferior rulers and feudatories was improved in the same degree. "In 1817," says Sir John Malcolm, in his admirable work on Central India, "there was not one district belonging to Scindia that was not more or less disturbed; in 1821 there existed not one enemy to the public peace." Colonel Todd, the political agent of the British in the Rajpoot states, and who was present at the great pacification of 1818, describes, with his usual force, the desolate state of the country. From Jehaijpoor westward to Komulmer, a space of 140 miles, he mentions that "all was desolate; even the traces of the footsteps of men were effaced. The babool (*mimosa Arabica*) and gigantic reed, which harboured the boar and the tiger, grew upon the highways; and every rising ground displayed a mass of ruin. Bhilwara, the commercial entrepôt of Rajpootana, which ten years before contained 6000 families, showed not a vestige of existence. All was silent in her streets; no living thing was seen, except a solitary dog, that fled in dismay from his lurking place in the temple, scared at the unaccustomed sight of man." Odeypoor, the capital of Mewar, which formerly contained 50,000 houses, had not above 3000 occupied; the rest were in ruins, the rafters being taken for firewood. Money was scarce, and the prince was obliged to borrow at the rate of thirty-six per cent. In the tracks near the Vindhya range and the Nerbuddah, where the Pindarees, Gonds, and Bheels had their homes, hundreds of villages were to be seen deserted and roofless. Of 3701 government villages which belonged to Holkar, only 2038 were inhabited in 1817. In 1818, 269 villages were restored; in 1819, 343; and in 1820, 508. These villages exhibit a lively portrait of an Indian community; and it is remarkable, that on the proclamation by the British of protection and peace throughout India, these communities instantly revived in their original structure, with all their native functionaries, who re-assembled at once from the different countries into which they had been scattered by the wars and revolutions of the last twenty years. Well may Colonel Todd exult with a generous enthusiasm on the revival of this oppressed country from desolation and misery. The commercial mart of Bhilwara rapidly rose from ruin, and in a few months contained 1200 houses. "Bales of goods, the produce of the most distant lands, were piled up in the streets lately overgrown with grass; and a weekly fair was established for home manufactures. The most enthusiastic proofs were afforded, that neither oppression from without, nor tyranny from within, could expel the feeling for the *bassota*, the land of their fathers. Even now, though time has chastened the impressions, we should fear to pen but a tythe of the proofs of the devotion of the husbandmen of Mewar to the *solum natale*. It would be deemed romance by those who never contemplated humanity in its reflux from misery and despair, to the 'sweet influences' of hope; he alone who had witnessed the day of trouble, and beheld the progress of desolation, the standing corn grazed by Mahratta horse, the rifled towns devoted to flames, the cattle driven to the camp, and the chief men seized as hostages for money never to be realized, could appreciate their deliverance. To be permitted to see these evils banished; to behold the survivors of oppression congregated from the most distant provinces, many of them strangers to each other, and the aged and the helpless waiting the lucky day to take possession of their ruined abodes, was a sight which memory will not part with." After mentioning that on a lucky day three hundred husbandmen, preceded by music and banners, marched into Kupasun, to take possession of their properties, and that above three hundred towns and villages were simultaneously re-inhabited, he adds, in a strain of just exultation, "Well might the superstitious fancy that miracles are abroad; for even to those who beheld the work in progression, it had a magical result; to see the

Reviving prosperity.

waste covered with habitations, and the verdant corn growing on the fields, where lately they had roused the boar from his retreat. It was a day of pride for Britain. By such exertions of her power in these distant lands, her sway is hallowed; by Britain alone can this fair picture be defaced; the tranquillity and independence she has conferred, by her alone may be disturbed."[1]

Petty states of India.

After the contest was brought to a close, the country was still overspread with disorderly bands of Arabs, Mekranies (from Meckran in Persia), Mewassies, and Patans; and the general result of the arrangements now adopted was the expulsion of these disturbers of the country, and the restoration of the just rights and dignities of Scindia and Holkar, as well as of a crowd of petty feudatories and renters, who were before the prey of freebooters. The same system was extended to the Rajpoot states to the north-west of Malwah and the Chumbul river. The petty rajahs who occupied this country were continually at war; and the country was besides laid waste by the predatory bands of Ameer Khan, Holkar, and Scindia, who, on pretence of espousing the quarrels, invaded and plundered the territories of the different chiefs. These evils had risen to such a height, that they were all desirous of being admitted into a federal union with the British government, offering in some cases half their dominions for protection. In 1818 they were admitted into this union, of which the British are at the head. They agreed, in the event of any future differences amongst them, instead of appealing to arms, to submit their differences to the arbitration of the British government. In this manner their country, freed from the scourge of internal war, has progressively improved. The military adventurers who fled before the victorious armies of Britain, were reduced to submission by the wise and conciliatory measures of Sir D. Ochterlony, combined with skilful military movements. The Patan battalions, with about 3000 horse, were taken into the British service, the officers being dismissed with pensions. These measures have been followed by the happiest effects. The wretched peasantry have emerged from their hills and fastnesses, the usual refuges of the oppressed, and have occupied their deserted villages; the ploughshare is again at work on a soil undisturbed for years, except by the hoofs of predatory horse; and although the fierce habits of war may occasionally recur, yet the foundation of improvement is laid. The daring robber, moulded by time and the force of circumstances, will gradually exchange his wild and disorderly habits for those of the peaceful cultivator, and commerce and industry succeed to scenes of desolation and war.

Policy of the British.

A wise and beneficent policy on the part of the British would realize all those happy prospects. But Colonel Todd seems to doubt whether this line of policy will be adopted. He censures in strong terms the treaties which have already been concluded with the Rajpoot princes, by which they are laid under a heavy annual contribution, and their territories, to use Colonel Munro's expression, converted into rack-rent estates for the British. The rana of Odeypoor is bound to pay one half of his revenues for five years, and three eighths in perpetuity; which condition not only imposes a heavy burden on the cultivator, but lays the foundation for British interference in all the concerns of the tributary state, and for endless disputes in consequence, and finally, for the subjugation of the country. After observing that the dread of being incorporated with our empire prevails amongst this proud people, Colonel Todd observes, "With our present system of alliances, so pregnant with evil from their origin, this fatal consequence, far from desired by the legislative authorities at home, must inevitably ensue. If the wit of man had been taxed to devise a series of treaties with a view to an ultimate rupture, these would be entitled to applause as specimens of diplomacy. There is a perpetual variation between the spirit and the letter of every treaty; and while the internal independence of each state is the ground-work, it is frittered away and nullified by successive stipulations; and these positive and negative qualities continue mutually repelling each other, until it is apparent that independence cannot exist under such conditions. Where discipline is lax, as with these feudal associations, and where each subordinate vassal is master of his own retainers, the article of military contingents alone would prove a source of contention. By leading to interference with each individual chieftain, it would render such aid worse than useless. But this is a minor consideration to the tributary and pecuniary stipulation, which, unsettled and undetermined, leaves a door open to a system of espionage into the system of their revenue accounts; a system not only disgusting, but contrary to treaty, which leaves internal administration sacred. These openings to dispute, and the general laxity of their government, coming in contact with our regular system, present dangerous handles for ambition; and who so blind as not to know that ambition to be distinguished must influence every vice-regent in the East; while deeds in arms, and acquisitions of territory, outweigh the meek eclat of civil virtue, the periodical visitations to their kingdoms will ever be like the comet's, 'Foreboding changes to princes.'" The rapid progress of the British dominion in the East too fatally confirms the truth and wisdom of these admirable remarks.[2]

Runjee Singh.

The country of Lahore, or the Punjab, as far as the Indus, is occupied by the rajah Runjeet Singh, who, in the year 1805, when Lord Lake had an interview with him, seemed to be one amongst many petty chiefs. But between this and 1812 he had subdued the whole country, and was proceeding to extend his power over all the petty chiefs as far as the Jumna, when he was opposed in 1808 by a strong military detachment of British troops stationed at Ludiana. A treaty was concluded in 1809, by which it was mutually agreed that the rajah should not encroach on the territory to the north of the Sutledge, nor the British on the territory to the south of that river.

Siege o Bhurtp

The peace of India has since been interrupted by the Burmese war, and by the siege of Bhurtpore. The rajah, confiding in the strength of his fortress, committed several enormities in his government, such as the seizure of the infant rajah, and the murder of his uncle and followers; and he even treated the remonstrances of Lord Amherst with indifference or contempt. In these circumstances, the reduction of this formidable stronghold was essential to the glory of the British arms, on which former failures had left a stain. The siege was accordingly commenced with 25,000 efficient troops; and as no impression could be made by cannon on walls of clay sixty feet in thickness, they were thrown down by the explosion of a mine. The assault took place next day, the 17th January 1826, which was completely successful, with the loss of 163 killed, and 466 wounded. The principal works of the fortress have since been demolished.

Burme war.

The British rulers of India and the Burmese monarch had long been involved in mutual disputes, and these were brought to an issue in 1822, by a claim set up by the sovereign of the Burmese to the petty isle of Shapuree, in the province of Bengal, on the Chittagong frontier, and by aggressions on the British territory, which were repelled by a force stationed at Chittagong, whilst a large armament was sent to Rangoon, the naval arsenal of the Burmese empire, which was captured; and, after a series of hard-fought actions by the British, who endured much privation and distress, the monarch of Ava was compelled, in 1826, to sue for peace, by the near approach of the army to his capital.[1]

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[1] *Annals of Rajast'han*, vol. i. p. 482, 483.

[2] *Ibid.* vol. i. chap. viii. p. 122.

Pol al sys n of Ind

The wars and commotions of India have thus at length come to a close, and Great Britain remains the sole ruler of that vast empire. The native princes, rajahs, and petty feudatories of the country, hold their several dignities and stations in the great political system of which they form a part, under the guarantee of her sovereign authority. The nature of the subsidiary alliances of the British with the Indian states has been already described, namely, the furnishing a force, which is stationed in the dependent state for its protection, and the latter a territory equivalent to its maintenance, and further submitting, in its foreign relations and differences with other states, to the arbitration of the British government, though free from all control in its internal concerns. The powers with whom subsidiary alliances have been formed are the nizam or subahdar of the Deccan; the nabob of Oude; the Guicowar, whose dominions are in the province of Gujerat; Holkar, who has been deprived of all his dominions south of the Nerbuddah; the rajah of Nagpoor, reduced, since 1817, to insignificance; the rajahs of Cutch, of Mysore, of Travancore, and of Cochin. The protected states are so far reduced to dependence that they agree to maintain no correspondence with foreign powers of a political tendency without the privilege or consent of the British government, and not to go to war, but to submit all their differences with other states to the arbitration of the British. They are independent in their internal concerns, and have not, like the others, a British force stationed within their territories. They are bound to furnish a contingent of troops when required, which in the field act in subordination to the British commanders. These states are, 1*st*, in the north-west, Siccim and the Sikh and Hill states, on the left bank of the Sutledge: 2*d*, Rajpoot states; Bicanere, Jesselmere, Jeepoor, Joudpoor, Odeypoor, Kotah, Boondi, Serowey, Kishengurh, Dowleah and Pertaubgurh, Doorapoore, Banswarra: 3*d*, Jaut and other states on the right bank of the Jumna; Bhurtpore, Ulwar or Macherry, Kerowlee: 4*th*, Boondelah states; Sumpthur, Jhansi, Jaloun, Oorcha or Tehree, Dutteah, Rewah: 5*th*, States in Malwah; Bopaul, Dhar, Dewas, Rutlaum, Silana, Nursinghur, Amjherra, &c.: 6*th*, States in Gujerat; Pahlunpore, Rahdunpore, Rajpeepla, Loonawara, Soonth, the states in the Myhee Caunta, the Kattywar states: 7*th*, States on the Malabar coast (chiefly Mahratta); Sattarah, Sawunt Warree, Colapore, Collabba: 8*th*, Burmese frontier; Cachar, Jyntia. States not under British protection; Scindia, the rajah of Dholapore, Barree and Rajakera (formerly rana of Gohud), Runjeet Singh of Lahore, the ameers of Scind, and the rajah of Nepaul. Scindia, though not formally a protected or dependent state, is substantially under the control of the British, who now settle with many of his tributaries, collecting his revenue, and paying it over to him; so that they have secured their ascendency in all the western and southern districts of his dominions, which, in the event of a war, they might employ against him for his destruction. Of this, according to Sir John Malcolm, he is so sensible, that he has abandoned all idea of ever again opposing the British government.

Ca s of the i- tish c- cess

The rise of the British power, from small beginnings into so vast an empire, is one of those surprising revolutions in human affairs which gives to history the air of a romance. The managers of a trading company in London are now the lords of a kingdom ten times the size of England, and containing a hundred millions of inhabitants; they engage in war and make peace; they rule over kings and princes, dethroning some and setting up others in their stead; and in their counting-house in Leadenhall Street they regulate, not the chances of profit and loss, but the concerns of a vast empire. Yet the causes of this great revolution are simple and obvious. The extensive dominion acquired by the British in India is the consequence of long-continued military success; it is the fruit of victory in many a well-fought field, the triumph of European discipline and science over the rude valour of the hasty levies and imperfectly trained militia of the East. In the course of this long contest the British had frequently to contend with few against many, and their empire sometimes tottered on the verge of ruin, as in the invasion of the Carnatic by Hyder Ali. But the steadiness of the European infantry still repelled the irregular charges of the Mahratta horse, and triumphed in the end; and to this powerful instrument, namely, a well-disciplined military force, wielded by skilful hands, the British are indebted for the conquest of Hindustan. The extension of their empire in India was always discountenanced by the Directors at home, who issued their repeated and peremptory commands on the subject. Yet it might have been easily foreseen, that, the foundation once laid, the superstructure would naturally arise; that having made the first step, the British would not readily stop short in their course. The frailty of man has never been able to resist the allurements of ambition; the dazzling prize of extensive dominion has in all ages been pursued through the paths of blood; and it was scarcely to be imagined that the Company's servants in India would resist its temptations, more especially as there were many circumstances which gave a plausible colour to their ambitious views. The native powers, alarmed by the territorial acquisitions of the British, naturally combined against them as the common enemies of Indian independence. The British, on the other hand, convinced of their strength, and of the hatred and jealousy which they had excited throughout India, and easily yielding to the least surmise of hostile coalitions, often took up arms to avert distant and doubtful dangers; and victory being still the result of each new struggle, they assured their safety by the ruin of their enemies, and by the extension of their power. Thus the hostile designs of Tippoo rested upon mere suspicion, and he was overthrown when he was no longer formidable, and when he was thought to be an easy prey; and thus have all the independent states of Hindustan been successively crushed by their great rival, and war only ceased when no enemy remained to be conquered. Peace now reigns throughout the wide precincts of Hindustan,—of itself an unspeakable blessing, especially in India, so long the scene of ruthless war, massacres, and devastation; and this is no doubt the consequence of British ascendency. Happy, if, along with this blessing, we diffuse among the ignorant, superstitious natives, the arts, the knowledge, the improvements, and the enlightened morality, of Europe.

Internal policy of the British.

It will now be proper to give a brief account of the domestic policy of the Company as sovereigns of India, especially in those important departments in the civil administration of every country, namely, the revenue, the judicial establishments, and the police.

Land-tax under the Mogul empire.

Under the Mogul government, the public revenue was chiefly derived from a general land-tax, and the regular payment of this tax was the tenure by which property was held throughout the empire. The lands were possessed by different descriptions of owners or occupiers, under the titles chiefly of zemindars or polygars, the military chieftains of the Carnatic, talookdars, ryots, maliks, meerassadars, nair mulguenies, bhoomias, &c.[1] When Hindustan was brought under the sway of the British, they were necessarily ignorant of the manners and usages of the people, and of the peculiar structure of a Hindu community; and hence the nature of the tenures under which land was held, and of the different descriptions of land owners and occupiers, has been a standing subject of controversy amongst the Company's servants, some insisting that under the Mogul despotism, as over all the East, the sovereign is the sole proprietor of the lands within his dominions; that no private right of property has ever been recognised in any of the great monarchies of Asia; and that all grants of land are resumable at the pleasure of the prince. According to this theory, the zemindar is considered merely as a species of steward or factor, appointed by the government, to collect and superintend the land revenues; and after reserving a suitable portion for his own maintenance, to remit the surplus to the imperial treasury. The rights of the talookdars, an inferior description of holders, and the ryots, and other occupiers of land, were still more imperfectly understood by the English when they acquired the dominion of Bengal; but, under the idea of the sovereign's indefeasible right in the soil, they naturally considered them as tenants at will, to be dealt with like other tenants in the same situation, at the pleasure of the proprietor. This hypothesis of the sovereign's proprietary right was eagerly adopted by the English, and has been boldly followed up in practice. It has, as might have been expected, led to extensive confiscations of land, to great changes in the state of property, and to much distress and confusion, as will be afterwards narrated; and it will be proper, therefore, briefly to inquire how far this claim accords with any legal right, and still more with any principle of enlightened policy.

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[1] For a full account of the operations of this war, see the article AVA.

Sovereign's proprietary right considered.

In a government purely arbitrary, where every man holds life and liberty at the mercy of the sovereign, it is extremely difficult to distinguish between the exercise of legal rights and the outrages of abused power. That the despotic rulers of the East might take possession of the land, or of any other description of property belonging to their subjects, and that this was their practice, can hardly be questioned. But might does not constitute right; nor by such acts of tyranny can they become lords of the soil in any legal sense, any more than of the lives and liberties of their subjects, because they often massacre and torture them at their pleasure. The law of conquest, which is the law of the strongest, gave to the Mahommedans possession of India, which they desolated with fire and sword, and took possession of the lands and properties of the inhabitants, who, according to their approved practice, might have been all put to the sword, as the redemption price of their blood. This was the only title which the Mogul emperor could have had to the lands within his dominions, namely, that he had seized upon them by force; and in countries long subject to Mahommedan rule, or to the Mahrattas and other domestic tyrants, all the ancient rights of the proprietors have accordingly been obliterated. But these acts of tyranny and spoliation can never be construed into legal precedents, nor can they ever confer any title; and it seems a gross abuse of words to call that a right which is merely a deed of violence.

The monarch or the emperor was no doubt styled, in the true strain of oriental flattery, the sole proprietor of the soil, and the lord of the universe; and this he may have been originally, in the same manner as the monarchs of Europe were under the feudal system. According to the feudal law, they were the supreme lords of all the conquered territories, which they granted as fiefs to their vassals, on condition of military service; and from the monarch a subordinate chain of vassalage extended downward to the lowest tenant. These lands were at first granted for a year, but afterwards for life; at length they became hereditary, and descended to the son, or to more distant relations; and thus they finally became a permanent property. But the form of the original tenure is still maintained. They still hold of the sovereign, to whom, at the death of each heir, a formal surrender is made of the property, and a new charter is granted as a matter of course. But this right of the crown, by which in former times the property was actually resumed at the death of the proprietor, has now become a mere legal fiction, an evidence only of the original tenure by which the property was held; and we may easily imagine the disorder and injustice that would be introduced into any European country by a conqueror, who, guided by feudal forms, in opposition to immemorial usage and fixed law, was to resume all property holding of the crown, or of any other superior. In like manner, in Hindustan, though the sovereign was styled the proprietor of all the lands within his dominions, and in legal theory might be so, it would be rash to infer from this the actual extinction of all proprietary rights. Under the Mogul government a heavy tax was, no doubt, laid on the land, which was the main source of the public revenue. But individual rights of property might nevertheless exist; and their non-existence has certainly never been satisfactorily proved; so far from it, that the advocates of the sovereign proprietary right seem to have nothing to oppose to immemorial usage, and to the principles of justice, but legal forms and the acts of despotic power.[2]

But the abstract question of right here merges into the higher question of policy. It would be the interest of a sovereign, even if he were proprietor of the soil, to commute his rights for a moderate and fixed assessment, which in the end would bring in the greatest amount of revenue. A land-tax which leaves a bare maintenance to the cultivator discourages agriculture, population, and the growth of capital; it is indeed an interdict on all improvement. Its produce cannot be increased except by the most ruinous extortions, though it will necessarily decrease with the desolation of the land, which it tends to promote. No country can be improved and cultivated where the rights of property are loaded by a public tax. Would the wastes of America, we may ask, be so quickly converted into fruitful fields, if the government were to come in for the largest share of the produce, if the owner were placed under the strict surveillance of the excise, and obliged to account for every particle of his crop. In Europe the church tithes have been justly complained of as a great obstruction to improvement. But a tax such as we have described, which, however it varied in its amount from a fourth, a third, or half the gross produce of the soil, generally left only a bare maintenance to the cultivators, is far more pernicious in its operation; and it is indeed owing to its pressure that so large a portion of Hindustan still remains a primitive wilderness. Mr L. Place, to whom was committed, in 1790, the settlement of the Jaghire, a tract of country in the Carnatic that had been ruined by the invasion of Hyder Ali, after mentioning the desolation of the country, and that the inhabitants would not cultivate any fields except under a secure tenure, adds, that "by granting them lands to them and their heirs for ever, so long as they continued in obedience to the circar (government), and paid all just dues, he was enabled to convert the most stubborn soil and thickest jungle into fertile villages."

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[1] See Colonel Todd *On the Feudal System in Rajast'han*, vol. i. chap. i. p. 167. See also *Fifth Report*, p. 822–23, Extracts from Mr Thackeray's Report, dated 4th August 1807.

[2] The masterly reports of the Company's collectors in Southern India all concur in stating the hereditary rights of individuals in the land to be clear and unquestioned from the most remote ages. " In tracing their (the Hindus') past situation," says one of the collectors, " it is not to be discovered, that during the revolutions of many ages, from the reign of their first princes, until the final downfall of the Hindu authority, any questions ever existed, in any stage of the Hindu history, as to the right of the people to the lands of the country, excepting villages or lands totally waste, and that had escheated to government. On the contrary, they appear to have been transmitted to them, from the most remote era, down to the present time, without interruption; these rights are supported by usages, which could never have prevailed, but for their universal acknowledgment; and, in the repositories of their history and their laws, we find the right of the people to property in lands repeatedly acknowledged and preserved." (Extract from Report of Collector of Southern Polygar Peshcush, 29th December 1800, *Fifth Report*, Appendix, p. 828.)

d titles ng the dus.

It was extremely natural for those who had succeeded to the rights of the sovereign to exaggerate the extent of those rights, and to believe in the convenient doctrine of his proprietary title to the land. But although many ancient rights were unquestionably trampled down and for ever lost in the violence of the Mahommedan conquest, yet recent investigations have discovered, amidst the ruins of Hindu institutions, many relics of ancient manners, and the clearest titles of individual proprietors to the possession of the soil. In carrying into effect the permanent settlement by Lord Cornwallis of the land revenues in Bengal, the collectors were embarrassed by the claims of the petty talookdars, who insisted on a hereditary right of property in the soil; and the maliks, who with vehemence urged the same claims, and affirmed that the zemindars and talookdars had no deeds to show that could deprive them of their just rights. They claimed the land as their paternal inheritance, and refused to settle for the public revenue on any other terms than as proprietors. The collector was deeply impressed with the justice of their claims; and Mr Rickards, in his masterly work on Indian finance, affirms that the maliks were really proprietors, stripped of their rights by the usurpations and exactions of the zemindars and their aumils or collectors.[1] In the district of Dacca, the private rights of property were found to exist in their full force; even the unproductive jungle and waste around the town was claimed by individuals, "who," says the collector, "though they receive no profit from it, and are too indolent themselves to make it productive of any, will not suffer others to bring it into a state of cultivation without some recompense; and so very tenacious are they of it, that even in the suburbs of the city, which for three or four miles is almost an impenetrable jungle, infested by wild ferocious animals, a man cutting down a single tree will be sued by the proprietor for damages."[2] A clearer idea cannot possibly be conveyed of the rights of property, and of the solid foundation on which they rest in Bengal, as in all other countries. The accurate researches of Colonel Todd, who drew his information not merely from written records and deeds, but from the more durable tablets of stone found amidst the ruins of the fallen pile, have laid open the ancient tenures and institutions of Northern India; and in his lively delineation of those ancient manners we recognise all the peculiar features of the feudal system. There were in Rajast'han or Rajpootana two classes of landholders, the one the Grasya-t'ha-cour or lord, the other the bhoomia;[3] the first holding land by a grant from the prince on the condition of military service, "renewable," says Colonel Todd, "at every lapse, when all the ceremonies of resumption, the fine of relief, and the investiture, take place;"[4] the other an allodial proprietor, who holds prescriptive possession, who succeeds to his inheritance without any fine, though he pays a small annual quit-rent, and may be called upon for military service in the district where he resides, which is chiefly composed of the rocks and wilds that afford a refuge from oppression, and where the bhoomias, being numerous, form a species of local militia.

Landed property in the South of India.

In the southern countries of India, in Tanjore, Tinnevelly, Canara, Malabar, &c. where the Mahommedan rule had only been temporary or partial, the rights of property were not extinguished; they were indeed encroached upon, and were, as Mr Rickards observes, "in progress of actual extinction, and approached nearer and nearer to this term in proportion to the duration of Mussulman tyranny." The tyranny and exactions of Hyder Ali and his son Tippoo had nearly extinguished all proprietary rights in Mysore and in Malabar; and most of the Hindu landholders were compelled to seek refuge in Travancore. "I was," says Mr Rickards, "personally acquainted with some who, from the same causes, deserted their estates, and retired for safety into Coimbetoor."[5] But those rights were not obliterated, and the investigations of the British functionaries, skilled in the native languages and manners, brought to light in these countries the ancient condition of property, and the clearest titles of individual proprietors.[6] The notion of the sovereign's proprietary right to the whole

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[1] See *Fifth Report*, p. 493, Copy of a Letter from the Collector of Shahabad to the Board of Revenue, dated 29th September 1789. Rickards, vol. i. chap. i. sect. iv. p. 368. *Mal*, says Rickards, is an Arabic word, denoting wealth, property, revenue, rent, particularly that arising from land; and *Malik* means master, lord, proprietor, owner of such rent.

[2] *Fifth Report*, Appendix, p. 495, Letter from the Chief of Dacca to the Board of Revenue, dated 23d July 1786. It was proposed that the government should clear away this jungle, and cultivate the land. But this "laudable plan," says Mr Day, chief of Dacca, cannot therefore be carried into effect, "without creating great dissatisfaction," as every seizure of private property necessarily does; yet he observes, that the "prejudice (*i. e.* the robbery) of a few individuals, should be no impediment to the adoption of a plan which has for its object the benefit of the community at large."

[3] The term *bhoomia* is, according to Colonel Todd, a most expressive and comprehensive name, importing absolute identity with the soil; *bhoom* meaning land. (Todd, vol. i. p. 168.)

[4] *Annals and Antiquities of Rajast'han*, by Lieutenant-Colonel James Todd, vol. i. p. 164.

[5] Vol. i. p. 283.

[6] See *Fifth Report of Select Committee*, p. 714, Report of Mr Place respecting the land tenures in the Jaghire; Report of Mr Hodgson on the revenues of Tinnevelly, *Fifth Report*, p. 832; Report on Revenues of Dindigul, p. 978. Mr Place at first agreed to the favourite theory that the sovereign was lord of the soil, and that the occupants of land in India were mere tenants at will. But on further inquiry, he was convinced that the *meerassadars* were hereditary proprietors. Report of Collector of Tanjore and Trichinopoly, 8th September 1805: "Immemorial usage," he observes, "has established, both in Tanjore and Trichinopoly, that the occupants, whether distinguished by the names of *meerassadars* or *mahajanums*, have the right of selling, bestowing, devising, or bequeathing their lands in the manner which to them is most agreeable." "It is fortunate that, at the moment when we are consulting on the means of establishing the property and welfare of the numerous people of these provinces, we find the lands of the country in the hands of men who feel and understand the full rights and advantages of possession; who have enjoyed them, in a degree more or less secure, before the British name was known in India; and who, in consequence of them, have rendered populous and fertile the extensive provinces of Tanjore and Trichinopoly. The class of proprietors to whom I allude are not to be considered as the actual cultivators of the soil; the far greater mass of them till their lands by means of hired labourers, or by a class of people termed *pullers*, who are of the lowest, and who may be considered as the slaves of the soil. The landed property of these provinces is divided and subdivided in every possible degree. There are proprietors of 4000 acres, of 400 acres, of forty acres, and of one acre."

produce of the land was interwoven with the Mogul system of finance, and the East India Company had always acted on the same maxims. Accordingly, Mr Place and others, when they entered on the management of the Jaghire, Canara, Malabar, &c. were prepossessed with the same ideas, and gave the most liberal interpretation to the Company's proprietary rights, considering the occupants and cultivators of the land as mere tenants at will. But they were soon undeceived by glaring facts. They found that the possessors of the land had the right of selling, bestowing, devising, or bequeathing their lands, in whatever manner they might deem expedient; that the lands, whether they belonged to villages, and were cultivated in shares by their common labour, or to individuals, were their absolute property, of which they could only be deprived by an act of violence. This proprietary right was termed *meerass*, a Persian or Arabic term for land;[1] and the proprietor a *meerassadar*. "Whatever may have been the origin of these rights," says the Fifth Report (p. 105), "they are regarded by the people as hereditary rights," and were, according to the Hindus, far more ancient than the Moorish conquest. Estates were found to consist of from 4000 to one acre of land; and where they were large, or were divided amongst a numerous proprietary, they were tilled by *parakudis* or *pyacaris*, who were paid for their labour, and who possessed hereditary rights of occupancy as cultivators. Common labourers were also occasionally hired; and slaves are numerous all over the country, attached to the soil, and in a state of villenage, as were formerly the cultivators in Europe. In Canara, the same rights of property exist in the land; and the proprietors are known under the appellation of *nair mul guenies*, who, like the meerassadars, have tenants in perpetuity, or *shud mul guenies;* and tenants at will, or *chalie guenies*. Of these tillers it is observed in the Fifth Report of the Select Committee on the affairs of the East India Company, that "the lands in general appear to have constituted a clear private property, more ancient, and probably more perfect, than that of England. The tenure, as well as the transfer, of this property, by descent, sale, gift, and mortgage, is fortified by a series of regular deeds, equally varied and curious, and which bear a very strong resemblance in both parts of the country. The proprietary right is either vested in individuals, or in copartnerships of persons, each of whom possesses an unalienable interest in the estate, proportioned to the share of the property of which he has become possessed."

There is another class of landholders in Malabar, denominated *jelmkars*, or *jenmkars*, who possess allodial rights, acknowledging no superior, and who were exempt from the government-tax.[2] When Hyder conquered the country, his first act was to declare half the produce of the soil to belong to the sovereign; and it was in this manner that in Hindustan all private rights were trampled upon and gradually obliterated. But these exactions of tyranny are not to be confounded with the legal claims of the state. Mr Hodgson, in his report on the revenues of Coimbetoor, justly observes, that whatever abuses took place under the Hindu or Mahommedan princes, "what was fair assessment, and what was exaction, was well known to the party governing and those governed."[3] From all this concurring evidence, it is clear that the sovereign's proprietary right in the soil was in Hindustan, as in Europe, more nominal than real; that prior to the Mahommedan conquest the land was divided amongst individual proprietors, and that the bhoomia of Rajpootana, the malik of Bengal, the meerassadar of Southern India, the nair mul guenies of Canara, and the jelmkars of Malabar, were all hereditary landholders, with legal rights, of which they could only be dispossessed by the violence of despotic power.

The Mahommedan conquest subverted most of the ancient rights and titles of the Hindu landholders, and introduced into Bengal the title of zemindar or landholder, from the Persian word *zemin*, land; respecting whose rights and duties so wide a difference of opinion has prevailed. Without entering further into this controversy, which, as respects the zemindar, is more a speculative than a practical question, it may be observed, that the zemindars had lived for centuries in great splendour on the produce of their lands, which had quietly descended under the existing tenure through successive generations; that they had the power to sell, to alienate, or to mortgage; and that as long as they paid the annual tribute to government, they enjoyed secure possession of their lands. Under a despotic government arbitrary ejectments might no doubt occur; but these were rare, and they were universally regarded, both in law and in usage, as the illegal outrages of abused power. It is admitted on all hands that these rights belonged to the zemindars; and the only point that still remains in dispute, and it does not appear very material, seems to be, whether, according to the theory of the Mogul constitution, the receipt of the land-tax by the sovereign, or of his allotted share of the produce by the zemindar, entitled the one or the other to the character of proprietor of the land.

The zemindars, being bound to the state for the revenue, were necessarily invested with the power of collecting the land-tax from the subordinate landholders and tenants. They united, in this manner, legal authority with the possession of property, whilst, as judges and magistrates, they administered both civil and criminal justice, and were held responsible for all crimes committed within their respective boundaries. These powers they frequently abused, and oppressed the inferior landholders, the talookdars and the ryots, the hereditary cultivators, or, as others consider them, the proprietors of the land, by the most cruel exactions. It was to the principal landholders that government looked for the discharge of its demands, whilst the inferior occupants and tenants were bound each to his immediate superior for their several proportions of the stipulated tax.

There were various other tenures by which lands were held in Bengal, namely, the Jaghire, Altumgha, Muddud Mash Ayma, and others. The first were grants of land on the condition of military service, or for the support of garrisons or any other public establishment, especially of a military nature. This would appear also to have been the conditions of the zemindary tenure, as Mr Rickards states that the zemindars of Bengal are expressly mentioned in the

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[1] This term of *meerass* was introduced by the Mohammedans. "Swastrium," says Mr Hodgson, "is the Sanscrit word, and is generally used by the Brahmins; and *caneatchy* by those Shudras (cultivating castes) who may not have adopted the general term *meerass*." (See *Fifth Report*, Appendix, p. 832, Extract from Hodgson's Report on the Revenues of Tinnevelly, 24th September 1807.) Caniatchikedar is possessor or proprietor, and fully answers to jelmkar. (See p. 833, *Fifth Report*, Mr Hodgson on the Revenues of Dindigul, 28th March 1808.)

[2] *Jelmkar* or *jenmkar* means an allodial proprietor; the term *jenm* meaning properly allodial right.

[3] *Fifth Report*, p. 834. "Neither the Hindu nor Mussulman government appear (supposing their right in the soil as proprietors to be indisputable, and proprietary right to be a right to demand what the proprietor pleases for his land) ever to have exercised the right. What was fair assessment, and what was exaction, was well known to the party governing and those governed. It is true, where, as under Tippoo Sultaun's reign, exaction had no limit, landed property could have no value; but where fraud could not counteract oppression, a hope of change for the better, or inability to resist, produced submission, till the load became too heavy to bear, and emigration the only source of relief."

Ayeen Akberry as furnishing their several contingents of cavalry, infantry, and artillery. The Altumgha grant, according to the terms of it, was in perpetuity. The other grants were for the support of learned men, or religious establishments. Many of the public functionaries of the Company denied the validity of these grants; they estimated the average loss, as it was called, as if there could be any loss where there never was any right, on these grants in Bengal and the ceded provinces at two and a half millions sterling, and contended that they were resumable, and were often actually resumed, at the pleasure of the prince. Colonel Todd, however, mentions, that in Rajpootana this right of resumption had fallen into disuse. "The right to resume," he observes, "may be presumed to exist; while the non-practice of it, the formalities of renewal being gone through, may be said to render the right a dead letter;" and, quoting a passage relative to the fiefs in Europe, that they were first moveable or resumable at pleasure, then perpetual or for life, and finally hereditary, he adds, "this is the precise gradation of fiefs in Mewar, a division of Rajpootana. There is reason to believe that these grants were in a progress to permanency all over India." But all permanent property in land was discountenanced by the policy of the British in India, who were perpetually picking holes in the tenures by which it was held, even where the deed of grant expresses in the plainest terms that it is perpetual, "from generation to generation."[1]

Div n of t cou y int -lage

The country of Hindustan is divided into villages or districts, each comprising some hundreds or thousands of acres of arable and waste land. Every village is a separate community or township, and has its own establishment of public officers and tradesmen. These consisted of the *potail*, or head inhabitant, whose business it was to superintend the affairs of the village, to settle disputes amongst the inhabitants, to attend to the police, and to the collection of the public tax; the *curnum*, to whom it belonged to keep an account of the cultivation and produce of the land, to register the proprietors of the village, and to attest all deeds of sale, transfer, or assignment; the *boundary-man*, who preserves the limits of the village, or gives evidence of them in case of dispute; the priest, the schoolmaster, the astrologer; the smith, the carpenter, the potter, the washerman, the barber, the cowkeeper, the doctor, the dancing-girl, the musician, the poet, who were each rewarded for their labours out of the produce of the village lands. The amount of their shares on the gross produce is estimated at five and a half per cent. The collectors were allowed ten per cent., and the remaining proportion of the crop was divided between the sovereign and the cultivator, in the proportion of ten elevenths to the former, and one eleventh to the latter. "Under this simple form of municipal government," says the Fifth Report, "the inhabitants of the country have lived from time immemorial. The boundaries of the villages have been but seldom altered; and though the villages themselves have been sometimes injured, and even desolated, by war, famine, and disease, the same name, the same limits, the same interests, and even the same families, have continued for ages. The inhabitants give themselves no trouble about the breaking up and division of kingdoms; while the village remains entire, they care not to what power it is transferred, or to what sovereign it devolves; its internal economy remains unchanged; the potail is still the head inhabitant, and still acts as the petty judge and magistrate, and collector or renter of the village." So deeply attached are the Hindus to their native villages and local manners, that, however they may be scattered by the desolation of war, their affections still centre in one common and cherished spot; insomuch that, in 1817, as is mentioned by Sir John Malcolm, and as has already been noticed, when peace was re-established in Central India, by the expulsion of the Pindarees and other freebooters, who laid waste the country, the inhabitants and officers of the villages re-assembled from every quarter, and the resurrection of these communities into life and action seemed to have been the work of an instant.

Land-tax.

The land-tax of the village is collected by the potail, assisted by a train of petty officers or under collectors, the putwarries, the peons, the pykes, and others, whose salaries form a deduction from the gross rent. The potail pays his collections to the zemindar, from whom they were received, under the Mogul government, by a higher officer, and finally remitted to the imperial treasury. The accounts of the *curnum*, or the *canongoe*, were also transmitted through various gradations of accountants, who superintended and checked the collection and receipt of the public revenue. In the year 1573, during the reign of Akbar, when the Mahommedans had completed the conquest of Hindustan, Rajah Torrel Mull, minister of finance to the emperor, from the accounts furnished by the canongoes and collectors of the revenue paid by the ryots, formed a general rent-roll for all the country, as well as a scheme of division, fixing the separate proportions of districts and villages. The revenue thus settled, and usually called *tumar jumma* (rent), or standard assessment, is estimated by Sir John Shore at

	Rupees.	
	10,693,152, at 2s. 3d.	L.1,202,979
In 1722, being a period of 149 years, it was increased, under Jaffier Khan, by means of Abwabs, which are arbitrary taxes added to the original or standard assessment, to........	13,115,907	1,475,537
In 1728, by the additional taxes of Sujah Khan............	16,418,513	1,847,082

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[1] Colonel Munro, a great authority on all Indian questions, in a paper of remarks on a decision of the chief justice of Madras respecting a jaghire estate that was resumed by the Company, argues, from the arbitrary practices of Indian princes in taking away these rights, that no such rights exist, although they are defined in the clearest terms. "The grant," he observes, "is in the usual form,—'to be enjoyed by him and his descendants *for ever, from generation to generation.*' He is authorized to divide it among his descendants; and the local officers are required to consider the perwannah 'as a most positive peremptory mandate, and not to require a fresh sunnud every year.' The terms employed in such documents, 'for ever,' 'from generation to generation,' or, in Hindu grants, 'while the sun and moon endure,' are mere forms of expression, and are never supposed, either by the donor or the receiver, to convey the durability which they imply, or any beyond the will of the sovereign. The injunction with which they usually conclude—'Let them not require a fresh sunnud every year,' indicates plainly enough the opinion that such grants were not secure from revocation." (In Consultation, 15th March 1832.) The language here may be a "mere form of expression," yet it is impossible to frame in words a clearer legal title; and the doubt is, whether the subversion of such a title, however common amongst the despotic princes of Hindustan, ought not to be regarded as a tyrannical act rather than a legal precedent. No landed proprietor would, with such a title, surrender his estate, except to the power of the strongest. Custom may have rendered such acts familiar to the prostrate people of Hindustan; but if words like these are to be held as mere official forms, it is clear that no legal title to property can exist in India. Sir Thomas Munro mentions several examples of land held under common jaghire grants descending through several generations. He still insists, however, that, by the invariable custom of the country, they are resumable at the pleasure of the prince, though it seems extremely doubtful how far the practice of a despotic government in resuming lands can be received as a precedent against such a clear legal title.

	Rupees.	
In 1755, by Aliverdy Khan, to	18,644,067	L.2,097,550
In 1762-3, by Cossim Ali	25,624,223	2,882,724
In 1763-4	17,704,766	1,991,785

The arbitrary taxes termed Abwabs, added to the original standard assessment, consisted of duties on the transit of goods through the different chokies or toll-bars of the country, of taxes on cattle and stock of every description; of a capitation tax; of a tax on shops, manufactures, or stock in trade; and of fines and other arbitrary exactions; and, in proportion to the demands made on the zemindar, he was empowered to augment the contribution of his tenants. The standard revenue of Torrel Mull, amounting to L.1,202,979, appears to have been all that the country could bear; for, inconsiderable as was the augmented revenue of Jaffier Khan, it was only obtained by the most cruel tortures inflicted on the zemindars, many of whom he confined in pits filled with ordure, which he termed in derision Bykaut, or Hindu Paradise. In the reign of Meer Cossim, who was set up by the English, to whom he promised large sums as the price of his elevation, these oppressions were carried to a still greater height. The policy was to ascertain, by exact money, the produce of the land; and the whole surplus, after allowing a bare maintenance to the cultivator, was swept into the treasury.

English invested with the sovereignty of Bengal.

Although the ascendency of the English had for some years been thoroughly established in Bengal, and although they were formally invested in 1765 with the sovereignty of the country, its affairs were still administered in the name of the native prince, and according to the forms and policy of the ancient constitution. Justice was still dispensed by the native courts, and by the nabob's officers; the revenues still flowed through the same channels into the public exchequer; and all transactions with foreign powers were carried on under the same authority as formerly. But such was the increasing power of the English, that the government, as far as regarded the protection of the people, was dissolved. Neither the nabob nor his officers dared to offer any opposition to their sovereign will; and the tribunals of justice, so far from being a refuge to the oppressed, became subservient to the rapacity of the gomastahs, or Indian agents, employed by the Company's servants, and were converted by them into most efficacious instruments for oppressing and plundering the people.

The directors had been long dissatisfied with the proceedings of their servants, and with the produce of the land revenues, which had fallen far short of their expectations, and they now resolved to put an end to the double administration of the nabob and the Company; and, dispensing with the empty name of the former, to take upon themselves, ostensibly as well as really, the entire care and management of the land revenues. The dewanny of Bengal, Bahar, and Orissa, or the office of collector of the public revenues, which in the East implies the right of sovereignty, was conferred in perpetuity on the East India Company by a grant from the Mogul Shah Aulum, dated the 12th of August 1765. The assessment imposed on the country by Cossim Ali is stated by Sir John Shore to have been mere "pillage and rack-rent;" and it was an assessment on paper, as, out of the sum of L.2,882,724, there remained a balance undischarged of L.1,987,054, notwithstanding the cruelty with which the collection had been enforced. It was found necessary to reduce the assessment, in 1763-64, to L.1,991,785, out of which the sum realised was only L.857,070.[1] In 1765-66, the first year of the Company's administration, the assessment was 16,029,011 rupees, equal to L.1,803,263, of which 14,704,875 rupees (equal to L.1,803,263) were actually collected. In 1765 the assessment imposed amounted to L.1,692,237, and in 1766 and 1767 it amounted to L.1,713,677, from which deductions were afterwards made, as it was found impossible to collect it. Yet the sum actually realised was greater than ever was extorted from the country by all the cruelties of Jaffier Khan. But the methods by which it was collected were most ruinous. The landholders, failing almost universally in their engagements, were left to the mercy of the revenue-officers, by whom they were grievously oppressed. In many parts, the villages were deserted by the cultivators, and the land was left desolate. All these evils were still farther aggravated by a grievous famine which prevailed in Bengal in the year 1770, by which it is computed that about one third of the inhabitants perished. But, in the midst of all this misery, the revenue was still violently kept up to its former standard. The deficiencies occasioned by the famine were re-assessed on those who survived this calamity; and so strictly were they levied, that the land revenue for that year exhibited an increase above that of the year preceding. The ruinous effects of this heavy exaction are stated at length in the different letters from the governor-general to the directors. In a letter, dated the 3d of November 1772, he observes, "It was naturally to be expected that the diminution of the revenue should have kept an equal pace with the other consequences of so great a calamity; that it did not, was owing to its being violently kept up to its former standard." He then describes the method by which this was accomplished, which was by "an assessment upon the actual inhabitants of every inferior division of the lands, to make up for the loss sustained in the rents of their neighbours, who are either dead or have fled the country." "The tax," he continues, "not being levied by any fixed rate or standard, fell heaviest on the wretched survivors of those villages which had suffered the greatest depopulation, and were of course the most entitled to the lenity of government. It had also this additional evil attending it, in common with every other variation from the regular practice, that it afforded an opportunity to the farmers, or shiedars, to levy other contributions off the people under colour of it, and even to increase this to whatever magnitude they pleased, since they were in course the judges of the loss sustained, and of the proportion which the inhabitants were to pay to replace it." To the same effect, Mr Middleton, one of the superintendents of the public revenue, observes, "When a very considerable portion, supposed even a third of the whole inhabitants, had perished, the remaining two thirds were obliged to pay for the lands now left without cultivators. The country has languished ever since, and the evil continues enhancing every day. The first remedy, without the adoption of which all other measures will be fruitless, is an universal remission of some considerable portion of the revenue throughout the provinces. Such remission should have been made immediately on the famine. Its not taking place then has made it more and more necessary every day; and the longer it is delayed, the more ruinous the consequences must be to this country and its revenue."

To correct these evils, supervisors, chosen from the Company's servants, were in 1769 stationed in different parts of the country, to superintend the native officers in the collection of the revenue and in the administration of justice; and two councils were appointed over the supervisors, one at Moorshedabad and another at Patna. These supervisors were instructed to procure information respecting the amount of the land revenues, the manner of collecting them, the amount of the cesses or arbitrary taxes, the origin and progress of those modern exactions, and also to inquire concerning the regulations of commerce and the administration of justice. The reports made by these supervisors concurred with all the other evidence received as to the wretched and oppressed state of the natives. "The nazims," they observed, "exacted what they could from the zemindars and great farmers of the revenue, whom they left at liberty to plunder all below; reserving to themselves the prerogative of plundering them in their turn, when they were supposed to have enriched themselves with the spoils of the country."

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[1] See Sir John Shore's Minute, *Fifth Report*, p. 176.

It was now resolved to make a settlement of the land revenues for five years commencing from the year 1772. For this purpose, a committee of the board, consisting of the president and five members, named the "Committee of Circuit," was appointed, who were to make a journey through the country, and were empowered to receive proposals for a new lease of the lands, first from their ancient possessors, and if their offers were deemed unsatisfactory, they were to be let by public auction to the highest bidder. These persons proceeded in their circuit through the country, publicly advertising and letting in farm, for the highest rent that could be obtained, the estates of such as hesitated to contract for the assessment proposed. A great proportion of the landed property throughout Bengal was thus exposed to auction; and, in the general sale, the former owners and the great nobility of the country were outbidden by adventurers, to whom property was acceptable on any terms; and were generally dispossessed of their lands, from the surplus produce of which a provision was assigned them by the indulgence of the revenue committee.

The supervisors who had been stationed in the different districts were invested with the necessary powers for the collection of the revenue, and were henceforth denominated collectors. A native officer was to be joined with them under the title of duan, to confirm and to check accounts, and to assist in all those multifarious details which were intelligible only to a native. Various regulations were adopted to check the exertions of the collectors; but the governor and council express their regret that it was not in their power wholly to remedy this evil. Under the Mogul government, the duty of collecting the revenues and of administering justice was united, as formerly mentioned, in the person of the zemindars. The new scheme for the management of the revenues subverted this ancient order of things. The zemindar was superseded both as collector and as judge, and his place was supplied by two courts, the one for civil, called the Dewanny Court, the other, called the Fonjdarry Court, for criminal proceedings, established in each district. In the criminal court the new collector of taxes was to act as president, to be assisted by two Mahommedan officers, the cauzee and the muftee, and by two Mohlavies, as interpreters of the law. The civil court consisted, in like manner, of the collector as president, assisted by the duan and other officers of the native court. Two supreme courts were, at the same time, established at Calcutta, for the review of the inferior courts, the one for civil cases, being called Dewanny Sudder Adawlut, and the other the chief court of criminal justice, or Nizamut Sudder Adawlut. To one of these all capital cases were reported, and were ultimately referred to the governor and council, who, finding the labour too great, restored, in 1774, this branch of administration to the nominal nabob, and carried back the court to Moorshedabad. It appeared that, for a long period before this, the administration of criminal justice was wholly at a stand. In the new arrangements all disputes about property not exceeding ten rupees in value were referred to the head man of the district to which the parties belonged.

In considering those regulations, the question naturally occurs, how these supervisors, who were now to act in the double capacity of collector and judge, became qualified for the discharge of such important functions. In all other countries, it is only by a previous course of laborious preparation that any one is qualified for the office of a judge; and to appoint an unqualified person would be reckoned both dangerous and absurd. But how much more dangerous and absurd was it to appoint uninstructed persons to act as judges in a foreign land, with whose language they are but imperfectly acquainted, and of whose laws, manners, and customs, they are thoroughly ignorant? If, among a comparatively rude people, the mode of proceeding be loose and arbitrary; if there be no books of written law, or of precedents to govern judicial decisions, which must consequently depend on the imperfect lights and analogies afforded by manners, religion, or customs, the incapacity of a foreigner for the discharge of such nice duties becomes even more glaring. By disposing of the administration of justice in this manner, it was clear that the judicial duties would either be neglected, or that they would still be performed as before, and with no increased chance of amendment by native officers. This new arrangement was, therefore, like many others, a useless innovation on the established practice of the country. There is another weighty objection to the union in one person of the duties of collector and judge, namely, that it was in the collection of the duties that the grossest oppression had been committed; the powers of the collectors being frequently perverted to the most iniquitous ends. Under this new project, those who sought redress from the courts of justice met with their oppressor in the capacity of judge. He judged in his own case, and of complaints brought against his own conduct. Justice was in this manner an empty name, unless it was supposed that the judge would pronounce himself an oppressor.

Under the five years' lease on which the land revenues had been farmed in 1772, the country was grievously overtaxed. The revenues fell into a heavy arrear the very first year, and the lands were let on a progressive rent. To collect the outstanding balances, and to force up the revenue to its standard, a host of extortioners was, under the name of aumils, or collectors, let loose upon the afflicted country. But the rents contracted for by the farmers of the revenue were greater than they could pay, and, notwithstanding all their efforts, the arrears continued to increase. On the five years' lease, they amounted to a sum equal in value to L.1,454,277, which was judged to be wholly irrecoverable; while, during the same period, the sums remitted, even under the rigorous management of public farmers, amounted to L.1,336,451. Nor was this the only evil arising from the mal-administration of the Company's servants. The zemindars, who are admitted on all hands, even by those who advocate the sovereign's right to the possession of the soil, to have lived in splendour on their hereditary possessions; in all cases to have possessed the powers of magistracy within their district, and, where the territory was large, to have exercised a species of sovereignty; were either despoiled of their estates, or, where they were induced, by a hereditary attachment to their possessions, to engage for the rent proposed, they were overwhelmed with taxes which they could not pay, and were thus involved in poverty and ruin. Where the zemindar was himself the farmer of the revenue, he exercised the same extortion on his inferiors which was applied to himself; where a money-jobber, having no interest whatever in the property of the tenants, was the farmer, there was no limit to his extortion and cruelty.

The defects in this system for the administration of the land revenues soon began to disclose themselves; and the rulers of India, whose government was one continued innovation, immediately resolved to make another considerable change in the state machinery which they had just set in motion. They abolished the superintendence of the collectors; and the country, with the exception of Chittagong and Tipperah, being formed into six grand divisions, viz. Calcutta, Burdwan, Moorshedabad, Dinazepore, Dacca, and Patna, a council was appointed for each of the last five, consisting of a chief and four senior servants, to whom were transferred the powers and duties of the collectors. They were to preside in the courts of justice, and to superintend the collections; and, in subordinate districts, they delegated their powers to naibs or aumils, who were natives, and who were appointed, like their superiors, to collect and to judge in all cases under the value of 1000 rupees. The empty privilege of appeal was, as formerly, reserved to the unsuccessful suitor in the provincial courts; and, to superintend the whole collections of the country, a grand revenue-office was established at the presidency. The district of Calcutta was placed under the peculiar superintendence of a committee of revenue, consisting of two members of the council and three inferior servants. These regulations, which were declared to be temporary, and only preparatory to something more permanent, failed as usual in all their important objects. The defective administration of justice amongst the natives was admitted and complained of by all parties, and the peace of the country was in consequence disturbed by the general prevalence of robbery and other enormous crimes. The truth is, that the new arrangements had subverted the ancient institutions and local manners of the country, and had thus left a void in its internal economy which the government was in vain endeavouring to fill up.

The lease of the lands expired in 1777; and, after various suggestions and consultations, it was resolved that the rent should be regulated by the average collections of the three preceding years, and that the lands should be let, not by auction, but by an agreement with their ancient possessors in preference to other competitors. The liberal views of Mr Francis, who proposed that, in lieu of the monopoly of salt and opium, a moderate duty should be imposed on those articles, and that a long series of oppression should thus be terminated, by giving freedom to trade, were rejected by the governor-general. In pursuance of the plan proposed, the lands were let from year to year until the necessary arrangements could be completed for the system which was now to be adopted of a permanent land-tax.

The attention of the British parliament had frequently been directed to the state of our Indian possessions, and to the transactions of the resident government; and, in 1784, a new system, of which we have already given an account, was established in Britain for the control of the local administration, under which Lord Cornwallis, who was chosen governor-general, was specially directed by the act of parliament, as well as by instructions from the directors and the board of control, "to inquire into the alleged grievances of the landholders, and, if founded in truth, to afford them redress; and to establish permanent rules for the settlement and collection of the land revenue, and for the administration of justice, founded on the ancient laws and local usages of the country."

Lord Cornwallis, on his arrival in India, did not deem matters fully ripe for the execution of the proposed plan, namely, the permanent settlement of the land revenue. On this important subject he found that the most intelligent of the Company's servants differed widely in opinion. Neither the nature of the land tenure, nor the rights of the different orders of people who shared amongst them the produce of the soil, were well understood. All that was distinctly known was the amount of the revenue; but whether it was too high or too low was still a disputed point amongst the English in India, although the country was visibly declining under the weight of assessment. In such diversity of opinion, the governor-general, anxious to proceed with caution, delayed for a little the plan of a permanent settlement. He let the lands, in the mean time, from year to year, through the agency of the district collectors; and information on which to found a more durable arrangement was diligently sought from every source.

Perma- nent se- tlemen of Lor Cornw

In 1799, Lord Cornwallis had resolved on the permanent settlement of the land revenues. This he conceived to be essential to the relief of the country, the condition of which he described to be wretched in the extreme. "I am sorry," he observes, "to be obliged to say, that agriculture and internal commerce have for many years been gradually declining; and that at present, excepting the class of shroffs and banyans (bankers and merchants), who reside almost entirely in towns, the inhabitants of these provinces are advancing hastily to a general state of poverty and wretchedness. In this description I must even include every zemindar in the Company's territories, which, though it may have been partly occasioned by their own indolence and extravagance, I am afraid must also be in a great measure attributed to the effects of our former system of management." "I may safely assert," adds he, "that one third of the Company's territory in Hindustan is now a jungle, inhabited only by wild beasts." In pursuance of his plan, Lord Cornwallis entered into a permanent settlement of the land revenues for ten years, which was afterwards declared unalterable; and the zemindars of Bengal, Bahar, and Orissa, were formally constituted legal and perpetual proprietors of their respective estates, on the payment of a fixed rent to the state. The ten years, or, as it is called, the *decennial settlement*, was completed in every district in 1793.

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In regard to this measure, there cannot be a doubt, that in abolishing a land-tax, increasing at the discretion of the government with the produce of the land, Lord Cornwallis acted upon a just principle. But the advantage of a permanent tax depends on its amount. If it be a moderate tax, its permanency is an advantage; but not so if, as in this case, it was exorbitant, higher than the land could bear, and inconsistent with the progress of cultivation. The legislators of India had not yet acquired the necessary knowledge of the country for such a measure. They had no data on which they could, with any certainty, adjust the tax to the capacity of the soil; and, after long discussions, it was at length fixed at the average amount of the collections for the last three years. In the division of the produce, accordingly, two fifths were, as before, allotted to the ryots, after deducting the expense of collections; of the remaining three fifths, constituting the rent of the estate, ten elevenths were taken as the government share, and one eleventh left to the zemindar. If we suppose, therefore, an estate of which the gross produce is L.1000 a year, the respective shares of the three claimants will be, L.400 for the ryots, L.540 for the government, and the remaining L.60 for the zemindar. In scarcely any instance, however, were these proportions practically enforced. But the tax was exorbitant. During the three preceding years, the average collections of which had furnished the standard of the assessment, it had been a general complaint that the country was overtaxed; and to this cause was ascribed its misery and decline. From this high standard of taxation no systematical reduction has ever been made. Arrears, which had been long accumulating, and which could not be recovered, had indeed been remitted; but every method of extortion had been practised, in order to realize as large a revenue as possible; and the country was now charged with a permanent assessment, founded on the actual revenue of those years, which was exorbitant, and greater than the land could bear; and this radical defect, even if there had been no other, would have ensured the failure of the plan. The zemindar, who was bound, in the first instance, for the public tax, depended, for the means of discharging it, on the produce of his rents; and the state, by imposing an immoderate tax on him, laid him under the necessity of plundering all below him.

There was another defect in the decennial settlement, that it provided no security for the under-tenants and ryots in the hereditary privileges which they claimed in the soil. As they varied in different places, and depended on different rules, the subject appeared to involve details too intricate for European management; and the important task of settling with the ryots was, therefore, devolved upon the zemindars, with a mere general recommendation to be guided by the custom of the place, and to give the ryot a written copy of his lease. According to this plan, it was the great proprietors only who had any permanent interest in the lands, while the inferior proprietors and tenantry were at the mercy of the principal landholders, who might exact from them whatever they pleased. The under-tenants and cultivators, in this ill-defined state of their rights, had no interest whatever in the improvement of the soil, being well assured that they would in no case be left more than a bare maintenance; and this was one among the other errors of the settlement, that it was made entirely with the zemindars, who were notoriously ignorant, oppressive, and corrupt. Maliks and other inferior landholders were crushed, and the just titles of the talookdars and ryots were extinguished; they were placed in the power of the zemindars, on whom alone the government relied for the improvement of the country; though no country was ever yet improved by its great lords, who are generally inactive, wasteful, and improvident. The putwary or hereditary officer of the village was now made a servant of the zemindar; and the office of canongoe, the hereditary village accountant, was abolished, and his land resumed, that is, seized by the government. Though humanely intended, therefore, the plan was calculated to entail ruin upon the higher classes of landholders, by the tax which it imposed on them; while by necessitating them, and at the same time giving them the power, to oppress all below them, in order to satisfy the exorbitant demands of the state, it necessarily had the effect of extending this ruin downwards to the lowest tenant. Its effects have entirely corresponded to this view of its principle.[1]

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It soon appeared, that, in order to realize the revenue, it would be necessary to sell the lands; and this evil once begun, continued to increase. The revenue was not punctually paid, and, for the recovery of outstanding balances, lands to a great amount were at stated times exposed to auction. In the year 1796–97, the lands advertised for sale bore a rent of 2,870,061 sicca rupees (L.332,927), and those actually sold yielded an annual rent of 1,418,756 rupees (L.164,576). In 1797–98, the quantity of lands sold bore a rent of 2,274,076 rupees (L.255,833), and it is observed in the Fifth Report, p. 56, that "among the defaulters were some of the oldest and most respectable families of the country;" "the dismemberment of whose estates," continues the Report, "at the end of each succeeding year, threatened them with poverty and ruin, and, in some instances, presented difficulties to the revenue officers in their endeavours to preserve undiminished the amount of the public assessment." In order to check those evils, several alterations were made from time to time by Lord Cornwallis. But they appear to have been unavailing; and, in the year 1802, in a report from one of the collectors, we have the following melancholy picture of the state of the country:—" 'All the zemindars,' it is observed, 'with whom I ever had any communication, in this and in other districts, have but one sentiment respecting the rules at present in force for the collection of the public revenue. They all say that such a harsh and oppressive system was never before resorted to in this country; that the custom of imprisoning landholders for arrears of revenue was, in comparison, mild and indulgent to them; that though it was no doubt the intention of government to confer an important benefit on them, by abolishing this custom, it has been found by melancholy experience, that the system of sales and attachments, which has been substituted for it, has, in the course of a very few years, reduced most of the great zemindars in Bengal to distress and beggary, and produced a greater change in the landed property than has perhaps ever happened, in the same space of time, in any age or country, by the mere effect of internal regulations.'[1] In another part of the same document, the collector, after commenting on a regulation then recently introduced, observes, 'Before this period (1799), complaints of the inefficacy of the regulations were very general among the zemindars, or the proprietors of large estates; and it required little discernment to see that they had not the same powers over their tenants which government exercised over them. It was notorious that many of them had large arrears of rent due to them which they were utterly unable to recover, while government were selling their lands for arrears of assessment.' The collector adds, 'Farmers and intermediate tenants were, till lately, able to withhold their rents with impunity, and to set the authority of their landlords at defiance. Landholders had no direct control over them; they could not proceed against them, except through the courts of justice; and the ends of substantial justice were defeated, by delays and costs of suit.'" To the same purpose Sir Henry Strachey observes, "That the men of opulence are now all men of yesterday; that the greatest men formerly were the Mussulman rulers, whose places we have now taken, and the Hindu zemindars. These two classes are now ruined and destroyed."[2]

Waste
lands re-
assessed.

It was the intention of Lord Cornwallis to include in the permanent settlement of the land-tax in Bengal, all the waste lands, which were fertile and extensive, and which, yielding, when improved, a valuable produce, would enable the zemindar to pay the exorbitant tax upon the cultivated parts. The Europeans at this time did not know the fertility and the vast extent of those lands; and when it was discovered that the zemindars were enriching themselves by the cultivation of their untaxed wastes, it seems, as Mr Rickards observes, to have excited a notion amongst the British that they had got too good a bargain; and an error of this nature, on the side of liberality, was so monstrous an anomaly in the Company's policy, as behoved to be corrected with all due speed. Accordingly, doubts were suggested respecting the right of the zemindars to these waste lands, though they all laid claim to them as part of their assessed estates, and though it does not appear how the mere fact of their non-cultivation should invalidate or in any degree affect the title to the land.[3]

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[1] *Fifth Report*, printed in 1812, p. 60.

[2] See Answers to the Interrogatories of Government, dated 30th Jan. 1802.

[3] Mr Hodgson, in his Report on the Revenues of Tinnevelly, observes, "If the *meerassadars* (proprietors) should be unable or unwilling to procure *pyacarries* (cultivators) to cultivate that part of the meerassee (estate) which is waste, and the circar (government), or

Inquiries were from time to time made, and in 1815 commissioners were appointed, apparently with no other view than to find a flaw in the titles of the zemindars, and to resume or to seize upon these waste lands, the cultivation of which was so great a source of wealth. Thus it appears that it was no more safe to grow rich under the rule of the British in India, than under any of the native despotic states; and the too luxuriant prosperity of the thriving zemindars was accordingly pruned by the tax-gatherer's rapacious hand. It was suggested by one of those commissioners in 1817, whose inquiries, the further they were pursued, involved him in greater difficulties, that all the waste lands should, without more ado, be declared the property of government, leaving to the zemindar the tardy and uncertain remedy of proving his title to the satisfaction of those who were despoiling him of his property. The greatest difficulties were everywhere experienced in carrying this scheme of spoliation into effect. In Bahar and Benares the commissioner declared the unassessed lands to be everywhere claimed as a portion of the zemindary estate. It is clear that the permanent settlement of the land-tax in 1793 was intended by Lord Cornwallis as a full discharge of all the public dues. It was a solemn deed, by which all doubtful and conflicting claims were for ever set at rest; and to open up this settlement at the distance of twenty years, and to harass the landholders with new and undefined demands, was a breach of faith, a cruel mockery of private rights, calculated to inflict a deep wound on the prosperity of the country. Such vexatious inquiries, conducted by those who had an interest in the confiscation of the lands, terminated as might have been expected. Those which were exempted from taxation by the permanent settlement of 1793 were now resumed and assessed; and the zemindar had his remedy in a suit against the government before the British revenue courts, which generally gave judgment against him. It is mentioned in evidence before the Lords' Committee, that the proprietor of a great estate in the Sunderbunds, who had brought into cultivation an extensive waste, was called upon, notwithstanding the permanent settlement of his land-tax, to pay an additional tax on the produce of this land. He disputed the claim; but being cast in a suit before the revenue courts, he was subjected to a ryotwar settlement, and compelled to pay fifty times more than the original rent.[1] Thus the tax was not only exorbitant, but provision was made for continuing it at a rack-rent, so that there was no prospect of relief under any circumstances to the oppressed country; and thus we find extortion to be still the true feature of the Company's government. It is this grinding system of taxation, this continual desire for an improving revenue, the standard by which the zeal of the Company's servants is judged of, and promotion regulated, that defeats all the blessings that might otherwise flow from European rule; that spreads pauperism far and wide, and is the standing source of misery throughout the country.

Delay
justice

The ruin of the zemindars was partly occasioned by another cause, namely, the want of any effectual method of enforcing their claims against the small tenants. The public officer was empowered to proceed against defaulters by a summary process, and to attach and sell, by public auction, the zemindar's land for the discharge of arrears; whilst against the under-tenants the zemindar had to seek redress by an ordinary suit at law, which was both tedious and expensive. To heighten this evil, the courts of justice were overloaded with a long arrear of undecided causes, so that no decision could be expected before the lapse of years. There were in the district of Burdwan above thirty thousand undecided suits; and no decision could be expected within the ordinary duration of human life. The zemindar, in this manner, whilst he was compelled to pay, by the prompt and efficient process of government, was left to seek redress from his tenants through a labyrinth of endless litigation; and the knowledge of this impediment to justice gave great encouragement to the tenants to refuse payment of their rents. The ruin of the zemindar, therefore, was the inevitable consequence of this summary process to which he was exposed, while he could have no similar recourse on his tenants; and these regulations were universally complained of, and on the justest grounds. In an address from one of the collectors to the board of revenue, in behalf of the zemindar of Burdwan, who had in vain applied for redress to the civil courts, it is observed that he (the zemindar) begs leave to "submit to your consideration, whether or not it can be possible for him to discharge his engagements to government with that punctuality which the regulations require, unless he be armed with powers as prompt to enforce payment from his renters, as government had been pleased to authorize the use of in regard to its claims on him; and he seems to think it must have proceeded from an oversight, rather than from any just and avowed principle, that there should have been established two modes of judicial process under the same government; the one summary and efficient for the satisfaction of its own claims, the other tardy and uncertain in regard to the satisfaction of claims due to its subjects; more especially in a case like the present, where ability to discharge the one demand necessarily depends on the other demand being previously realized."

Oppression of ryots.

The system which impoverished the zemindars proved equally ruinous to the ryots. It was the practice of the zemindar to contract for a certain rent with a land farmer, who subdivided the land into smaller portions, and let it to a variety of inferior tenants. To this head farmer it appears that a written agreement was given, according to the regulations; but the under-tenants were left, without any security, to the mercy of their superiors. It is well known, and admitted by the servants of the Company, that the ryot, even when he receives written agreements from the zemindar, is liable to indirect oppressions which no law can remedy; and though, owing to the expense and delay in the administration of justice, he could retaliate on the zemindar, by refusing payment of his rents, this privilege could be of little advantage to him, whilst it tended still farther to widen the breach between the landlord and the tenant, and to add to the hatred, strife, and violent distraction of interests by which the community was now, as it were, torn in pieces. To remedy the grievances which the zemindars suffered from the evasion of payment by their tenants, it was enacted in 1799, that they might have recourse to the same summary process against defaulters, as was used by the government against themselves. They were empowered to seize the property of their tenants for arrears, previous to any legal judgment, or any proof of the justice of their claim. This regulation gave to the zemindars the power of unbounded oppression, against which the ryot had no redress, as he was effectually shut out of the courts of justice by the

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the circar's representative, a zemindar or mootahdar, should assign the land to be cultivated to a stranger of his or their procuring, the meerassadar would consider himself proprietor of the land, claim his *sawmy bogum* (a deduction for himself of about 13½ per cent. on the gross produce), and not consider his title invalidated by his temporary inability." (See *Fifth Report*, p. 832.)

[1] See Minutes of Evidence before Lords' Committee, 26th February 1830, Evidence of Mr Mangles, p. 49.

enormous expenses of law proceedings.[1] It was undoubtedly just that the zemindar should have the same efficient process for enforcing payment as was used against himself; but such was the unhappy condition of India, under the unskilful management of strangers, that every plan of reform seemed only to increase the general disorder. Her rulers wanted intelligence for the delicate task of domestic legislation; their schemes were crude and inapplicable, nor could they ever mould the various and jarring interests of the Indian community into any consistent scheme of civil order; so that, though they were continually patching their imperfect work, it still bore the same incongruous character, and the cure of one evil was constantly followed by an irruption of other and worse evils from some other quarter.

The state of society which prevailed in Hindustan arose from the mixed operation of a peculiar system of laws, customs, manners, religion, and policy; and such an artificial structure required to be nicely and skilfully handled, instead of which it was lacerated in all its delicate parts by the rude hand of foreign interference. The English were ignorant even of the language of the people whom they had brought under their sway, and whom they now attempted to govern; and though they might know generally that the public revenues were derived from an impost on land, they were entirely inexperienced in the usages of the country, and in the financial details of the Mogul government. With what effect, therefore, could they interfere in such complicated details? how could they decide between the claims of justice and of fraud? how could they judge of cases connected with the peculiar usages of the country, and with all those minutiæ of local manners with which no foreigners can ever become thoroughly acquainted? The Company's servants, involved in such a labyrinth of complex concerns, possessed no clue to guide them to any equitable issue. Supposing their views to have been honest, they wanted intelligence to give them effect; and although they could enforce submission to their decrees, the country, under their usurped and ill-directed authority, presented one vast scene of anarchy and oppression. The directors in Europe readily ascribed all these evils to the misconduct and rapacity of their servants, which they heavily censured; and, in their correspondence with India, they express the most just, humane, and enlightened sentiments, and a sincere desire to promote the happiness of their subjects. But if they had only said to their servants "lower the assessment," these three words would have been of more avail than volumes of fine sentiment. The truth is, that extortion has all along been the vice of the Company's government. The eastern maxim of the sovereign's proprietary right to the soil was too readily adopted into their European creed, and was the ground and the excuse of immoderate assessment. The new sovereigns of India could never relinquish the idea of profit, and the wealth of India was now expected to swell the balance-sheet. The land and labour of the country were to be laid under contribution for the benefit of the mercantile proprietors in Europe. The glory of a sovereign consists in the felicity of grateful millions, and this is the only true and legitimate end of all government. But the East India Company were intent on profit, on enriching themselves at the expense of their subjects; and the duty of the servants to their masters consisted in sending home a large investment. They were to possess themselves of as large a quantity as possible of the produce of the country, giving nothing in return, and to send it to Europe to be shared amongst the proprietors; and it was, accordingly, the boast of successive administrations how well they had succeeded in this matter; not how happy they had made their subjects, but how much of their property they had taken from them and sent to Europe.

Judicial system of Lord Cornwallis

The institutions of Lord Cornwallis, for the administration of civil and criminal justice, appear to have been equally unsuccessful with his finance measures; and it soon appeared, as has already been stated, that the new courts of judicature had more business than they could manage, and such an arrear of undecided cases accumulated that the course of justice was nearly stopped. In this dilemma, the costs of suit were raised for the purpose of discouraging litigation; and this expedient being found ineffectual, they were raised a second time. To place justice out of the reach of the poorer and more numerous class, by laying a heavy tax on it, was indeed an easy and effectual method of discouraging litigation. It was, in fact, a denial of justice, a direct refusal to hear the complaints of the poor, who might, therefore, be harassed for ever after with impunity. Notwithstanding this discouragement, however, the evil went on increasing, and at last amounted to an almost total dissolution of civil order. As no decision was to be procured before the regularly-constituted tribunals, every man began to arm himself in his own quarrel, and the country thus became the scene of bloody affrays between armed individuals, unhappily left without any other resource for the decision of their differences. In some of those conflicts 4000 or 5000 persons were arrayed on each side, and many lives were lost. In a letter of the court of directors, dated October 1814, it is observed, "As to affrays respecting the possession and boundaries of lands and rents, this has been long a serious evil, and must, we conceive, have existed in a greater or less degree in every part of the country." "These affrays," continue the directors, "which often lead to homicides and woundings, have been very naturally ascribed by several of the judges to the difficulty of obtaining judicial redress."[2] In the district of Tirhoot, where the public peace had been frequently disturbed by those private feuds, the judge for the division of Patna observes, that they chiefly "arose from the accumulated arrears of suits," and "that the parties finding a delay in obtaining redress, had resorted to force."[3] Mr Melville, also a judge in the division of Dacca, expresses himself to the same purpose. "With respect to affrays," he observes, "attended with homicides and wounding, it is known that those disorders arose from attempts to retain by force possession of lands, or rents of lands, to which the different parties alleged separate claims." The same person afterwards states, that "in Chittagong, they (meaning these quarrels) had not only been frequent, but violent; that the police authority had been often resisted, and in one instance overpowered; that it would be wrong to disguise the length of time a claimant must wait, with the sacrifices he must make, before the decision of a civil court can be obtained."

Penal judicature and police.

We shall now briefly advert to the system of penal judicature and police established by Lord Cornwallis; the object, in this case, being to give security to the people by the suppression of crimes. With reference to this object, however, the scheme has notoriously failed. Since the year 1793, India has become a prey to disorders of every sort, and to the worst of crimes. The crime of robbery, accompanied with murder, rose to a most alarming height, and was prosecuted with a degree of union, perseverance, and cruelty, inconceivable to those who live in the civilized communities of Europe. Robbery is a regular profession, which is handed down from father to son; and the decoits, or gang-robbers, are formed, as the title implies, into powerful confederacies, and make their irruptions on the peaceful country with a force which it is vain to resist. They are described by Mr Hastings as "a race of outlaws, who live from father to son in a state of warfare against society, plundering and burning villages, and murdering the inhabitants." In the year 1772, the robbers are mentioned by the committee of circuit, and stated to be "not like robbers in England, individuals driven to such courses by sudden want; they are robbers by profession, and even by birth; they are formed into regular communities, and their families subsist by the spoils which they bring home to them."

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[1] All the collectors invariably bear testimony to the oppressions of the zemindars after the passing of the regulation of 1799.

[2] See *Papers relating to the Police and Administration of Justice in Bengal, from* 1810 *to the present time.* Printed by order of the House of Commons, 1819, p. 21.

[3] *Ibid.* p. 22.

Increase of crimes.

All the reports of the judges employed in the administration of criminal justice concur in representing the deplorable prevalence of the atrocious crimes of gang-robbery and murder. Sir Henry Strachey, writing on this subject in 1802, observes, that the crime of decoity (that is, robbery by gangs) has increased greatly since the British administration of justice. Another judge, writing on the same subject in 1808, observes, "That decoity (gang-robbery) is very prevalent in Rajeshahye has been often stated. But if its vast extent were known; if the scenes of horror, the murders, the burnings, the excessive cruelties, which are continually perpetrated here, were properly represented to government, I am confident that some measures would be adopted to remedy the evil. Certainly there is not an individual belonging to the government who does not anxiously wish to save the people from robbery and massacre." (Mill, vol. iii. p. 311.) He afterwards adds, that such is the state of things which prevails all over Bengal; and as to his own particular district, he expresses his persuasion that no civilized country ever had so bad a police. To the same purpose Mr Dowdeswell, the secretary to the government in 1809, observes, in a report which he drew up on the general state of Bengal, "Were I to enumerate only a thousandth part of the atrocities of the decoits, and of the consequent sufferings of the people, and were I to soften that recital in every mode which language would permit, I should still despair of obtaining credit, solely on my own authority, for the accuracy of the narrative." "Robbery, rape, and even murder itself," continues he, "are not the worst figures in this horrid and disgusting picture. An expedient of common occurrence with the decoits, merely to induce a confession of property, supposed to be concealed, is to burn the proprietor with straw or torches, until he discloses the property, or perishes in the flames. And when they are actuated by a spirit of revenge against individuals, worse cruelties, if worse can be, are perpetrated by these remorseless criminals. If the information obtained is not extremely erroneous, the offender, hereafter noticed, himself committed fifteen murders in nineteen days; and volumes might be filled with the atrocities of the decoits, every line of which would make the blood run cold with horror." (*Fifth Report*, p. 603.)

It would far exceed our limits to trace in detail the cause of those evils which necessarily arose out of the very nature of the government now established. The truth is, the British were never qualified to act as legislators in India. They were too ignorant of the habits, manners, and character of the people, to meddle with their institutions, on which, however, they were continually innovating. By altering the old mode of settling the land revenues, they compromised the rights of the different classes of landholders and occupiers. Strife and contention immediately ensued, litigation burst upon society like a flood, the civil courts were overwhelmed with suits which they could not decide, and the people, desperate from a denial of justice, were involved in furious affrays with each other in prosecution of their rights, or, being driven from their lands, they had recourse to robbery for a subsistence. Business was thus, from various sources, accumulated in the criminal courts, which being encumbered with the delay, the expense, and all the tedious formalities of the English practice, proceeded with their decisions at much too slow a pace for the wants of the country; and the evil in this manner daily increased. The mischief of this delay was twofold: 1*st*, It allowed criminals, during the long interval between their apprehension and trial, to prepare the certain means of their escape, by the suborning of false witnesses, who, in the gross dissolution of morals in Hindustan, were always to be readily procured, and in any number; and, 2*dly*, It entailed a grievous hardship on the innocent, great numbers of whom were crowded into jails with the worst of felons, there to wait until the tardy hand of justice should bring them relief.

Defect police.

The inefficient state into which the police had fallen, was also one cause of the general prevalence of crimes. By the ancient institutions of the Mogul government, ample means were provided for the preservation of the public peace. In every village a permanent body of guards and watchmen was maintained, whose business it was to assist in all the subordinate details both of the revenue and police, to convey the rents of the ryot to the district collector, to watch those ryots who were in arrear, to guard their crops from depredation, to act as guides and protectors to travellers, to collect information of any offences committed, and to report the arrival in the villages of suspicious persons. For these various services they had grants of land rent-free, or on very easy terms. Besides this standing force of guards and village watchmen, the zemindar, who was at the head of the police, and was held responsible for all crimes committed within his boundaries, had under his orders a large body of *pykes*, or armed constables, whom he could call out in aid of the police service, either for the apprehension of offenders, or to prevent breaches of the peace. These establishments, though they had fallen into a state of decay at the time of the permanent settlement in 1793, and though they were frequently perverted from their original purposes, yet existed in all parts of the country, and the police force was found to be in great efficiency and strength. The zemindary of Burdwan, a tract of country seventy-three miles long by forty-five broad, which was in the highest state of cultivation, and well stocked with inhabitants, maintained a body of 2400 village watchmen, who were distributed under their respective chiefs amongst the different villages, for the double purpose of protecting the inhabitants and of procuring information; besides 19,000 *pykes*, or armed constables, who were liable to be called out, under the orders of the zemindar, in aid of the police. Instead of improving upon those ancient establishments which had taken root in the country, which were interwoven with the frame and texture of Indian society, and which were, generally speaking, efficient, though frequently perverted from their original purposes, Lord Cornwallis demolished the whole structure. According to his new scheme of police, the zemindary constables were disbanded, and their lands, which were allowed them in lieu of pay, were resumed, that is, were seized by government. The country was divided into districts of twenty miles square, over which a native police officer or darogah was placed, with fifteen or twenty armed men under his orders; he was assisted also by the village watchmen, and such of the zemindary constables as were still retained in the public service. It was soon found, however, that the new police officers could not effectually call out this array in aid of the civil power. They wanted the personal consideration of the zemindars, who had long been looked up to with respect and reverence as the hereditary aristocracy of the country. The system, therefore, proved eminently inefficient; nor were the officers employed under the new plan found to be less corrupt than the disbanded constables of the zemindars. The merits of the plan appear to be pretty fairly estimated in the Fifth Report (p. 71), in which it is observed, that the head police officers, and "the inferior officers acting under them, with as much inclination to do evil, have less ability to do good, than the zemindary servants employed before them." How vain was it to imagine that any better materials could be found for the regulation and government of the country than those which the country itself afforded. To complain of them was to complain of the general state of society out of which they were produced; and to throw them away because they were corrupt or otherwise imperfect, evinced an ignorance of the legislator's province, which is not to create materials, but to make the best use of those which are provided to his hand. Herein, then, consisted the error of the British legislators. They cast from them the only efficient instruments which were to be found for the government of the Indian community, while they had nothing to substitute in their place; and their plans, when tried in practice, were accordingly found to be idle theories, at variance with the whole frame and order of the society for whose use they were intended.

Pr lence of g- rob ry.

The pernicious consequences of thus rashly subverting the ancient establishments of the country were soon displayed in the alarming increase of crimes. The disbanded zemindary constables, whose lands were seized, were deprived of the means of living, and they necessarily betook themselves to theft and rapine for a subsistence. The country became infested with gangs of robbers and murderers, whose horrid cruelties struck terror into the peaceable inhabitants, whilst lesser crimes also became more frequent. The police was inadequate to the detection of offenders, the courts of justice to their conviction; and, amongst other evils, a host of false witnesses now arose, amid the general corruption of morals, who swore in the teeth of each other, perplexing all judicial proceedings, and confounding the innocent with the guilty. For remedy of these complicated evils, various expedients were resorted to. Amongst others, a feeble attempt was made to revive the ancient powers which the zemindars had over the police; but this was attended with so little success, that it was abandoned in 1810. In 1808 a superintendent of police was appointed, with a view, as was stated, of concentrating, in his office, all the information which might be obtained from different quarters, and of giving unity and vigour to the measures adopted for the apprehension of offenders; and, as a last resource, a regular establishment of police spies, called *goyendas*, was organized, and placed under a species of superintendents called *girdwars*, the office of the first being to point out the robbers, that of the latter to apprehend them. Notwithstanding all these measures, crimes of every description appear to have gone on increasing; and in a minute of Lord Minto, dated November 1810, it is observed, "That a monstrous and disorganized state of society existed under the eye of the supreme British authorities, and almost at the very seat of that government to which the country might justly look for safety and protection; that the mischief could not wait for a slow remedy; that the people were perishing almost in our sight; that every week's delay was a doom of slaughter and torture against the defenceless inhabitants of very populous countries." The directors, in whose letter of the 28th of October 1814 this passage appears, confirm the truth of the statement by the following brief observation: "That this representation of the late governor-general is not too highly coloured, would appear from the minute of Mr Lumsden, and the reports of Mr Secretary Dowdeswell, forming also part of the proceedings in regard to Mr Ernst."[1]

Spies.

The new scheme of employing spies, however useful in some cases, was in other respects highly detrimental to the peace of the community. Those spies, and more especially their superintendents (*girdwars*), became, in many cases, the pests of society. They took advantage of the power which they possessed of apprehending suspected persons, to extort money from them; and frequently, under threats of immediate apprehension, they laid under contribution all classes indiscriminately. It is stated, in a letter of the directors, dated October 1814, on the authority of Mr Dick, a circuit judge, that "whole villages are put under contribution, or subjected to the rapacity and spiteful machinations of the vilest members of society."[2] In some cases the innocent were brought to trial, and convicted, on suborned evidence, procured by these wretches.

Incapacity of European judges.

Amongst the other causes of these evils may be enumerated the incapacity of Europeans to officiate as judges in a society so peculiarly constituted as that of India. This is a fact which is deeply regretted by all the most experienced servants of the Company, from Sir John Shore downwards. Europeans are sent out to India with the sole view of amassing a fortune. They have no interest in the country from which they draw such important benefits; they know nothing of its habits and manners, never mixing with the natives in their ordinary business or amusements, and never attaining to more than a theoretical knowledge of their characters; yet they soon begin to officiate as judges, but how miserably ill appointed for such an office their own experience quickly teaches them. They soon find the difficulty of appreciating or understanding even the most ordinary transactions of a society, with the rules and principles of which they are entirely unacquainted. What is intelligible by intuition to a native, is a mystery to them; and it is easy to conceive how these difficulties must be accumulated on them in any case involving a long train of circumstantial or contradictory evidence. It is not, as every one knows, on the mere naked testimony of a witness, that a judge entirely relies; it is the tone, the manner, the living evidence of expression and character, which impresses upon testimony the stamp of truth, which carries conviction to the mind, and saves a judge from the miserable dilemma of being blown about by every wind of opposite evidence. These discriminations are, however, far too nice for a European judge in an Indian court, and he frequently knows not what to believe. He cannot, by any judicious cross-examination, extort the truth from contradictory witnesses. In any train of questions involving the peculiar usages of the country, his stock of knowledge is soon exhausted. A story which hangs together in all its main circumstances, may yet be inconsistent in some of its minute and delicate points. But a European can never detect inconsistencies which are wrapt up in the veil of local manners, and hence he lies at the mercy of every perjured witness who chooses to practise upon his ignorance. The truth of this statement is illustrated and confirmed by the concurring reports of many of those who have acted in this trying situation. Sir Henry Strachey, whose reports to the supreme government abound in most just, enlightened, and comprehensive views of Indian society and manners, observes, that "nothing is more common, even after a minute and laborious examination of evidence on both sides, than for the judge to be left in utter doubt respecting the points at issue. This proceeds chiefly from our very imperfect connection with the natives, and our scanty knowledge, after all our study, of their manners, customs, and languages. Within these few years, too, the natives have attained a sort of legal knowledge, as it is called; that is to say, a skill in the arts of collusion, intrigue, perjury, and subornation, which enables them to perplex and baffle us with infinite facility." "We perhaps judge too much by rule; we imagine things to be incredible because they have not before fallen within our experience. We make not sufficient allowance for the loose, vague, and inaccurate mode in which the natives tell a story; for their not comprehending us, and our not comprehending them. We hurry, terrify, and confound them with our eagerness and impatience." "We cannot," adds the same discriminating observer, "study the genius of the people in its own sphere of action. We know little of their domestic life, their knowledge, conversation, amusements, their trades and castes, or any of those national and individual characteristics which are essential to a complete knowledge of them. Every day affords us examples of something new and surprising; and we have no principle to guide us in the investigation of facts, except an extreme diffidence of our opinion, a consciousness of inability to judge of what is probable or improbable." "The evil I complain of is extensive, and, I fear, irreparable. The difficulty we experience in discerning truth and falsehood among the natives, may be ascribed, I think, chiefly to our want of connection and intercourse with them; to the peculiarity of their manners and habits, their excessive ignorance of our characters, and our almost equal ignorance of theirs." The following passage, from the same document, gives a striking view of the inefficiency of European judges: "The evidence on every trial convinces us, that innumerable robberies and murders, that atrocities of the worst conceivable kind, are committed, and that very often the perpetrators are before us; yet do we find ourselves, from causes of the nature above described, constrained to let them loose again to prey on society, or, at the utmost, to direct that they be discharged, on giving security for their good behaviour." "The judge of circuit is from day to day engaged in trying large gangs for robbery and murder, and letting them go; and the country continues to be overrun with them, to a degree truly deplorable."[1]

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[1] See *Papers relating to the Police and to the Administration of Civil and Criminal Justice in Bengal, Fort George, &c. from* 1810 *to the present time.* Printed in 1819, p. 24.

[2] *Papers printed by order of the House of Commons,* 1819.

New measures.

The directors of the Company in Europe, as soon as they were informed of these vices and disorders in their Indian government, displayed the most praiseworthy zeal in their endeavours to remove them. Far from blaming the freedom with which they were exposed, or seeking, by palliations, to evade the truth, they listened to the representations of their servants; and, in many cases, followed their judicious and enlightened suggestions. One of their first cares was to re-establish the vigour and efficiency of the police. It was soon found that the system established in 1793, not being connected in any degree with the institutions or local manners of the country, was ill adapted to its end; and that the subversion of the ancient establishments, on the ruin of which it was founded, had been attended with the worst effects, and had paved the way for all the disorders and evils with which the country had been afflicted. Hence it has been the policy of the government to restore the ancient institutions of the country, and to revive for the public service the ancient array of village watchmen and zemindary constables, formerly disbanded. In many cases their efforts have been attended with success. A new energy has been infused into the police; and this, joined to the activity of the local magistrates, has had the effect of greatly diminishing the crime of gang-robbery, as well as other crimes. This fact is placed beyond a doubt by the records of criminal justice, from which it appears, that in Bengal the atrocities which formerly spread terror throughout the peaceful country, have been greatly diminished in number by the vigilance of the police and the great exertions of the local magistracy.

Decreas
of crime

Number of Persons sentenced to Death by the Court of Nizamut Adawlut (chief Criminal Court) of Bengal.

From 1816 to 1821, including a period of six years...	490
From 1822 to 1827...	366
Decrease......	124

Sentenced to Transportation or Imprisonment for Life.

From 1816 to 1821...	1758
From 1822 to 1827...	880
Decrease......	878

Number of Persons tried before the Circuit Courts of Bengal.

From 1816 to 1818, three years,—Burglary...		2853
From 1825 to 1827, do...	do...	1036
Decrease......		1817
From 1816 to 1818, three years,—Cattle stealing...		203
From 1825 to 1827, do...	do...	31
Decrease......		172
From 1816 to 1818, three years,—Larceny...		1516
From 1825 to 1827, do...	do...	223
Decrease......		1293

In the Lower and Western Provinces of Bengal.

	No. Sentenced.		Decrease of Crime.
	1826.	1827.	
Arson,...	154	31	123
Burglary...	2,433	1,995	438
Frauds...	6,161	3,302	2,859
Larceny...	8,301	7,927	374
Plundering,...	768	97	671
	17,817	13,352	4,465

In the western and lower provinces the number of murders without depredation were,

	Western Provinces.	Lower Provinces.
In 1818 and 1820...	496	319
In 1827 and 1828...	255	194
Decrease......	241	125

Number of Depredations accompanied by Torture and Wounding.

	Western Provinces.	Lower Provinces.
In 1818 and 1820...	1000	545
In 1827 and 1828...	512	221
Decrease......	488	324

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[1] Answers to Interrogatories of Government, 30th January 1802, *Fifth Report*.

In 1807, gang-robberies amounted to 1481
In 1824, to.................................234

Decrease...1247

In 1807, wilful murders amounted to...406
In 1824, to.................................30

Decrease...376

In Kishnagur, formerly notorious for gang-robberies, they decreased from 329 in 1808, to 10, their amount in 1824.

These records present a satisfactory view of the decrease of crime under the British rule in India; and it is ascribed, not to any improvement in the morals of the people, but to the great efforts of the magistracy, and to the increased efficiency of an improved police, in which the native officers are remarkably active.

Judicial establishments.

The judicial establishments of Bengal consist of,

1st, A high court of appeal, termed the Sudder Dewanny Adawlut; and the Nizamut Adawlut, or the chief civil and criminal court, which sits in Calcutta. A chief judge presides, with a salary of L.6000 a year, assisted by three puisne judges with L.5000 each. This court has power to revise the sentences of the inferior courts, and to mitigate them if excessively severe; to suspend provincial judges; and to receive appeals from the inferior courts. Its construction of the regulations or edicts issued by the governor-general is final.

2d, There are six provincial courts of appeal in Bengal, with a chief and puisne judge in each, for the trial of civil cases, in which the matter in dispute exceeds 10,000 rupees in value. They may try suits not exceeding 5000 rupees, if the plaintiff desire their decision. In the case of appeals their decision is final, except in special cases.

3d, There are twenty commissioners of circuit in Bengal, who combine revenue with judicial functions. They are criminal judges, who hold sessions of jail delivery at least twice in each year, who have also the direction and control of the magistrates, revenue officers, and police. They have each a salary of L.4000 a year.

4th, The city and zillah or district courts amount to forty-nine in Bengal. They have a judge, magistrate, and registrar, or, where the business is not extensive, a judge and magistrate, or a magistrate and registrar. These courts take cognizance of affrays, thefts, burglaries, &c., try original suits to the value of 20,000 rupees, decide appeals from registrars in cases not exceeding 500 rupees in value, and from sudder aumeems (native judges) and moonsifs. By a regulation of the governor in 1832, three zillah judges may be invested by the governor-general with power to hold sessions and jail delivery. From the zillah courts an appeal lies to the provincial courts; and, by a regulation in council, it was declared competent for the governor-general to establish in any part of the presidency a native court, to be superintended by a native judge; and also, by a regulation passed on the 11th of September 1821, he was empowered to authorize any judge of circuit to assemble native juries in criminal cases. Many distinguished persons in the service of the Company, and thoroughly acquainted with the Hindu character, have long recommended the employment of natives in the administration of civil and criminal justice. Native courts of justice have accordingly been constituted, and it would appear that they had satisfactorily executed their duties; for we find, in consequence of the heavy accumulation of suits in the zillah and city courts, a regulation of the governor-general, dated the 27th of December 1827, extending their powers to suits in which British subjects are engaged, to the amount of 1000 rupees, which were formerly excepted from their jurisdiction. In 1832 an extensive establishment of zillah and city courts was begun. A regulation passed in that year by the supreme council of Bengal ordains, that such of the natives, of whatever caste or religion, as are found qualified, by their attainments and good character, are to be employed in the zillah (district) and city courts, as civil and criminal judges, with liberal salaries, and, more recently, as assessors on the bench, along with European judges.

A similar plan of judicature is in force at Madras and Bombay. At Madras Colonel Munro, when he was governor, was extremely anxious for the introduction of the trial by punctayet, or native juries; and a regulation, dated the 31st of August 1827, was issued for allowing native juries to be assembled in criminal cases.[1] The office of a native judge was also constituted for the trial of criminal cases, by a regulation issued the 31st of August 1827. By the governor and council of Bombay a regulation was issued in 1830, extending the jurisdictions of native courts to all original suits, of whatever amount.

At each presidency there is a supreme or king's court, with a chief judge and two puisne judges, a master in equity, registrar, an established number of attorneys and barristers, at the discretion of the judges; and at Calcutta a Hindu and Mahommedan law officer is attached to the court. The jurisdiction of this court extends over the presidency, with certain exceptions not well defined; and in certain cases a jurisdiction is claimed beyond the presidency, though it has been doubted whether such claims rest on any sure foundation of law. There are at Calcutta and Bombay courts of requests for the recovery of small debts, the recorders of which are Europeans.

Tenures.

The zemindary settlement was extended to Benares in 1795. It was introduced into the ceded territories of Oude in 1801 and 1803. The country was divided into seven districts, with a judge and magistrate and collector in each; and a court of appeal and circuit, with a suitable establishment of officers, fixed at the town of Bareilly. The lands were let at first for three years on increasing annual rents, by which the tax was raised from its amount in 1801, of 13,523,474 sicca rupees (L.1,600,000), to 19,161,486 rupees, being an increase on the existing tax of more than 40 per cent. and a foretaste to the oppressed peasantry of the blessings they were to derive from British rule. In 1805 it was proposed to extend the permanent zemindary settlement to the provinces acquired from Scindia and the rajah of Berar, being the Doab, and a tract on the right bank of the Jumna, the province of Cuttack, and of Bundelcund on the right bank of the Jumna above Allahabad. Objections, however, having been made to this measure, the lands have been let since 1810 to the zemindars, on leases of five years; and the assessments have as usual been enormously increased, from 19,426,787 rupees (L.2,266,457), the amount in 1807, to 31,427,494 (L.3,666,540) in 1818–1819. But here, as in all other cases, the revenue has been improved at the expense of the country; and accordingly we find Lord Moira regretting the sale of lands in these provinces for outstanding balances, and the evasion of the copartnery rights by which these estates were held, at "the expense," he adds, "of the well-being and peace of the district, which it invariably disturbs."[2]

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[1] It is remarkable that these enlightened regulations of Colonel Munro, for improving the condition of the natives, were disapproved of by two out of the three judges of the Sudder Dewanny Adawlut, and by ten out of the twelve judges of the courts of circuit; by several of the other members of the council at Madras, namely, Sir G. T. Walker, who alleged, and with some appearance of reason, the corrupt morals of the natives. This was, however, a difficulty to be overcome.

[2] Rickards' *India*, vol. i. p. 399.

The ancient territories attached to the presidency of Madras contained two descriptions of land-tenures, namely, the lands occupied by the zemindars or polygars, and the Havelly lands under the immediate management of the government. In letting these lands, it was the practice either to receive from each cultivator his tax in kind, in which case it was necessary to maintain a large establishment of revenue officers, or to let the lands to a revenue farmer, on whom extensive powers were necessarily conferred, and consequently ample means of oppression. Another mode of settlement was with the head inhabitants of the villages, who contracted for the public tax, which they collected from the ryots. The ancient possessions attached to the presidency of Madras were, the Jaghire, which had been desolated by the invasion of Hyder Ali in 1780, and the Northern Circars. The revenues of the Jaghire had been collected by village settlements from 1789 to 1802–3, when it was divided into sixty-one estates of from 2000 to 5000 pagodas of annual rent, and sold to the highest bidder. The permanent settlement was introduced into the Northern Circars in 1802 and 1803. The assessment in some of the zemindaries exceeded a lac, or 100,000 pagodas, though it did not include the sayer duties, which consisted of imposts on houses, implements of agriculture or trade, on merchants, artificers, &c. This assessment was not framed on any accurate knowledge of the resources of the country, but any error that was made was on the side of excess. It was the poor peasantry who suffered for the ignorance of the collectors, who were determined not to underrate the lands.

Quidquid delirant reges, plectuntur Achivi.

The Jaghire, in 1784, had not recovered from the devastation of Hyder's invasion; it still remained a monument of the miseries of war; and to all these calamities was now superadded, Mr Rickards justly observes, " a revenue administration, the basis of which was the exaction of a land-tax from the wretched remaining inhabitants, equal to one half the gross produce of the soil."

The modern possessions of the Madras presidency are by far the most extensive, and comprise the Carnatic and Mysore; the whole peninsula of India, in short, south of the Toombudra and Kistnah rivers. Most of these lands, except such as are held by the polygars or zemindars of Southern India, had been farmed out in extensive tracts by the native rulers to individuals, by whom they were subset to the head men of the villages, who collected the tax from the cultivators. This mode of farming the revenues was after some time given up for the village or *mouzawar* settlement, according to which the intermediate agency of the renter or farmer was superseded by that of the government collector, who contracted for the whole assessment with the head man of the village. This plan of village settlements was again abandoned for the *ryotwar* or the *kulwar* settlement, which only differed from the village settlement in this, that it substituted the government collector for the head man of the village, and thus abolished all intermediate agency between him and the ryot. In the village settlement, the great farmer or revenue speculator was superseded in his agency by the potail or head man of the village; in the ryotwar settlement, the potail or head man of the village was superseded by the government collector, who undertook the duty of settling individually with each ryot for his rent. With this view an exact scrutiny was instituted into the whole produce of the country. Every field was surveyed, measured, and re-measured; its name was entered in the register, and where it had no name it received one; red land was to be distinguished from black land; trees, rivers, wells, forts, open villages, were to be all specified; the inhabitants to be enumerated; their cattle, buffaloes, sheep, goats, &c., in short, every thing taxable, was to be brought to account in the ryotwar survey.[1] The assessors followed in the train of the surveyors, and a host of revenue officers was spread over the harassed country. The object of this severe scrutiny into the produce of the land, was to ascertain the highest assessment which it could possibly bear. It was not to lighten the burdens of the poor ryot that his means were so rigidly inquired into, but to find out how much he could pay without being utterly ruined. " The survey valuation," it is observed in the Fifth Report of the Select Committee (p. 120), "regulated on the principles which have been described, rather constituted the *maximum* of assessment, than the absolute demand upon the cultivator for that assessment."[2] This *maximum* of assessment is what is also called the *standard rent*, or jumma. " Alterations in the assessment," says the Report, " were also occasioned by the gradual increase made to it, as the circumstances of the cultivators and the state of agriculture improved, in order to raise it to what was considered the *standard rent*." Thus it was obviously a scheme for racking the country. From the survey a maximum or standard assessment was calculated, that is, the highest assessment which the country could possibly bear; and this, though not immediately taken from the ryot, was the standard to which it was understood that his assessment would be ultimately raised as his circumstances improved. It was the reward that awaited his successful cultivation of the land; and in this case he had little encouragement to sow, when another was to reap. " Under this mode of adjusting the rents of a village," it is said in the Fifth Report, " the ryot knew before he set his oxen to the plough, and dropped his seed into the ground, what was the utmost limit of rent that he could be called upon to pay; and that the advantage of additional labour upon his field would be all his own, as well as the advantage of additional produce in an abundant season. He also knew that in an unfavourable season an abatement would be made in his favour if his diminished means rendered him unable to satisfy it. He further knew, that if the potail required him to pay more than the sum at which his rent was finally fixed by the collector, he had only to prefer his complaint." (P. 121.) When the standard rent, as it is called, was greater than the ryot could pay, being calculated not on the produce, but on the producing capacity of the soil, of what advantage was it to him that it could not be raised higher? He did not, as is here stated, know either that the advantage of additional labour upon his field, or that the additional produce in an abundant season, would be all his own, as the assessment was raised with his improving circumstances; and the extra produce of an abundant year was taken to compensate the remissions of a bad year.[1] Besides, as the harvest advanced, the revenue officers again spread over his fields to gauge the produce and to fix the annual rent. When the crop failed to a great amount, the deficiencies of one village were re-assessed on the neighbouring villages; so that the ryot was far from "knowing, before he set his oxen to the plough, and dropped his seed into the ground," the utmost limit of rent he had to pay; and with regard to any complaints against the potail, the directors observe, "it is vain to say that the ryots are protected against harassing and vexatious proceedings by courts of justice; for the loss of time and the expense incident to a legal process, and the delay in decision, will in nine cases out of ten prevent the ryot from appealing to the court."[2] The revenue board at Madras observe on the ryotwar settlement, "the system then was, to *make as high a settlement as it was practicable to realize;* if the crop was good, the demand was raised as high within the survey rate as the means of the ryot would admit; if the crop was bad, the last farthing was notwithstanding demanded, and no remission was allowed, unless the ryot was totally unable to pay the rent. On this point the most severe scrutiny was instituted; for not only was the whole of the collector's detailed establishment of servants employed in an investigation of his means, *but his neighbours were converted into inquisitors, by being themselves made liable for his failure,* unless they could show that he was possessed of property."

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[1] See Instructions to Surveyors, by Colonel Munro, the great patron of the ryotwar settlement, *Fifth Report*, Appendix, p. 787.

[2] William Chaplin, Esq. who was employed as registrar under Sir T. Munro in the Ceded Districts, after mentioning that a survey, classification, and assessment was undertaken by Sir T. Munro in the year 1801, and completed in 1806–7, gives the following conclusive evidence respecting the nature of the assessment:—" Was the assessment fixed the highest assessment which it was thought fit in any case to exact for the land? Yes. It was a maximum assessment, which was never expected to be wholly raised; it was a maximum assessment, beyond which no collection was ever to be made afterwards; it was an assessment, the total of which was avowedly too high at the time to be realized, without occasional and partial remissions; and it was recommended afterwards to be reduced. Was any abatement made? No abatement was at that time made. A discretionary abatement was every year made by the collector, whenever there was a partial failure of the crops, from drought, or from the poverty of the inhabitants. Still the sum demanded was the maximum assessment? The sum demanded was the maximum." (See Minutes of Evidence before the Lords' Committee, 30th March 1830, p. 176.)

It is thus obvious that the much boasted ryotwar settlement is, like all the other continually changing plans introduced by the East India Company's servants, an elaborate scheme of extortion, founded on the idea of the proprietary right of the sovereign to all the lands within his dominions. But, besides the land-tax, amounting to forty-five or fifty per cent. on the gross produce of the soil, there are other taxes, called *sayer*, *moturpha*, or *weesabundy*, being taxes on the profits of merchants, traders, manufacturers, craftsmen, taxes on houses, shops, looms, tolls, mechanical and agricultural implements, all which are embraced in the collector's survey, and appear to have been rigidly exacted. "The mode of settling the moturpha on looms," says one of the collectors, "has hitherto been very minute; every circumstance of the weaver's family is considered; the number of days which he devotes to the loom, the number of his children, the assistance which he receives from them, and the number and quality of the pieces which he can turn out in a month or year; so that let him exert himself as he will, his industry will always be taxed to the highest possible degree." Colonel Munro has described the tax on house-rent, or, as he calls it more properly, a tax upon income, to be levied in a manner the most arbitrary, and which offends against every principle of taxation. It extends to the poorest class of labourers, who pay one or two rupees, though their hut is not worth more than from five to ten rupees. This tax Colonel Munro points out as a source of increasing revenue; and when he found it higher in one district of the ceded provinces than another, he equalized the tax, not by lowering, but by raising it everywhere to the same level, and even suggested that it might be increased "as the circumstances of the country improve;"[3] so that it would appear as if there were no end to the demands of the state, thus prowling into the recesses of domestic industry, and casting as it were its evil eye on every species of increasing wealth. This rigid scrutiny, not so much into the actual resources, as into the productive capacity of the soil, was with a view to a permanent settlement of the land-tax; and this permanent settlement was prospective, as the tax was to keep pace with the improvement of the country.

The ryotwar settlement was substituted for the village settlement in the southern parts of the peninsula, in Salem and Kistnaghery, amongst the Carnatic polygars or military chieftains of the country, and in Ramnaud and Dindigul; and in 1802 and 1804 the permanent settlement with the zemindars or polygars was introduced, the land being divided into estates, and sold to individuals under the burden of the standard rent, to which the actual rent had not yet risen. The country had previously been the scene of great confusion, from the rebellion of the polygars; the land-rent had risen 117 per cent., from 168,305 to 344, 682 pagodas; and the *standard* rent, now fixed, was, as usual, higher than the country could bear. The estates of the landholders were accordingly brought to sale for arrears of rent, and the lands which had been purchased were mostly resumed by the government. The province of Dindigul is in particular described by Sir Thomas Munro himself, as being in 1821 in a state of deplorable disorder and oppression from high taxes. A keen but very useless controversy has been maintained amongst the Company's servants regarding the respective merits of the zemindary, the village, or ryotwar settlements. But it is not the mode of levying the tax, but the amount, which is the grievance, and the standing source of misery all over India. The permanent settlement having been discontinued in 1804 by order of the directors, was not extended to the other territories under the presidency of Madras.

In the country known under the name of the Ceded Districts, being ceded to the Company by the nizam in 1792, extending south-east from the Toombudra river as far as the Eastern Ghauts, equal in extent to Scotland, and containing about two millions of inhabitants, the ryotwar settlement was introduced by Colonel Munro in 1800, and continued till 1807–8. During this period the land revenues were raised from 1,006,593 pagodas (L.402,637), to 1,517,272 (L.606,909); and in 1808–9 they amounted to 1,802,570 (L.721,038), of which the sum of 1,669,908 pagodas (L.667,963) consisted of land revenue. The ryotwar was superseded by the village settlement, which comprised three years from 1809, after which, in 1811–12, commenced a decennial settlement of the Ceded Districts. The country was oppressed by this heavy assessment; and under the village settlement the head men of the villages (potails) declined to contract for the rent. Speculating renters were accordingly introduced, whose severe exactions increased the general distress, and numbers of the ryots emigrated to Mysore. In 1817 it was determined again to try the annual ryotwar settlements, when the decennial village settlements would expire in 1820–21; and Sir Thomas Munro, now governor of Madras, prepared to carry into effect the views of the directors. Many humane and excellent regulations were passed to prevent the oppression of the ryots; and the benevolent intentions of the court of directors may be traced in their various despatches on the subject. But still the only mode of relieving the country was to lessen the amount of the tax, and without this, no regulations, however wise, will ensure the prosperity of the subject.

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[1] Colonel Munro himself states this to be the rule of settling. "Were it even possible," he observes, "to estimate exactly the actual loss in every year, it would not follow that it ought to be remitted; for the same cultivators who have lost this year may have gained the last; and as no extra assessment was laid upon their profit, no remission can now fairly be claimed for their loss. Whatever may have been the crop, *should it have even been less than the seed*, they should always be made to pay the full rent, if they can, because good and bad seasons being supposed to be equal in the long run, the loss is merely temporary, and the making of it good is only applying to the deficiency of a year of scarcity, the funds which have arisen from one of abundance." (See Extracts of Proceedings of the Board of Revenue at Fort St George, 19th May 1803, *Fifth Report*, p. 748, 749.)

[2] Rickards' *India*, vol. i. p. 482.

[3] See *Fifth Report*, Appendix, p. 942, Extract from the Report of the Principal Collector of the Ceded Districts, 15th August 1807.

In the southern division of Arcot the ryotwar system was introduced in 1805–6, by Mr Ravenshaw, who gives a melancholy picture of the state of the country. "The miserable appearance of the villages," he observes, "a great portion of the inhabited houses of which are without roofs; and of the inhabitants, a great number of whom are clothed in the garb of extreme misery; must touch the heart of one who has any spark of sensibility for his fellow creatures." From this state of extreme depression the country gradually revived, and the revenue improved under the judicious management and moderate assessment, of which the collector was a strenuous advocate.

On the western coast of India, the provinces of Malabar, Canara, Coimbetore, &c. were subjected to the rigorous survey of the ryotwar settlement. In Malabar, the collectors under the Bombay government, on the notion of the sovereign's proprietary right to the lands, claimed fifty per cent. on the gross produce, which it was impossible to realise, though the clearest rights of property were trampled under foot, and the prejudices of the country deeply wounded, by the sale of lands, the consequence of over assessment, and by the ruin of the ancient aristocracy.[1] A rebellion was the consequence, which was rigorously and with all due severity put down, and the province transferred to the Madras government, whose collector, we are told, in 1801–2, effected a sudden rise of about fifty per cent. in the land revenue, by adopting rates of assessment inconsistent with long-established local usage, and from which it was soon after found expedient to recede.[2] The lands were over-assessed; in many cases, after they were sold, the proprietors were thrown into prison, and there kept for years, by the severity of the collector.[3] A ryotwar survey of the province was undertaken by the principal collector, who, being obliged to leave the province, its revenues were successfully administered by the new collector Mr Warden, by whose judicious advice a fresh survey was averted for a time, as inconsistent with the customs of the country, and the existing state of property. In 1833, against the earnest remonstrances of the inhabitants, a strict ryotwar survey was begun, of the most inquisitorial nature, not only into the produce of land, but into the profits and all the implements of trade and manufactures. The absurdity and injustice of this assessment, and the hardship which the people suffered from the monopolies on timber, tobacco, salt, &c. appear, from the evidence given in 1830 before the Lords' Committee on the affairs of India, to have been very great. By the timber monopoly, which was the source of great complaints, the price was raised so as to stop ship-building. In many parts the timber on an estate constituted its chief value; and the government monopoly therefore amounted to an extinction of the rights of property, and was the cause of unspeakable discontent and distress. A conservator of the public forests was appointed; and as the distinction between public and private property was often doubtful, the proprietors and occupiers of land were prevented from cutting down wood even for the most necessary purposes, under pretence that it belonged to the Company, though by his orders all the wood on their estates might and often was cut down.[4] This monopoly was abolished in 1823 by the advice of Sir Thomas Munro, who, though he administered a bad system, acted on this as on other occasions with the most enlightened humanity. The monopoly of salt was equally grievous to the inhabitants, and occasioned dreadful complaints. The landholders depended in many cases on the manufacture of salt for paying the rents of their lands. They were accordingly ruined by the suppression of the salt pans in Malabar, the compensation given them being very inadequate; and it was besides estimated that 6438 persons were thrown out of employment.[5] Tobacco, almost a necessary of life in the moist climate of Malabar, where the fall of rain is 140 inches, three times more than in the adjoining province of Coimbetore, or on any part of the Coromandel coast, was raised 800 per cent. by the monopoly. One of the collectors, Mr Baber, made strong representations against these enormous abuses, by the continuance of which he was afraid that the people would be driven into rebellion. Tobacco was in consequence smuggled into the country from Coimbetore by gangs of contraband traders, of bad character, and ripe for any villany.[1] The revenue was raised from 217,619 pagodas, its amount in 1800–1, to 638,488.

The province of Canara was committed to the management of Colonel Munro, who, by his vigilant administration, restored tranquillity in the country. Yet Colonel Munro, with all his great qualities, was a strict assessor; and the rent imposed upon this district must have been high, as, though he mentions that he disapproved of the numerous additions made to the ancient land-rent by Hyder and Tippoo, and says, "had such an assessment as that introduced by Hyder and Tippoo existed in ancient times, Canara would long ago have been converted into a desert," yet he adds, "I did not think myself at liberty to depart widely from the system which I found established, as it is the same as that which exists in all the provinces which the Company have acquired in the last and former wars. I have made no other reduction in the assessment of Tippoo Sultan than such as was absolutely necessary in order to ensure the collection of the rest. I considered myself merely as a collector, who was to investigate and report upon the state of the country, but who was to leave it to the board to decide as to the expediency of lowering the assessment."[2] The zemindary settlement has never been extended to any portion of the territories under the Bombay presidency, nor to the districts ceded on the Nerbuddah and by the rajah of Berar in 1826; the greater part of these territories being all assessed by villages.

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[1] See Lords' Committee, Evidence of T. H. Baber, Esq. Have there been any sales of land for arrears of revenue? Very considerable. So much so, that almost an entire revolution has taken place in property within the last thirty years. When a tenant of a small estate failed to pay, did the collector immediately sell that portion of his estate? No. In the first instance his person was liable, then his moveable property; every article of every description, every thing which could be laid hold of, was seized and sold; and that failing, then the land; even slaves have been sold, the same as cattle. 31st March 1830.

[2] *Fifth Report*, Appendix, p. 798, Extract from the General Report of Revenue at Fort St George, 5th October 1808, on Malabar revenues.

[3] See Evidence of T. H. Baber, p. 206.

[4] The cruelty of this monopoly, and the misery and vexation which it occasioned to the inhabitants, are forcibly described by Sir Thomas Munro in a minute which he drew up on the subject. After pointing out the situation of the ryot when he had the complete control over his wood of every kind, he observes, "But what is his situation now? He cannot cut down or sell a bit of wood on his own property, for the most ordinary purposes; he cannot even remove the young teak plants which spring up from seeds scattered by the winds, though they are injurious. Though he cannot himself cut down his own trees, the conservator cuts them down at pleasure, both on his hills and in his fields and gardens, and makes him pay duty on the wood; and he not only levies duties, but he confiscates property. A monopoly, or even any restriction, on the cutting of wood, is, in Malabar, vexatious and oppressive in the highest degree. Wood is wanted in large quantities for every purpose, for boats, houses, barns, and granaries. In a country where the fall of rain during the five monsoon months is from a hundred to a hundred and sixty inches, and sometimes nearly fifty inches in one month, it is almost impossible to make any building water-proof. The houses of all the more substantial rayets (cultivators) have a double roof, or two stories: in the lower the family resides; the upper serves as a lumber-room, but its chief use is to defend the lower, and carry off the water. The barns and granaries are necessarily constructed in a still more substantial manner, because a great part of the grain is reaped in the rainy season, during short intervals of sunshine, and, in order to be dried instantly, carried into the barns, which are made large for that purpose. The principal public buildings were formerly covered with copper, as the only means of completely excluding the water. The copper was stripped off and coined into money by Tippoo Sultan; but we go beyond him; he only deprived them of copper, but we of their roofs, or, what is the same thing, we prevent them, by our restrictions, from replacing them. These harsh measures have had their natural result; clamour and confirmed aversion and discontent, if not open resistance."

[5] See Evidence before Committee of Lords, by T. H. Baber, Esq. p. 214, April 1830. Commissioner Græme, in his letter to the board of revenue, 31st August 1830, mentions other frauds connected with the salt monopoly. He says that the government, on purchasing salt, are in the habit of pressing it down with hands and feet in the wooden measure; but when they sold it, of filling it up as light as could be, which made a difference of 20 per cent.; and other differences of measurement made an additional 20 per cent. See also Rickards, himself a principal collector in the province at the time, vol. i. sect. xvi. p. 542, et seqq.

Re nue an axa- ti

The other sources of the East India Company's revenue are the monopolies of salt and opium, custom duties both by sea and land, though the latter, from the obstructions which they occasion to trade, are in the way of being abolished; a stamp duty on conveyances, contracts, leases, policies of insurance, and deeds of every description; also on judicial proceedings. The mint, in which a seigniorage of two per cent. is charged on the coinage, and the post-office, yield an inconsiderable revenue. Of these various modes of taxation, the monopolies of salt and opium are the most objectionable. The opium monopoly was formerly a source of fraud and oppression, the cultivator being compelled to raise this article on pain of losing his land, and, in the event of a deficient produce, though occasioned by adverse seasons, being liable to punishment unless he made up the quantity, which he could only do by buying at a higher price than he expected to receive. Other frauds were practised by the collector or his agents, such as making pecuniary advances to the ryots in a light currency, and in using light weights in the weighing of the produce.[3] These frauds were inquired into and checked by the humanity of Lord Cornwallis in 1788. Treaties, as has been already mentioned, were entered into with the native princes for extending the opium monopoly to their territories. But these treaties, at the request of the princes, to whose subjects they were a continual source of vexation, were relinquished; and the trade in opium being now free, except in the Company's territories, the monopoly can scarcely be so profitable, owing to the reduction of price in the China market, from the competition of opium from Malwah and other provinces. The profits of the opium monopoly amounted in 1828–29 to L.1,930,891.

The monopoly of salt, which is so necessary to give a relish to the insipid food of the poor Hindu, is a still more pernicious device for raising money, and was formerly the source of great oppression; the molungees or salt-workers in Bengal being one half of them (the Adjura molungees) held under a species of bondage, and compelled to work at half the rate of wages received by the Ticka molungees, who worked by free compact.[4] This injustice was also inquired into and redressed by Marquis Cornwallis. Still the restraint under which such a monopoly lays the industry of the country, and the high price to which it raises a necessary of life, is a serious oppression, more especially as a revenue of equal amount might to a certainty be raised by a tax on the article with a free trade. The following table contains the latest account of Indian taxation:—

Direct Taxation.

Land-revenue	L.12,895,366
Farms, licenses, and tax on professions,	152,780
Sayer and Abkaree	861,196
Territories on Nerbuddah	457,923
Burmese cessions	117,326
Mysore and other subsidies	392,355
Ava, Bhurtpore, &c.	491,249
Marine receipts	77,787
	L.15,445,982

Indirect Taxation.

Salt sale, and licenses	L.2,700,147
Customs (sea and land)	1,869,634
Opium	1,930,891
Post-office	135,617
Tobacco	85,128
Mint receipts	19,414
Stamps	368,431
Judicial	126,464
	L.7,235,726

Mercantile character of the East India Company.

It will now be proper briefly to revert to the mercantile character of the East India Company; to give some account of its cash transactions and its commercial privileges, together with the general result, as it appears in the present state of its affairs.

The capital stock of the Company was originally L.2,000,000, and by successive enactments was increased as follows:

In 1708	L.2,000,000
1786	800,000
1789	1,000,000
1794	1,000,000
	L.6,000,000

Part of this capital was subscribed at a rate greatly exceeding the nominal amount. In 1794 there was paid for one million of stock the sum of L.2,027,295; and the whole amount paid into the Company's treasury for capital stock amounts to L.7,780,000.

As long as the attention of the Company was confined merely to trade, the annual dividend, which, from the year 1708 to 1766, varied from five to ten per cent. may be taken as a tolerably fair criterion of the profit gained. The acquisition in 1765 of the sovereignty and revenues of Bengal gave rise amongst the proprietors to the most extravagant anticipations of wealth, and, on the faith of these, the dividend, as already mentioned, was raised to ten, and afterwards to twelve per cent. But these expectations proved fallacious, and it was, in 1773, lowered to six per cent. It was afterwards raised to eight, and in 1793 to ten and a half per cent. Ever since the acquisition of the sovereignty of Bengal, it was not so much from *trade* as from *revenue* that the Company's profits were expected to arise. It was by the remittance of a large sur-

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[1] See Evidence of T. H. Baber before Lords' Committee, p. 212.

[2] *Fifth Report*, Appendix, p. 803, Extracts from the Report of the Principal Collector of Canara.

[3] Revenue Consultation, 1789, Answers of the Collectors in the opium districts to the Queries of the Board of Revenue, 1788.

[4] See Appendix to the *Second Report of the Select Committee on the Affairs of the East India Company*, p. 169.

plus revenue from India that the proprietors hoped to be enriched. These hopes, however, have not been fulfilled. A large and increasing revenue has indeed been collected, but it has been invariably followed by an increase of charge and of debt. The constant increase of the charge is a standing subject of complaint in the correspondence of the directors with their servants in India, whom they frequently accuse of the grossest profusion and corruption, reproaching them with the enormous expense of their establishment, and urging them, in the most earnest manner, to retrenchment and economy; whilst the servants, on the other hand, always hold out the fairest promises of their future management, and flattering statements of revenue, to be regularly overturned by the increasing charges of the succeeding year.

When Lord Clive was sent out to India in 1765, it was for the purpose of securing the Company's revenue from the profusion and mismanagement of corrupt servants, against whom the clamour in this country was loud and general. No amendment, however, took place, and the directors continued their complaints. During the ten years administration of Mr Hastings, which commenced in 1772 and ended in 1783, the Company were deeply involved in the wars and politics of India, the effect of which, on the finances, appears to have been to increase both the revenue and the charge, and in the same proportion to accumulate debt. In 1772 the revenues of Bengal, Bahar, and Orissa amounted to L.2,373,650, and the charges to L.1,705,279; producing a surplus of L.668,371. The India debt amounted to L.1,850,166. In 1785 the revenues of Bengal, Bahar, and Orissa, including the new revenue of Benares, amounted to L.5,315,197, and the charges to L.4,312,519; thus producing a surplus of L.1,002,678; to counterbalance which, however, the debt in India was increased to L.10,464,955. With the management of their affairs in India the directors seem never to have been satisfied; for we find them about this period complaining that certain late revenue regulations were made, "rather with a view of creating lucrative posts for a certain description of men, than with any design either of increasing the revenue or of promoting commerce." In the same strain we find them complaining, in a letter to Lord Cornwallis, of a disposition in their servants to "innovation and experiment, without urgent necessity or apparent cause, new institutions, and almost instant deviations from them, multiplication of offices, and increase of salaries." These, they continue, "are always introduced with flattering schemes of increase to the revenue and diminution of expense, which has hardly, in any instance, been realized by the event." In consequence of this constant increase of expense, though the Company's revenues were increased, the surplus revenue was diminished. In the same letter the directors state that it was one million less than in the year 1766, when the Bengal revenues were acquired.

In 1793 the revenues amounted to L.8,225,628, and the expense to L.7,007,050, thus yielding a surplus of L.1,218,578; and the debt was reduced to L.7,971,665. This state of the Company's affairs became the subject of the most extravagant declamations both in parliament and elsewhere. The old delusion of Indian wealth, nearly as absurd as the South Sea bubble, was successfully revived; annual remittances of treasure were anxiously expected and confidently promised; and the expected surplus was most gravely appropriated by acts of parliament to its appointed ends. Mr Dundas was the principal actor in this solemn farce, in which, being probably credulous himself, he imposed on the credulity of others, boasting that India would be a vast source of wealth to the Company, and to the nation. But these predictions were soon falsified by the event. The surplus of Indian revenue, for the appropriation of which so many wise provisions were passed, soon vanished, and in 1797 a deficiency appeared, which continued till 1810. The revenues had, in the mean time, increased from L.8,225,628, their amount in 1797, to about 15½ millions sterling; but, instead of any surplus being remitted from India to Europe, there appears a balance against India, from 1797 to 1807, to the amount of L.1,629,701; whilst, during this period, there was sent from England to India, more than was received, a sum of L.5,691,689. This was the sum, therefore, which England lost during those ten years by its connection with India. From another account also, it appears that, from 1793 to 1816, England remitted of cash to India L.8,824,067 more than was received. (See *East India Annual Accounts laid before Parliament*, p. 19.) In 1811 the revenues began again to exceed the charges, and in the three following years there was a large surplus of nearly three millions sterling in each year. In 1816, 1817, and 1818, this surplus continued to be above two millions annually; and it is stated by Mr Prinsep, in his narrative of the last Indian war, that there was actually accumulated in the different treasuries of the Company, bullion to the amount of eight millions sterling. Here, then, was an opportunity of making a large remittance to the directors in Europe. But of this large accumulation of treasure they received not one shilling. The Indian government was involved in a series of new wars, in the carrying on of which not only was all this wealth expended, but an additional sum of about four and a half millions sterling was borrowed; so that the Indian debt, which in 1814 amounted to about twenty-nine millions sterling, was raised to nearly L.34,775,792, its amount in April 1818. Mr Prinsep, however, in his interesting account of the administration of Marquis Hastings, still confidently held out the hope of a surplus revenue; and he founded his expectations, 1*st*, on a reduction of expense in consequence of the peace recently concluded; and, 2*dly*, on a great increase of revenue from the late extension of the Company's territories. But so far from any surplus of revenue being realized, we find the whole produce of the taxes collected throughout the extensive dominions of the Company, amounting to L.22,019,310, regularly swallowed up in the increasing charge; so that, on the seventeen years ending 1830–1831, the annual deficit amounts to L.18,994,036, as will appear from the following table:—

	INDIA.		Home Charges.	Surplus.	Deficit.
	Surplus.	Deficit.			
	£	£	£	£	£
1814–15	1,342,273	......	1,391,865	......	49,592
1815–16	276,893	......	1,402,472	......	1,125,179
1816–17	955,451	......	1,390,359	......	434,908
1817–18	487,489	......	1,347,052	......	859,564
1818–19	......	42,766	1,446,001	......	1,488,767
1819–20	......	80,833	1,544,857	......	1,625,690
1820–21	1,648,798	......	1,414,210	234,588	......
1821–22	2,057,051	......	1,507,773	549,278	......
1822–23	3,087,960	......	1,628,153	1,459,807	......
1823–24	426,387	......	1,287,560	......	861,173
1824–25	......	1,445,487	1,651,077	......	3,096,564
1825–26	......	3,039,625	1,817,232	......	4,856,857
1826–27	71,303	......	2,429,894	......	2,358,591
1827–28	......	1,190,575	2,069,141	......	3,250,716
1828–29	1,022,130	......	1,967,405	......	945,275
1829–30	1,138,238	......	1,748,740	......	610,502
1830–31	1,799,633	......	1,473,565	326,068	......
				2,569,741	21,563,777
					2,569,741
				Total deficit...	18,994,036

Revenues and Indian Charges (independently of the Home Expenses) of each Presidency, with the Deficit or Surplus in each Year, from 1814–15 *to* 1832.

	BENGAL.			MADRAS.				BOMBAY.		
	Revenue.	Charge.	Surplus.	Revenue.	Charge.	Surplus.	Deficit.	Revenue.	Charge.	Deficit.
	£	£	£	£	£	£	£	£	£	£
1814	11,237,498	8,876,581	2,360,917	5,322,164	5,189,412	132,752	……	857,080	1,717,144	860,064
1815	11,415,799	9,487,638	1,928,161	5,106,107	5,261,404	……	155,297	872,046	1,986,444	1,114,398
1816	11,967,259	9,796,974	2,170,285	5,360,220	5,142,553	217,667	……	895,592	1,946,118	1,050,526
1817	11,769,552	10,281,822	1,487,730	5,381,307	5,535,816	……	154,509	1,392,820	1,956,527	563,707
1818	12,399,475	10,677,015	1,722,460	5,361,432	6,006,420	……	644,918	1,720,537	2,597,776	877,239
1819	12,224,220	10,826,734	1,397,486	5,407,005	5,825,414	……	418,409	2,161,370	3,204,785	1,043,415
1820	13,518,968	10,688,439	2,830,529	5,403,506	5,700,466	……	296,960	2,438,960	3,299,170	860,210
1821	13,361,261	10,356,409	3,004,852	5,557,028	5,500,876	56,152	……	2,883,042	3,667,332	784,290
1822	14,169,691	10,317,196	3,852,495	5,585,209	5,229,202	356,007	……	3,372,447	4,275,012	902,567
1823	12,950,308	10,912,710	2,037,598	5,498,764	6,398,856	……	900,092	2,789,550	3,264,509	454,959
1824	13,484,740	12,620,179	864,561	5,460,742	5,789,333	……	348,591	1,785,216	3,305,982	1,520,766
1825	13,121,282	13,793,499	None.[1]	5,714,915	6,056,967	……	342,052	2,262,393	4,032,988	1,770,595
1826	14,767,238	13,405,152	1,362,086	5,981,681	5,634,322	347,359	……	2,618,549	4,000,552	1,382,003
1827	14,944,713	13,486,879	1,457,834	5,347,838	6,188,127	……	840,289	2,579,905	4,062,566	1,482,661
1828	14,785,860	12,042,607	2,743,253	5,575,049	5,671,496	……	126,447	2,331,802	3,675,384	1,343,582
1829	13,825,280	11,226,226	2,599,054	5,415,587	5,462,566	……	46,979	2,421,443	3,621,976	1,200,533
1830	14,119,914	11,171,167	2,948,747	5,358,260	5,325,840	32,420	……	2,541,136	3,636,626	1,095,490
1831	14,384,116	11,612,196	2,771,920	5,444,126	4,903,971	540,155	……	2,495,768	3,250,481	762,633
1832[2]										

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[1] Deficit of L.852,217.

[2] The year embracing 1832–33 not made up.

The commercial monopoly of the East India Company was granted by William III. in the year 1698, and it was confirmed by 9 and 10 William III. c. 44. The legislative enactments regarding the territorial possessions of the Company commenced in 1767. In that year it was agreed that, in consideration of an annual payment of L.400,000, the territorial possessions should remain in possession of the Company for two years, and afterwards for five years from the 1st of February 1769. There was paid to the public, under these two acts, from 1768 to 1775, the sum of L.2,169,398. In 1773 the affairs of the Company were much embarrassed, and they presented a petition to parliament soliciting a loan for four years, and a sum of L.1,400,000 was accordingly lent; and at this time parliament first assumed the regulation of the Company's affairs. The dividend was restricted to six per cent. till this loan should be repaid, and afterwards to seven per cent. It was enacted that the directors should be elected for four years, six of them, being a fourth part, to vacate their office annually by rotation; the qualification to vote in the court of proprietors to be raised from L.500 to L.1000. A new court of judicature was at the same time established at Calcutta, consisting of a chief justice and three principal judges, appointed by the crown; and a superiority was given to Bengal over the other presidencies; an appropriation was made of the revenues and profits of the Company, and they were required to make half yearly statements of their debts, and of the profit and loss incurred on their trade and revenues. The loan of L.1,400,000 having been discharged, two other acts were passed, by which the territory was continued to the Company for one year. In 1781 an act was passed continuing the territorial revenues and privileges of the Company till the 1st of March 1791, and then to be taken away only on a three years' notice; providing also that the Company should pay annually L.400,000 to the public, besides three fourths of any surplus revenue that might accrue.[1] Under this act the Company paid to the public L.400,000 in satisfaction of all claims up to the 1st March 1781. But of the annual sum of L.400,000 which was afterwards to be paid, the public received only L.300,000; and in 1783 the Company were allowed to borrow L.800,000, and out of this borrowed money to pay a dividend of eight per cent. By the act of 33 Geo. III. c. 52, passed in 1793, the British territories in India, together with the exclusive trade, were continued to the Company for twenty years; and the Company agreed to pay L.500,000 annually, unless prevented by war expenditure. But only two payments were made, of L.250,000 each, under this act, in 1793 and 1794. In 1814 the charter of the Company was renewed for twenty years; the trade to India opened under certain limitations, with the exception of the trade to China, the monopoly of which, with all the territorial revenues, was continued till 20th of April 1834. In 1833 a new act was brought forward by Mr Grant, for the future administration of the vast dominions of the Company, and for the general regulation of their affairs. By this act the commercial privileges of the East India Company were abolished, and the trade to India and to China was thrown open to all British subjects. The government of India was still vested in the directors of the company, in conjunction with the board of control, according to the provisions of Mr Pitt's bill. It was declared lawful for all British subjects to settle in any part of the East India Company's dominions throughout India without any license, merely making known to the chief officer of the customs their names, places of destination, and their business; to hold lands for a term of sixty years, and in perpetuity by a grant from the governor-general; and all classes in Hindustan, of whatever religion, colour, caste, or country, are declared equally eligible to all public offices. The value of the Company's stock is guaranteed to the proprietors at the rate of L.100 for every L.5. 5s. of annual dividend. For this purpose a fund of two millions is set apart, to accumulate at compound interest, until it amount to twelve millions, the price of six millions of stock at ten per cent., and the dividend is in the mean time to be paid out of the territorial revenues. The whole capital of the East India Company, amounting to L.7,780,000, having been in this manner lost, the inhabitants of Hindustan are taxed to make up the loss. For more than forty years a dividend of ten and a half per cent. has been paid upon East India stock, though in the course of this long period not a shilling of profit has ever been made. So far from it, the Company's affairs have been every day sinking deeper into embarrassment, and a pretended dividend has been paid with borrowed money, by which the original value of the stock has been nearly doubled in the market, and at this high value it is to be redeemed at the expense of the Hindus, who, though they had no share in the profits, are thus brought in to bear the loss. It may be doubted, however, whether any other arrangement would have been practicable. The error was in allowing so large a dividend to be paid with borrowed money; and this evil having gone so far, and many proprietors having purchased stock on the faith of the existing dividend, it would have been a bold measure to have at once annihilated the value of the stock to the amount of twelve millions. The reform of judicial proceedings, and the compilation of a uniform code of laws for Hindus and Mahommedans as well as European subjects, a great and important undertaking, forms part of this comprehensive and enlightened plan for the government of India. Owing to the recent extension of the British empire towards the north, it has been found expedient, for the more efficient administration of these distant territories, to erect a fourth presidency and council at Agra, with the same powers as the other presidencies, and subject also to the supreme authority of the president and council of Bengal.

The following is the latest statement of the Company's affairs:

Territorial and Political Debts Abroad.

Total debts in India bearing interest	L.41,204,416	
Debts in India not bearing interest	11,496,162	
Total territorial debts abroad, 1st May 1831	L.52,700,578	
Territorial and political debts at home	8,497,204	
		L.61,197,782
Commercial debts abroad, 1st May 1832	L.719,499	
At home	1,208,995	
		1,928,494
Commercial bonded debt bearing interest	L3,527,437	
Not bearing interest	15,417	
		3,542,854
Carry forward		L.66,669,130

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[1] On this clause Colonel Munro justly observes, "This is converting India into a rack-rent estate for England."

Brought forward			L.66,669,130
Territorial and Political Credits Abroad.			
Consisting of cash and bills receivable, &c. at Bengal, Fort George, and Bombay		L.9,018,281	
Stores in the several departments, 1st May 1831		7,098,683	
Debts, including arrears revenue		9,268,484	
Amount of securities purchased by commission for reduction of Indian debt		2,783,624	
Bills of exchange	L.522,139		
From which is deducted on various accounts	519,617		
		2,522	
		L.28,171,594	
Exports of military stores, cargoes, bills of exchange drawn on government, bullion, dead stock, buildings in India L.400,000, buildings of colleges at Halesbury, &c.		1,407,929	
		L.29,579,523	
Commercial Credits Abroad.			
Cash, goods, merchandise at the several presidencies, Cape of Good Hope, China, Canada, Halifax, and debts	L.1,416,246		
At Home.			
Value of goods, cargoes, ships, East India House, warehouses, debt due from public cash	20,230,903		
		21,647,149	
			51,226,672
Balance deficient			L.15,442,458

The East India Company consists, according to the latest calculation, of 3579 proprietors, who meet in a general court and vote. A proprietor of the Company's stock, provided it has been in his possession for twelve months, to the amount of L.1000, has one vote; of L.3000, two; of L.6000, three; and of L.10,000, four votes; 396 proprietors hold stock under L.500, and are not qualified to vote. The total number of voters is estimated at 2600. The proprietors meet every quarter. Their powers were limited to the election of directors, to the framing of bye-laws, and to the control of salaries or pensions exceeding L.200 a year, or gratuities exceeding L.600. In the court of directors and the board of control is vested the sovereignty of India; they regulate by their supreme authority the policy of the resident government, and the court of proprietors has no power to interfere with their orders.

India is divided into the four presidencies of Bengal, Madras, Bombay, and Agra. The presidency of Bengal is the head of the government, and the president is styled the governor-general. He exercises the executive and legislative powers within his presidency; the regulations which he issues having the force of laws, though subject to the revision of the directors and the board of control at home. Formerly these ordinances were not valid until they were publicly exposed for fourteen days, then registered by the king's supreme court, and afterwards subjected to a further ordeal at home. By the new charter of 1833 these restraints on the powers of the governor-general have been removed, and by his authority in council he can even make laws for the regulation of the supreme courts. The business of the executive is divided among five boards; 1*st*, that of revenue; 2*d*, that of customs, salt, opium; 3*d*, that of trade; 4*th*, the military; and, 5*th*, the medical board. There are three boards at Madras, namely, the first and the two last, and one at Bombay. These boards make suggestions, or present drafts of regulations in their respective departments; and all their minutes are laid before the government monthly, and transmitted home for the consideration of the directors and the board of control. The council of the governor-general consists of five members, three of whom are taken from the servants of the Company of three years standing, but the fourth not from the Company's servants; and all are appointed by the directors, subject to the approbation of the king. The commander-in-chief forms the fifth member. In all state questions the governor-general may act without or even against the advice of his council, on his own responsibility. In virtue of his commission as captain-general, he may head the military operations in any part of India. The chiefs of the other presidencies possess the same authority within their respective districts, but may be controlled in all matters of general policy by the governor-general, who has the power of declaring war and of making peace, and of entering into treaties with foreign states; and who may suspend the governors of the other presidencies, proceed thither, and, assuming the supreme authority, sit as president in their councils.

Indian army.

Each presidency has its separate army, commander-in-chief, and military establishment. But the commander-in-chief of the supreme government has a general authority over the military force in the other presidencies. The total armed force in British India is above 200,000. This force consists, 1*st*, of the king's infantry and cavalry; 2*d*, of the East India Company's European engineers, artillery, and infantry; and, 3*d*, of the Company's native artillery, cavalry, and infantry. The European troops in India amount, according to the latest accounts, to 30,864; the native troops to 181,517, highly distinguished by their valour, good conduct, and discipline. The complement of European officers to each regiment is, one colonel, one lieutenant-colonel, one major, five captains, eight lieutenants, and four cornets or ensigns. Of native officers there is a subahdar and jewadar to each company. But no native can ever attain a rank equal to the youngest European ensign. The number of European officers in India was, by a late return, 5531. The expense of the Anglo-Indian army, at each of the three presidencies of Bengal, Madras, and Bombay, in 1830, was, respectively, L.4,329,537, L.3,216,275, L.1,849,510. The Indian marine is inconsiderable, consisting of one frigate, with ten or twelve smaller vessels, and two armed steamers. The British ecclesiastical establishment in India consists of seventy-six European chaplains, who are under the charge of a diocesan at Calcutta, with L.5000 a year, and three archdeacons at each of the presidencies, with a salary of L.2000 a year. By the new charter of 1833 a bishop is to be stationed at each presidency, with a salary of L.2400. There are also Scottish Presbyterian churches at Calcutta, Bombay, and Madras.

Conclusion.

From the preceding view which we have given of the British administration of India, it will be seen that the inhabitants have suffered many serious evils from a foreign yoke; and that the land-tax levied by the East India Company is the standing obstacle to improvement. It is this tax which retards the progress of cultivation, and consequently of population and capital; and is the cause of large tracts of wilderness being still found in a country naturally fertile. All the different collectors in India, and amongst others Colonel Munro, are of opinion that, but for this obstacle, population would increase even faster in Hindustan than in America. Those provinces of India, however, such as Bengal, which have been long under the sway of the British, now exhibit, notwithstanding the high assessment, sensible marks of improvement. The ancient order of landholders, the zemindars, as well as the inferior tenants or occupants, have many of them no doubt been crushed under the pressure of taxation, and have mostly disappeared; but in their place, under the protecting influence of the British government, a middle order has arisen, who have acquired wealth by industry. In the great towns commerce has flourished; large capitals have accumulated, and in many cases have been employed in purchasing the forfeited lands of the zemindars. A new race of proprietors has thus arisen, more enterprising and industrious than the great lords to whom they have succeeded; and by their industry and exertions the land has been improved, and cultivation slowly extended over the jungles and wastes of the lower provinces. With the progress of commerce and of wealth, rice, the great staple of the farmer, has risen in price, and at the same time the wages of labour; a sure criterion of the improving condition of the people. In the interior of Bengal and the upper provinces, the towns are improving both in size and in appearance; and the equal protection extended to all classes by the British rulers has diffused throughout India a sense of security never before experienced under the despotic rulers of former times, and far less amidst the massacres, the pillage, and the intestine disorders, which from time immemorial have afflicted India, and more especially during the last twenty years preceding the Pindaree war. These evil days have passed away; India is now freed from the scourge of internal war, by the decided ascendency of the one great ruling power; and peace, which now reigns over all Hindustan, is of itself so great a blessing, as to compensate in some degree the evils of foreign rule. The European sovereigns of India have committed great errors, first, in discouraging the colonization of the country by Europeans, and, secondly, in the rigorous exclusion of the natives from every place of power, honour, or emolument. In their jealousy of colonization, the East India Company have evinced all that narrow spirit of monopoly by which they would hold possession of the country by any means, however exceptionable. The hereditary aristocracy of India having been ruined by the rigid exactions of the government, the want of their natural influence has been severely felt in all the details of domestic policy. The business of the revenue, the magistracy, and police, fell, as has been shown, into almost irreparable disorder; and these evils were, by all the most experienced servants of the Company, and by the directors at home, ascribed to the degradation and ruin of the ancient gentry and landholders, who had great authority and respect among the people, and who were universally looked up to as the guardians of civil order. On this subject, Mr Stuart, judge in the Benares division, in a report to government, reasons with great force and clearness, and observes, that the extinction of the aristocracy "may be traced throughout the country as one principal source of the disorders which prevail." (*Fifth Report*, p. 574.) These disorders would have been most effectually remedied by a body of Europeans naturalized in the country, who would have filled up the void in society occasioned by the ruin of the zemindars, and would have diffused amongst the natives the arts, the sciences, the literature, and enlightened morality of Europe; they would have improved the general aspect and condition of Hindu society; and their descendants, familiar with the laws, character, manners, and language of the natives, would have been qualified to act as the rulers and legislators of the country. Owing to the exclusive policy which has been followed, the government of India has been composed of a small body of foreigners, who engross from their rightful owners every part of honour or profit. The standing policy of the Company has been to exclude the natives from every fair object of ambition. Their rise in the army was limited to the command of a platoon of Sepoys; in the civil service to some petty office, alike insignificant in its functions and its pay. A proscription so universal was calculated to produce the most unfavourable effects on the national character. By narrowing the sphere of ambition, we diminish the incentives to active exertion, we take away from mankind the motives which prompt them to cultivate their faculties, we weaken the animating principle of all improvement, we relax the moral tone of society, and thus pave the way for the progress of vice and disorder. All accounts accordingly agree that the state of morals in Hindustan has not been improved under the rule of the English. "The decline of morality," says Lord Moira, in his judicial minute, dated the 2d of October 1815, "is stated to be a subject of reproach against us by all the natives whom birth or education have inspired with concern for the good order or well-being of society." Mr Stuart, whose reports on the state of India abound in the most masterly views of the state of property and manners, expresses this opinion in the strongest terms: "As we proceed," he observes, "these provinces will soon present the singular spectacle of a great empire, the government of which rigidly excludes its subjects from every object of fair ambition, which, in the pursuit, could stimulate men to cultivate their faculties, or, in the possession, enlarge their understandings and elevate their minds." "My speculations," he adds, "may have perhaps misled me, but I am persuaded that very unfavourable effects from these causes may already be traced in the habits of our native subjects; and their long continuance must, I think, infallibly end in reducing the whole population to one ignorant, grovelling, litigious, and profligate herd." Colonel Munro, one of the most distinguished officers in the Company's service, decidedly censures the illiberal policy of exclusion; and describes the natives as more patient and laborious than Europeans, as better accountants, as more efficient men of business; and he expresses his surprise that "men of respectable talents should recommend the abolition of Indian and the substitution of European agency to the greatest possible extent. With our limited number of servants," he observes, "we could not do the work of natives, with ten times the number we could only do it ten times worse."[1] The just and liberal views of Colonel Munro and others have been approved of, and the natives have been for some years admissible to civil offices, and to act as civil and criminal judges; and this tardy justice to the natives may be expected to produce the best effects. They are now summoned to sit in the punctayets (native juries), to try in some places criminal, in others both civil and criminal questions. And this enlightened policy has been still further confirmed by the great and memorable measure introduced into parliament by Mr Grant in 1833, for abolishing the commercial privileges, and regulating other complicated concerns, of the East India Company. The free admission of the natives, of whatever religion or caste, to all offices, and of British settlers into any part of India, there to acquire property or land, or to carry on any trade or profession, is calculated to promote the lasting advantage of India, establishing as it does the principles of freedom, not upon the mere arbitrary regulation of the supreme council, which may be recalled, but on the solid authority of a British act of parliament, which no inferior power can disannul.

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[1] See Copies of several Minutes of Council at the presidencies of Madras, by Sir T. Munro, Mr Græme, Mr Lushington. Judicial Consultation, 3d July 1827.

Under this liberal and comprehensive law, the Magna Charta of Indian freedom, the British merchant may transfer his capital, and his superior intelligence and industry, to the most remote parts of Hindustan; he may engage in trade, in manufactures, or in agriculture; and this free intercourse of India with Britain must in time produce important effects on the character and manners of the people. Hindustan appears, indeed, to be on the eve of a great moral revolution. The spirit of improvement has long slumbered amongst that singular people; and the division of the people into castes, and those superstitions to which they are attached with a blind devotion, are unfavourable to its progress. But the influence of European manners now begins to be seen; and, considering that the Hindus are a conquered people, long bowed under a foreign yoke; that, on the other hand, power, dominion, honour, and promotion, belong to the British; it is no wonder that the prostrate and servile Hindu should be induced gradually to forsake the manners and superstitions, and even the language, of his forefathers, for the enlightened views and purer faith of his victorious preceptors. This great and signal revolution is already begun. The manners, the customs, the language of Britain, are beginning to take root in India. They have been adopted by many natives of distinction, by zemindars, as well as by the rajahs and princes of the country; and from their example they are spreading amongst the other classes. Hindu children of both sexes crowd the British seminaries established at Calcutta; the rising generation resort to the colleges, and are instructed in English literature and science; they frequent the medical and surgical schools; and there is a growing disposition to adopt the free and liberal manners, and all the other improvements, of modern Europe. This moral change, which is already begun, will soon, by the free influx of Europeans, reach the remotest parts of Hindustan. Capital will be introduced, agriculture will be promoted, and improved modes of labour will be adopted. And all these changes will be brought about, not by any violent subversion of existing institutions, but gradually, through the quiet influence of moral causes.

Amongst other sources of improvement in Hindustan, may be reckoned the laudable zeal of the government for the instruction of the people, by the institution of colleges and schools throughout the country, in which are taught all the different branches of literature and science. It was stipulated by the charter in 1814, that a sum of L.10,000 should be annually applied to the purposes of education; which sum has been augmented by the liberality of the government to L.21,884, to L.66,563, and to L.44,330, its amount in 1830. In the Mahommedan College at Calcutta, the pupils are instructed in natural philosophy, theology, law, astronomy, mathematics, geometry, arithmetic, logic, rhetoric, oratory, grammar, in medicine and surgery, and in the English and Arabic languages. There is also a college for the cultivation of Sanscrit and Hindu literature; besides the Anglo-Indian college for instruction in the English languages. Colleges have been established at Delhi and Agra, and primary and elementary schools are dispersed over the whole country. In many cases, the native schools, generally ill conducted, have been improved under the superintendence of the British. In the presidencies of Bombay and Madras numerous schools have been established for the instruction of the natives in all the elementary branches of education; in geography, in mathematics, and in the English language, the knowledge of which is gradually extending amongst the Hindus. And with these institutions for the education of the people is now combined that mighty engine the press, which, though opposed in its first efforts, and rigorously persecuted, has in India, as in all other countries, finally broken down all the restraints of despotism, and achieved its own freedom. It is not above twenty years since one newspaper only was published in Calcutta. In 1833 eight daily newspapers, political and commercial, issued from the Calcutta press; two three times a week, one twice a week, and seven weekly newspapers, some political, others commercial; besides fourteen newspapers in Bengalee or Persian, and monthly, quarterly, and annual publications. At Bombay and Madras political intelligence is dispersed in various journals, some in English, others in the native languages; and throughout the provinces English newspapers are established; whilst at the different courts, at Delhi and at Meerut, the journals are numerous and daily increasing. To those various sources of improvement may be added the missionary labours, which are ardently pursued all over India; in the establishment of schools, in the sending out of preachers, and in the printing and dispersing of the sacred volume and other works in the native languages, on which large sums of money have been expended. Such are the various institutions which are in progress for the civilization of Hindustan, and which are destined ere long to produce important results, not only in that country, but throughout the whole extent of Asia. But those great moral changes which affect the condition of society are in their nature slow and gradual; they cannot be hastened forward, more especially amongst such a people as the Hindus, whose minds are enthralled by the force of their peculiar habits and religion, by immemorial usages, and by the deep-rooted prejudices of ignorance. We cannot expect that long-established habits will be suddenly relinquished, or that fixed impressions will at once yield to the voice of truth. But Great Britain has at last, and in earnest, undertaken the task of instructing her Indian subjects; the foundation is laid; the work of improvement is begun; the seeds of knowledge have been widely dispersed over the congenial soil, and they will assuredly spring up, and in due season yield the desired increase. (F.)

HINGHAM, a town of the county of Norfolk, in the hundred of Forehoe, ninety-six miles from London, situated at the source of the river Yare. The land around is fertile, and there is a market on Thursday. The inhabitants amounted in 1801 to 1203, in 1811 to 1311, in 1821 to 1442, and in 1831 to 1539.

HINNOM, or the *Valley of Hinnom*, in *Ancient Geography*, a place which lay to the south of Jerusalem. It was also called the *Valley of Tophet*, and was remarkable for the cruel and barbarous worship of Moloch, being the place where parents made their children pass through the fire in honour of that idol.

HINZUAN, one of the Comora Islands, situated between Madagascar and the continent of Africa, and otherwise called Anzuame, Anjuan, Juanny, and Johanna.

Hinzuan resembles, according to Sir William Jones's description of it, a vast amphitheatre, of which a general notion may be formed by conceiving a multitude of hills infinitely diversified in figure and magnitude, and thrown together with artless symmetry in all conceivable positions. A series of mountains forms the background. One of these is pointed, about half a mile above the level of the sea, and not more than three miles from the shore; and the whole are richly clothed with fruit trees of exquisite verdure. Beyond this there is another range, partly barren and partly verdant. Nearer the shore there is a vast multitude of cliffs, which push their verdure almost to the water's edge. The rows of palm trees with which it abounds give an enchanting beauty and variety to the scene, and almost appear to have been planted by design. The north side of the island shoots out into two points, which are twenty-six miles distant from each other, with a large bay between them. It is justly considered as a proper place of refreshment for vessels bound to and from the East Indies, yielding limes, lemons, oranges, and many other valuable antiscorbutics.

HIPPARCHUS, the most celebrated astronomer of antiquity, was a native of Nicæa, a city of Bithynia. We have no means of discovering the exact date of his birth or of his death, but we find from Ptolemy that his observations of the heavenly bodies extended from B. C. 162 to 127. His observations were principally taken in the island of Rhodes; but we know nothing of his private history, excepting that he was remarkable for unwearied industry and great love of truth. He seems to have first directed his attention to the rising and setting of stars; and whilst engaged on this subject he composed a commentary on the work of Aratus, and discovered many mistakes, which the latter, or rather Eudoxus, whom he copied, had made in respect to the position of stars. It was not, however, till a much later period that he discovered that the aspect of the heavens had undergone a considerable change since the observations of Eudoxus had been made. His anxiety to arrive at the truth induced him to subject the whole science of astronomy as then known to the strictest examination; and with this view deemed it a matter of the utmost consequence to the success of his ulterior objects, that he should fix with precision the equinoctial and solstitial points, as well as the time which the sun took to pass from one of these points to the other, or, in other words, the exact length of the year. He compared his own observations with those which had been made before his time, and he discovered that the period of 365 days six hours, which had hitherto been considered as the true length of the solar year, was too great by about five minutes. He was the first to perceive that the stars appeared to have a movement parallel to the ecliptic, and he established this doctrine in a work on the retrogradation of the equinoctial points. It was impossible in those early times to calculate with precision the exact quantity of this movement, as he had no observations with which to compare his own except those of Timocharis and Aristillus, who had lived only a short time before. He imagined, however, that it could not be more than 36″ a year, though it is now known that it is in reality 50″. This important discovery would have been sufficient to have immortalized his name, but he possesses many other titles to the admiration of posterity. He was the first to discover the means of determining the inequality of the movement of the sun, or what is called the apparent eccentricity of the solar orbit. He observed that the four parts into which the year is divided by the solstices and equinoxes are by no means equal, the sun occupying ninety-four days and a half in passing from the vernal equinox to the summer solstice, and only ninety-two and a half from the same solstice to the autumnal equinox. It was evident, therefore, that the sun remained 187 days in that part of the ecliptic which lies between the equator and the north pole, and only about 178 in the other part. The only way in which he could account for this apparent inequality of the sun's motion, was by supposing that the earth was not placed exactly in the centre of the circular orbit of the sun, and that his distance from the earth is therefore subject to variation. The distance of the earth from the centre of the orbit is called the *eccentricity;* and it produces an equation between the real and apparent motions, which is called the *equation of the centre.* Hipparchus determined the magnitude of this equation in terms of the radius of the ecliptic, and fixed the position of the line of the apsides, or that which joins the two opposite points of the orbit at the greatest and least distance from the earth. With these data he constructed the first tables of the sun which are mentioned in the history of astronomy. With equal industry and acuteness Hipparchus laboured to bring the still more difficult theory of the moon to a more scientific form. By comparing a great number of observations of eclipses recorded by ancient writers with his own, he was enabled to determine more accurately the period of the moon's revolution relatively to the stars, to the sun, to her nodes, and to her apogee. He calculated with remarkable precision, for the time when he lived, the distance of the moon from the earth, as well as the size of the sun and moon.

The appearance of a new star in the heavens induced Hipparchus to undertake the formation of a catalogue of all the stars visible above his horizon, to fix their relative positions, and to mark their configurations, in order that posterity might be able to detect any changes which might take place in the aspect of the heavens. His catalogue contained 1080 stars. He also invented the planisphere, or method of representing the starry firmament on a plane surface, which afforded the means of solving the problems of spherical trigonometry in a manner often more exact and more commodious than the globe itself. He was the first who demonstrated the methods of calculating triangles, whether rectilineal or spherical; and he constructed a table of chords, from which he drew nearly the same advantages as we derive at present from the tables of sines. Geography is also indebted to him for the happy idea of fixing the position of places on the earth by means of their latitudes and longitudes, and he was the first who determined longitude by the eclipses of the moon. His writings have all unfortunately perished, except a commentary on the poem of Aratus, and a work entitled *Asterismi.* They were first published at Florence, 1567, and afterwards by Petavius in his *Uranologium*, with a Latin translation, Paris, 1630. See Delambre, *Histoire de l'Astronomie Ancienne*, tom. i. p. xxi.; Marcoz, *Astronomie solaire d'Hipparque soumise à une critique rigoureuse, et ensuite rendue à sa vérité primordiale*, Paris, 1828. The views of Marcoz are ably controverted by Letronne in the *Journal des Savans*, 1828 and 1829, January; also by Littrow in the *Vienna Jahrbuch*, 1830, January and March.

HIPPOCENTAUR (composed of ἱππος, horse, κεντεω, *pungo*, I spur, and ταυρος, bull), in *Antiquity*, a fabulous monster, supposed to be half horse and half man. The hippocentaurs seem to have differed from the centaurs in this, that the latter only rode on bullocks, and the former on horses, as the names themselves indicate.

HIPPOCRATES, the greatest physician of antiquity, was born in the island of Cos, in the eightieth Olympiad, and flourished during the Peloponnesian war. He was the first who laid down precepts concerning physic; and, if we may believe the author of the life, which goes under the name of Soranus, he derived his materials from Hercules and Æsculapius. He was first a pupil of his father Heraclides, then of Herodicus, then of Gorgias of Leontium, the orator, and, according to some, of Democritus of Abdera. After being instructed in physic and in the liberal arts, he lost his parents, upon which he left his own country, and practised physic all over Greece, where he was much admired on account of his skill. He was publicly sent for, along with Euryphon, a man superior to him in years, to Perdiccas, king of Macedonia, who was then thought to be consumptive; but Hippocrates, as soon as he arrived, pronounced the disease to be entirely mental, as in truth it proved. Upon the death of his father Alexander, Perdiccas fell in love with Philas, his father's mistress; and this Hippocrates discerned by the great change which her presence always wrought upon him. The cause of his malady being thus ascertained, a cure was soon effected.

Being entreated by the people of Abdera to come and cure Democritus of a supposed madness, he proceeded thither; but, upon his arrival, instead of finding Democritus mad, he discovered that all his fellow-citizens were so, and that Democritus was the only wise man amongst them. From this philosopher he heard much, and learned a great deal of philosophy; a circumstance which has led Cornelius Celsus and some others to imagine that Hippocrates was the disciple of Democritus, though it is probable they never saw each other till this interview, occasioned by the Abderites. Hippocrates also received public invitations to other countries. Thus, when a plague attacked the Illyrians and Pæonians, the kings of those countries begged him to come to their assistance. He did not comply with their request; but learning from the messengers the prevailing direction of the winds, he concluded that the distemper would at length reach Athens; and having foretold what would happen, he applied himself to devise means for mitigating the evil when it should occur. So ardent indeed was his love of Greece, that when his fame had reached Persia, and Artaxerxes entreated him through the Persian governor of the Hellespont to come to him, at the same time promising him great rewards, he refused to go. He also delivered his country from a war which was just ready to break out, by prevailing upon the Thessalians to come to the assistance of his countrymen, a service for which he received the sincere acknowledgments of the Coans. The Athenians also conferred great honours upon him. They admitted him next to Hercules in the Eleusinian ceremonies, conferred on him the freedom of the city, and voted a public maintenance for himself and his family in the Prytaneum or council-house at Athens, where none were maintained at the public charge excepting such as had done public service to the state. He died amongst the Larissæans, at a very advanced age, having, according to some, outlived the usual term of human life, and attained upwards of a hundred years of age.

A complete bibliographical account of the editions, general and partial, of the works of Hippocrates, would occupy many pages; for, independently of the numerous Greek and Latin editions, almost all the modern languages have been enriched with translations of the different treatises of the Greek physician. The number of special editions of his principal works is prodigious. Thus, there have been more than thirty of the Protestation, as many of the book on the Nature of Man, and of that on Airs, Waters, and Places; about fifty on the Books of Epidemics; more than seventy of the Prognostics, and upwards of three hundred editions, with almost as many commentaries in all languages, of his Aphorisms, " ce chef-d'œuvre de l'ésprit humain." The following classification is made on the principle recommended by Erotian, the eldest glossator of Hippocrates, and adopted and improved by Foes: 1. Greek Editions, Venice, 1526, in folio, Aldus and Asulanus; Basil, 1538, in folio, Froben, a more complete and exact edition than the preceding: 2. Greek and Latin Editions, Venice, 1588, in folio, Mercuriali; Frankfort, 1595, 1621, 1624, and 1645, in folio; Geneva, 1657, in two vols. folio; Leyden, 1665, in two vols. 8vo; the Variorum edition, Vienna, 1743–1749, in two vols. folio, Stephen Mack: 3. Latin Editions, Rome, 1525, in folio, Calvo; Rome, 1549, 1610, 1619, in folio; Basil, 1526, in folio; Venice, 1545, in folio, the version of Cornarius; Basil, 1588, in folio; Venice, 1575, in folio, Marinelli; Frankfort, 1596, in 8vo, Foes; Altenburg, 1806, in three vols. 8vo, Pierer, with a learned dissertation on the state of medicine before the time of Hippocrates: 4. Greek and French Edition, Paris, 1811, 1815, in four vols. 12mo: 5. Numerous editions in French and other modern languages.

HIPPOCRENE, in *Ancient Geography*, a fountain of Mount Helicon, on the borders of Bœotia, sacred to the Muses. Some of the poets, as Ovid, make Hippocrene the same with Aganippe.

HIPPODROME, HIPPODROMUS (composed of ἱππος, *horse*, and δρομος, *course*), in *Antiquity*, a list or course where chariot and horse races were performed, and horses exercised. The Olympian hippodrome or course was a space of ground of six hundred paces in length, surrounded with a wall, near the city Elis, on the banks of the river Alpheus. It was uneven, and in some degree irregular, on account of the situation; in one part there was a hill of a moderate height, and the circuit was adorned with temples, altars, and other embellishments. Constantinople had a famous hippodrome, which was begun by Alexander Severus, and finished by Constantine. This circus, called by the Turks *Atmeidan*, is four hundred paces in length, and above a hundred paces in breadth. At the entrance of the hippodrome there is a pyramidal monólith obelisk of granite, about fifty feet in height, terminating in a point, and charged with hieroglyphics. The Greek and Latin inscriptions on its base show that it was erected by Theodosius; the machines which were employed to raise it are represented on it in basso-relievo.

HIPPOLYTE, ST, a city of the arrondissement of St Vigan, in the department of the Gard, in France, situated on the river Bidourle, at the foot of the Cevennes, containing 650 houses and 5479 inhabitants, who carry on many tanneries, and considerable manufactures of silk, woollen, and cotton goods.

HIPPOLYTE, *St*, a town of the arrondissement of Colmar, in the department of the Upper Rhine, in France, on the river Eckenbache. It contains 500 houses, and 1994 inhabitants, some of whom dig good coals in the vicinity.

HIPPOLYTUS, a son of Theseus and Hippolyte, and celebrated in fabulous history for his virtue and his misfortunes. His stepmother Phædra fell in love with him, and when he refused to pollute his father's bed, she accused him to Theseus of offering violence to her person. Her accusation was readily believed, and Theseus entreated Neptune to punish the incontinence of his son. Hippolytus fled from the resentment of his father; and as he pursued his way along the sea shore, his horses were so frightened at the noise of sea calves, which Neptune had purposely sent there, that they ran amongst the rocks, in consequence of which his chariot was broken and his body torn in pieces. Temples were raised to his memory, particularly at Trœzen, where he received divine honours. According to some accounts, Diana restored Hippolytus to life.

HIPPOMANES, a sort of poison, famous amongst the ancients as an ingredient in love-charms. The word is Greek, ἱππομανες, composed of ἱππος, *a horse*, and μανια, *fury* or *madness*. At the end of Bayle's dictionary there is a very learned dissertation on the hippomanes, and all its virtues, both real and pretended.

HIPPONAX, a Greek poet of Ephesus, son of Pythes and Protis (Suid.), who seems to have flourished in the times of Crœsus and Cyrus, B. C. 546 (Marm. Arund.), which agrees sufficiently with the statement of Pliny, that he lived about the sixtieth Olympiad (B. C. 540). He was thus about half a century subsequent to Archilochus, to whose history that of Hipponax bears a strong resemblance. Hated by the tyrants of his country, Athenagoras and Comas, he was obliged to fly, and proceeded to take up his residence at Clazomenæ, another city of Ionia, where, according to some, he died of hunger and want. In the history of poetry he is celebrated as the inventor of a species of iambic verse, which is called choliambi, because the line is imperfect. It is said that we are indebted for its invention to the circumstance of his dispute with two sculptors of Ephesus, Bupalus and Anthermus, who had exposed the poet to the ridicule of his countrymen by a hideous and grotesque representation of him. The poet took ample revenge on the sculptors by a lampoon of so cutting a character that they are said to have hanged themselves. (Plin. xxxvi. 5; Ælian. V. H. x. 6; Hor. Epod. vi. 11; Callimach. Fragm. xc.) The quality for which he was most distinguished was bitterness; and, in allusion to this, it is said that his grave was strewed with thorn bushes instead of vine branches and ivy. (Alcæus Messen. Anthol. Palat. vii. 536.) Besides the choliambi, he wrote also poetry in regular iambic measure. Little of the poetry of Hipponax has been preserved; only a few lines quoted by scholiasts and grammarians have been transmitted to us, but these have been carefully collected by Welcher, *Hipponactis et Ananii Iambographorum Fragmenta*, Göttingen, 1817.

HIPPOPODES, HIPPOPEDES, or *Hippopodiæ* (composed of ἱππος, *horse*, and πους, *foot*), in *Ancient Geography*, an appellation given to a certain people on the shores of the Scythian Sea, who were supposed to have had horses' feet. The hippopodes are mentioned by Dionysius (*Geogr.* v. 310.), Mela (lib. iii. cap. 6), Pliny (lib. iv. cap. 13), and St Augustin (*De Civit.* lib. xvi. cap. 8). But it is conjectured that they received this appellation on account of their swiftness. Pennant supposes them to have been the inhabitants of the Bothnian Gulf, and that they were the same people as the *Finni Lignipedes* of Olaus. They wore snow-shoes, which, he thinks, might fairly give the idea of their being, like horses, hoofed and shod.

HIPPOPOTAMUS, the RIVER-HORSE. See MAMMALIA.

HIRCUS, in *Astronomy*, a fixed star of the first magnitude, the same with Capella.

HIRE, PHILIP DE LA, one of the most laborious and most useful of the French geometricians, was born at Paris in the year 1640. His father, who was painter to the king, designed to bring up his son to the same profession, and with this view taught him drawing and such parts of the mathematics as are intimately connected with it. At the age of twenty he visited Italy to enlarge his knowledge of his favourite art, and resided in that country about four years. But the study of the mathematics, which he continued to prosecute on his return to his native city, afterwards engaged his whole attention; and the publication of some works having procured him a high reputation, he was chosen a member of the Academy of Sciences in the year 1678. When the minister Colbert conceived the design of constructing a better map of France than any at that time to be met with, Lahire was nominated, in conjunction with Picard, to make the necessary observations; and this engaged his attention for some years in the different provinces. In the year 1683 he was employed in continuing the meridian line which had been commenced by Picard in 1669. He continued it from Paris towards the north, whilst Cassini carried it on towards the south; but on the death of Colbert, which happened the same year, the work was discontinued. He was afterwards employed, in conjunction with other eminent philosophers, in taking the necessary levels for the grand aqueducts about to be constructed by Louis XIV. The works published by Lahire are very numerous; and as he was professor of the Royal College and Academy of Architecture, he must have been constantly employed. He had the circumspection and prudence of an Italian, which made him appear reserved in the estimation of his versatile countrymen, yet he was regarded by all as an honest and disinterested man. Lahire died in the year 1718, at the advanced age of seventy-eight. His principal works are, 1. Nouvelle Méthode de Géometrie pour les Sections des Superficies Coniques et Cylindriques, Paris, 1673, in 4to; 2. De Cycloïde Opusculum, ibid. 1676, in 4to; 3. Nouveaux Eléments des Sections Coniques, les Lieux Géometriques, la construction ou affection des Equations, ibid. 1679, in 12mo; 4. La Gnomonique, ou l'art de tracer des cadrans, ibid. 1682, in 12mo; 5. Sectiones Conicæ, in ix. libros distributæ, ibid. 1685, in folio; 6. Tabulæ Astronomicæ, Ludovici Magni jussu et munificentia exaratæ, ibid. 1702, in 4to; 7. L'Ecole des Arpenteurs, avec un Abrégé du Nivellement, Paris, 1689, in 8vo, reprinted in 1692 and in 1728; 8. Traité de Mécanique, où l'on explique tout ce qui est nécessaire dans la pratique des Arts, ibid. 1675, in 12mo; 9. A great number of *Mémoires*, in different journals, and in the Collection of the Academy. Lahire was besides the editor of the *Traité du Nivellement* by Picard; of the *Traité du Mouvement des Eaux* by Mariotte, and joint editor with Boivin and Thévenot of the *Veteres Mathematici Græc. et Latin.* 1693, in folio.

HIRSCHBERG, a city, the capital of a circle of the same name, in the Prussian province of Silesia. It stands at the influx of the Zachen into the river Baber. It is well built and fortified, and contains four Catholic churches and one Lutheran, 944 houses, and 6458 inhabitants. It is the great market-place for the sale of the linen cloth of Silesia. The city has declined much in prosperity from the falling off of that branch of industry, which has been encroached on by cotton goods. Long. 15. 36. 35. E. Lat. 50. 54. 39. N.

HIRTIUS, AULUS, a noble Roman who attended on Cæsar in his wars against the Gauls, and, when he returned to Rome, became the devoted friend of Cicero. He accompanied him to Tusculum, where he studied the art of declamation under that accomplished orator (Cic. *Fam.* vii. 33); and when Cæsar returned from his successful expedition against his enemies in Africa, he was employed by Cicero to make his peace with the conqueror. Hirtius continued a firm friend to Cæsar, and on his death became an equally determined opponent of the ambitious views of Antony. He was elected consul B. C. 43, with Pansa, and, after his recovery from a severe illness, proceeded with his colleague to relieve Brutus, who was besieged in Mutina by Antony. They gained the battle, and put Antony to flight; but Hirtius fell in his attack on the camp (Phil.

vii. v.; *Fam.* x. 33; Liv. *Ep.* 119). He is supposed by some to have been the author of the eighth book of Cæsar's Commentaries, and also of the Alexandrine, African, and Spanish wars; though the truth of this statement was doubted even in the age of Suetonius.

HISPANIA, called *Hesperia Ultima*, as being the westernmost part of Europe, and also *Iberia*, from the river Iberus. The name *Hispania* is of Phœnician origin, the Phœnicians, who settled several colonies on the coast, calling it *Spanjah*, from the great number of rabbits in the country. It has the sea on every side, except on that next to Gaul, from which it is separated by the Pyrenees. The Romans at first divided it into the Farther and Hither Spain, which were governed by two prætors. In that state it continued till the time of Augustus, who divided Farther Spain into Bætica, which he left to be governed by a proconsul, and into Lusitania, which he added to his own provinces; calling Hither Spain *Tarraconensis*. Hispania was anciently celebrated for its fertility. The people were of a warlike turn; and their bodies being formed for hardships and labour, they preferred war to peace, and were remarkably prodigal of life.

HISPANIOLA, called also St Domingo. See St Domingo.

HISSAR Ferozeh, a large district of Hindustan, in the province of Delhi, situated between the 28th and 30th degrees of north latitude, on the western side of the river Jumna. The country is fertile, but labours under a scarcity of water, which detracts from its fertility. It is only watered by one small stream, namely, the Sursutty. In order to supply the means of irrigation, one of the Afghan emperors, who lived in the fourteenth century, caused two canals to be cut, one from the Sutledge and the other from the Jumna, both of which joined at the city of Hissar, whence they are supposed to have been divided into a number of branches, so that the water was nearly all distributed over the lands, and the remainder fell into a lake called Bhedar. Under the influence of this extensive irrigation the country became fertile, and yielded two abundant crops in the year; and, from this circumstance, a part of it received the name of Hurriana, or the verdant mead. All these great works are now ruined; but the country still produces horses, camels, and cattle. The inhabitants are chiefly Jauts, with the exception of a few Rajpoots; there are also villages of Rajpoots who have embraced the Mahommedan religion. This district imports matchlocks, swords, coarse white cloth, salt, sugar, and a small quantity of rice and spices. The exports are horses, camels, bullocks, and ghee. The chief towns are Hissar, Hansy, and Ferozeh. During the prosperity of the Mogul government, this district was considered the personal estate of the heir apparent to the throne. It is now parcelled out amongst a number of native chiefs. The town of Hissar is the capital of the district. It was built by Sultan Feroz, who gave previous directions for the digging of the two canals above mentioned; after which he laid the foundations of the town and fortress, which he built of stone brought from the neighbouring hills of Nosa, and was completed in less than three years. Long. 75. 53. E. Lat. 28. 41. N.

HISTORY.

History, in general, signifies an account of the remarkable events which have happened in the world, arranged in the order in which they actually occurred, together with an explanation of the causes to which they were owing, and of the different effects they have produced as far as can be discovered. The word is Greek, Ἱστορια, and literally denotes a search of curious things, or a desire of knowing, or even a rehearsal of things we have seen, being formed from a word which properly signifies to know a thing by having seen it. But the idea now attached to the word is much more extensive, and it is applied to the knowledge of things derived from the report of others. Its origin is from the verb *ἰσημι, I know;* and hence it is that, amongst the ancients, several of their great men were called *polyhistores*, or persons of various and general knowledge. Sometimes, however, the word History is used to signify a description of things, as well as an account of facts. Thus Theophrastus calls the work in which he has treated of the nature and properties of plants, an History of Plants; we have also a treatise of Aristotle, entitled an History of Animals; and to this day the descriptions of plants, animals, and minerals, are called by the general name of Natural History.

But that which chiefly merits the name of history, and which is here considered as such, is an account of the principal transactions of mankind since the beginning of the world; and this is naturally divided into two parts, *civil* and *ecclesiastical*. The first contains the history of mankind in their various relations to one another, and of their actions, for their own benefit, or that of others, in common life; the second considers them as acting, or pretending to act, in obedience to that which they believe to be the will of the Supreme Being. Civil history, therefore, includes an account of all the different states which have existed in the world, and likewise of those men who in different ages have most eminently distinguished themselves either for good or evil actions. This last portion of civil history is usually termed Biography.

1. CIVIL HISTORY.

History, though apparently incapable of any natural division, will yet be found, on a nearer inspection, to resolve itself into the following periods: 1. The creation of man; 2. The deluge; 3. The commencement of profane history, when the fabulous relations of heroes and demigods were expelled from historical narratives, and men began to relate facts with some regard to truth and credibility; 4. The conquest of Babylon by Cyrus, and the destruction of the Babylonian empire; 5. The reign of Alexander the Great, and the overthrow of the Persian empire; 6. The destruction of Carthage by the Romans, when the latter had no longer any rival capable of opposing their designs; 7. The reign of the Emperor Trajan, when the Roman empire reached its utmost limits; 8. The division of the empire under Constantine; 9. The destruction of the western empire by the Heruli, and the settlement of the different European nations; 10. The rise of Mahommed, and the conquests of the Saracens and Turks; 11. The Crusades; and, lastly, all the space intervening between that time and the present.

First period.

Historians and chronologers are not agreed as to the number of years which have elapsed since the creation of the world. The compilers of the *Universal History* determine it to have taken place 4305 years before Christ, so that, according to them, the world is now (1835) in the 6140th year of its age. Others think it was created only 4000 years before Christ, so that it has not yet attained its 6000th year. Be this as it may, however, the account of the creation rests wholly on the truth of the Mosaic history; and this we must of necessity admit, because we can find no other which does not either abound in the grossest absurdities, or involve us in absolute darkness. The Chinese and Egyptian pretensions to antiquity are too absurd and ridiculous to require serious confutation. Some historians and philosophers are inclined to discredit the Mosaic account, from the appearances of volcanoes, and other natural phenomena, exhibited in the internal structure and constitution of the earth. But their objections are by no means sufficient to invalidate the authority of the sacred writings; and their own systems are in fact liable to insuperable objections. It is therefore reasonable to adopt as true the Mosaic account of the creation. But an historian is under an absolute necessity of doing so, because, without it, he is destitute of any standard or scale by which he can reduce the chronology of different nations to any agreement; indeed, without receiving this account as true, it would be in a manner impossible at this day to write a general history of the world.

The transactions during the first period, that is, from the creation to the deluge, are very imperfectly known, nothing being recorded of them but what is to be found in the first six chapters of Genesis. In general, however, we learn that men were not at that time in a savage state. They had made some progress in the arts, invented music, and found out the method of working metals. They seem also to have lived in one vast community, without any of those divisions into different nations which have since taken place, and which is supposed to have proceeded from the confusion of languages. The most material part of their history, however, is, that having once begun to transgress the divine commands, they proceeded to greater and greater degrees of wickedness, till at last the Deity thought proper to overwhelm the earth with a deluge, which destroyed the whole human race except eight persons, namely, Noah and his family. This terrible catastrophe happened, according to the Hebrew copy of the Bible, 1656 years after the creation; according to the Samaritan copy, 1307. For the different conjectures concerning the natural causes of the flood, see the article Deluge.

Second period.

For the history of the second period, that of the deluge itself, we must also have recourse to the Scriptures. We now find the human race reduced to eight persons, possessed of nothing but what they had saved in the ark, whilst the earth, desolated by the flood, had to be re-stocked with animals from those which had been preserved along with the eight persons who had escaped the general destruction. In what country this original settlement was effected, we are not informed. The ark is supposed to have rested on Mount Ararat, in Armenia; but it is impossible to ascertain whether Noah and his sons made any stay in the neighbourhood of that mountain. It appears, however, that some time afterwards, the whole or the greater part of the human race were assembled in Babylonia, where they engaged in building a high tower, as a place of refuge in the event of the recurrence of another deluge. This, however, gave offence to the Deity, who punished them by confounding their language; and hence originated the division of mankind into different nations.

According to a common opinion, Noah, when dying, left the whole world to his sons, giving Asia to Shem, Africa to Ham, and Europe to Japhet. But this notion or tradition receives not the least sanction from Scripture. It is believed, however, that Gomer the son of Japhet was the father of the Gomerians or Celts, or, in other words, of all the barbarous nations who under various names inhabited the northern parts of Europe; that from Magog, Meshech, and Tubal, three of Gomer's brethren, proceeded the Scythians, Sarmatians, Tartars, and Moguls; and that from the three other sons of Japhet, Madai, Javan, and Tiras, sprung the Medes, the Ionians, the Greeks, and the Thracians. The children of Shem were Elam, Ashur, Arphaxad, Lud, and Aram. The first settled in Persia, where he became the father of that mighty nation; the descendants of Ashur peopled Assyria or Kurdistan; Arphaxad settled in Chaldæa; Lud is supposed by Josephus to have taken up his residence in Lydia, though this is disputed; and Aram is thought to have settled in Mesopotamia and Syria. The children of Ham were Cush, Mizraim, Phut, and Canaan. The first is supposed to have remained in Babylonia, and to have been king of the south-eastern parts of it, afterwards called Khuzistan. His descendants are believed to have removed into the eastern parts of Arabia, from which by degrees they migrated into the corresponding parts of Africa. The second peopled Egypt, Æthiopia, Cyrenaica, Libya, and the other northern parts of the same continent. The place where Phut settled is not known; but Canaan is universally allowed to have settled in Phœnicia, and to have founded those nations who inhabited Judæa, and were afterwards exterminated by the Jews.

Almost all the countries of the eastern continent being thus furnished with inhabitants, it is probable that for many years few or no quarrels would arise between different nations. The paucity of their numbers, their distance from one another, and their diversity of language, would operate as an obstacle to intercommunication. Hence, according to the different circumstances in which the various tribes were placed, some would be more civilized and others more barbarous. In this interval also the different nations probably acquired different characters, which they afterwards retained, and manifested on all occasions; hence the propensity of some nations to monarchy, as the Asiatics, and the enthusiastic desire of the Greeks for liberty and republicanism.

The commencement of monarchical government dates from a very early period, Nimrod the son of Cush having found means to make himself king of Babylonia. In a short time Ashur, having emigrated from the new kingdom, built Nineveh, afterwards capital of the Assyrian empire, and two other cities, called Rezen and Rohoboth, as to the situation of which we are in a state of profound ignorance. Whether Ashur at this time set up as an independent king, or whether he held these cities as vassal to Nimrod, is unknown. It is probable, however, that about the same time various kingdoms were founded in different parts of the world; and these were great or small according to circumstances. The Scripture mentions the kings of Egypt, Gerar, Sodom, and Gomorrha, in the time of Abraham; and we may reasonably suppose that these kings reigned over nations which had existed for some time before.

The first considerable revolution we read of is the migration of the Israelites out of Egypt, and their establishment in the land of Canaan. For the history of these transactions we must refer to the Old Testament, where the reader will find that it was attended with a terrible catastrophe to the Egyptians, and with the utter extermination of some nations, the descendants of Ham, who inhabited Judæa. How far the overthrow of Pharaoh in the Red Sea affected the Egyptian nation cannot easily be determined; and in fact it seems exceedingly difficult to account for the total silence of their records concerning so remarkable an event, as well as for the general obscurity and uncertainty in which the early history of Egypt is involved. The settlement of the Jews in the promised land of Canaan is supposed to have happened about 1491 before Christ.

For nearly two centuries after this period, we find no accounts of any other nation than those mentioned in Scripture. About 1280 before Christ, the Greeks began to make other nations feel the effects of that enterprising and martial spirit for which they were so remarkable, and which they had undoubtedly exercised upon one another long before. Their first enterprise was an invasion of Colchis, now Mingrelia, for the sake of the golden fleece. Whatever was the nature of this expedition, they appear to have succeeded in it; and it is likewise probable, that it was this specimen of the riches of Asia which ever afterwards inclined them so much to Asiatic expeditions. All this time we are totally in the dark concerning the state of Asia and Africa, excepting in as far as can be conjectured from Scripture.

About 1184 years before Christ, the Greeks again distinguished themselves by their expedition against Troy, a city of Phrygia Minor, which they plundered and burned, massacring the inhabitants with the most unrelenting cruelty. Æneas, a Trojan prince, escaped with some followers into Italy, where he is supposed to have become indirectly founder of the Roman empire. At this time Greece was divided into a number of small principalities, most of which seem to have been in subjection to Agamemnon king of Mycenæ. In the reign of Atreus, the father of this Agamemnon, the Heraclidæ, or descendants of Hercules, who had been formerly banished by Eurystheus, were again obliged to leave this country. Under their champion Hyllus they claimed the kingdom of Mycenæ as their right, pretending that it belonged to their great ancestor Hercules, who was unjustly deprived of it by Eurystheus. The controversy was decided by single combat; and Hyllus being killed, they departed, as had been before agreed upon, under a promise of not making any attempt to return for fifty years. About the epoch of the Trojan war, the Lydians, Mysians, and some other nations of Asia Minor, are first mentioned in history. The names of the Greek states mentioned during this uncertain period are, Sicyon, Leleg, Messina, Athens, Crete, Argos, Sparta, Pelasgia, Thessaly, Attica, Phocis, Locris, Ozela, Corinth, Eleusina, Elis, Pilus, Arcadia, Ægina, Ithaca, Cephalonia, Phthia, Phocidia, Ephyra, Æolia, Calista, Thebes, Ætolia, Doloppa, Œchalia, Mycenæ, Eubœa, Mynia, Doris, Phera, Iola, Trachina, Thresprotia, Myrmidonia, Salamine, Scyros, Hyperia or Melite, the Vulcanian isles, Megara, Epirus, Achaia, and isles of the Ægean Sea. Concerning many of these we know nothing besides their names; and the most remarkable particulars concerning the others may be found under these respective heads.

About 1048 before Christ, the kingdom of Judæa under David approached its utmost extent of power. In its most flourishing condition, however, it was never remarkable for the largeness of its territory. In this respect it scarcely exceeded the kingdom of Scotland; though, according to the accounts given in Scripture, the magnificence of Solomon was superior to that of the most potent monarchs on earth. This extraordinary wealth was owing partly to the spoils amassed by David in his conquests over his various enemies, and partly to the commerce with the East Indies which Solomon had established. Of this commerce he owed his share to the friendship of Hiram king of Tyre, a city of Phœnicia, the inhabitants of which were then the most famed for commerce and skill in maritime affairs of any in the world.

After the death of Solomon, which happened about 975 before Christ, the Jewish empire began to decline; and soon afterwards many powerful states arose in different parts of the world. The disposition of mankind in general seems now to have taken a new turn, not easily to be accounted for. In former times, whatever wars might occur between neighbouring nations, we have no account of any extensive empire in the world, or of any prince undertaking to reduce distant nations under subjection. The empire of Egypt indeed is said to have been of great extent, even before the days of Sesostris, who was also a great conqueror. Of the remote history of this country, however, our knowledge is so imperfect, that scarcely any thing certain, or even probable, can be concluded from it. But now, as it were all at once, we find almost every nation aiming at universal monarchy, and refusing to set any bounds whatever to its ambition. The first shock given to Jewish greatness was the division of the kingdom, through the imprudence of Rehoboam. This rendered it more easily a prey to Shishak, king of Egypt, who five years afterwards came and pillaged Jerusalem, and all the fortified cities of the kingdom of Judah. The commerce to the East Indies was now discontinued, and consequently the sources of wealth were in a great measure cut off; and this, added to the perpetual wars between the kings of Israel and Judah, contributed to that remarkable and speedy decline which now took place in Jewish affairs.

This Shishak, who undertook the expedition against Jerusalem, recorded in Scripture, is now known to be identical with the Scheshonk mentioned on the Egyptian monuments. His infantry is described as an innumerable host, composed of different African nations; and his cavalry is stated at sixty thousand, with twelve hundred chariots. These numbers are most probably exaggerated, and all that we can infer from them is, that the invading host was too numerous to be resisted by any force which could be brought against it. We may also observe, that the policy of the elder Pharaohs seems to have differed entirely from that pursued by their successors. In the earlier ages of the monarchy, the sovereigns of Egypt, animated by a spirit of conquest, sought to extend their dominions by the power of the sword, and, with this view, undertook distant expeditions. But experience at length convinced them of the extreme hazards incident to a system of aggression on the part of a country which, from its position and configuration, was peculiarly open to attack; reverses taught wisdom even to those who are generally the last to profit by the severe lessons of adversity; and a change of system ensued. It was felt that an advanced state of civilisation, surrounded on all sides by barbarism and ferocity, could only maintain itself by concentrating its means, and following a system strictly defensive; that the policy of nations must be accommodated partly to their actual position, and partly to the relations in which they stand to those by whom they are encompassed; and that prudence may long preserve what temerity would speedily overthrow. Hence the aggressive policy of the elder Pharaohs gradually merged into that Chinese system of conservation and exclusion which characterised the government of Egypt at the time when the early Greek writers first became acquainted with the country, and which, from not attending to the change we have alluded to, the latter have described as if it had always prevailed. Shishak or Scheshonk was amongst the last of the Egyptian princes who attempted foreign conquests, or conducted expeditions against the neighbouring nations.

But though the Jews obtained a temporary deliverance from this invader, they were soon afterwards attacked by new enemies. In 941 before Christ, Zerah, an Ethiopian, invaded Judæa with an army, it is said, of a million of infantry and three hundred chariots; but he was defeated with great slaughter by Asa king of Judah, who engaged him with an army of more than half a million of men. About this time also the Syrians, who had grown a considerable people, showed themselves bitter enemies to the kings both of Israel and of Judah, aiming, in fact, at the conquest of both nations. Their kingdom commenced in the days of David, under Hadadezer, whose capital was Zobah, and who probably was at last obliged to become a tributary of David, after having been defeated by him in several engagements. Before the death of David, however, Rezon, who had rebelled against Hadadezer, having found means to make himself master of Damascus, erected a new kingdom, which soon became powerful. The Syrian princes being thus in the neighbourhood of the rival states of Israel and Judah, whose capitals were Samaria and Jerusalem, found it an easy matter to weaken both, by pretending to assist the one against the other; but a detail of the transactions between the Jews and Syrians is to be found in the Old Testament, to which therefore the reader is referred. In 740 before Christ, however, the Syrian empire was totally destroyed by Tiglathpileser, king of Assyria; as was also the kingdom of Samaria by Shalmaneser his successor, about twenty years thereafter. The people were either massacred or carried captive into Media, Persia, and the countries around the Caspian Sea.

Whilst the nations of the East were thus destroying each other, the foundations of formidable empires were laid in the West. In Africa, Carthage was founded by a Tyrian colony, about 869 before Christ, according to those who ascribe the highest antiquity to that city; and in Europe also a considerable revolution took place about 900 before Christ. The Heraclidæ, who had been expelled from Greece by Atreus, the father of Agamemnon, after several unsuccessful attempts, at length conquered the whole Peloponnesus. From this time the Grecian states became more civilized, and their history is less obscure. The institution, or rather the revival and continuance, of the Olympic games, in 776 before Christ, also greatly facilitated the writing, not only of their own history, but of that of other nations; for as each Olympiad consisted of four years, the chronology of every important event became fixed by referring it to these periods or divisions of time. In 748 before Christ, or the last year of the seventh Olympiad, the foundations of the city of Rome were laid by Romulus; and, forty-three years afterwards, the Spartan state was new-modelled, and received from Lycurgus those laws by means of which it afterwards arrived at such a pitch of splendour.

Third period.

With the beginning of the 28th Olympiad, or 568 before Christ, commences the third general period above mentioned, when profane history becomes somewhat more clear, and the relations of different nations may be depended upon with some degree of certainty. The general state of the world was then as follows. At this period, the northern parts of Europe were either thinly inhabited, or filled with unknown and barbarous nations, the ancestors of those who afterwards destroyed the Roman empire. France and Spain were inhabited by the Gomerians or Celts. Italy was divided into a number of petty states, consisting partly of Gaulish and partly of Grecian colonies, amongst whom the Romans had already become formidable. The latter were governed by their king Servius Tullius; had increased their city by the demolition of Alba Longa, and the removal of its inhabitants to Rome; and had enlarged their dominions by several cities taken from their neighbours. Greece was also divided into a number of small states, amongst which the Athenians and Spartans, the most remarkable, were rivals. The former had, about 599 before Christ, received an excellent system of laws from Solon, and were enriching themselves by navigation and commerce. The latter were become formidable by the martial institutions of Lycurgus, and, having conquered Messenia, and added its territory to their own, were justly esteemed the most powerful people in Greece. The other states of most consideration were Corinth, Thebes, Argos, and Arcadia. In Asia great revolutions had taken place. The ancient kingdom of Assyria was destroyed by the Medes and Babylonians, its capital city Nineveh was utterly ruined, and the greater part of its inhabitants were carried to Babylon. Nay, the very materials of which it was built were carried off, to adorn and give strength to that stately metropolis, which was then undoubtedly the first city in the world. By Nebuchadnezzar, who now sat on the throne of Babylon, the kingdom of Judæa was totally overthrown in 587 before Christ. Three years before this he had taken and razed the city of Tyre, and overrun all the kingdom of Egypt. He is even said by Josephus to have conquered Spain, and reigned there nine years, after which he abandoned it to the Carthaginians; but this seems by no means probable. The extent of the Babylonian empire is not certainly known. But, from what is recorded of it, we may conclude that it was not at all inferior in magnitude to any that had ever existed; and the Scripture informs us that it was superior in wealth to any of the succeeding ones. We know that it comprehended Phœnicia, Palestine, Syria, Babylonia, Media, and Persia, and not improbably India; and, from a consideration of this vast extent of territory, and the riches with which every one of these countries abounded, we may form some idea of the wealth and power of this monarch. When we consider also, that the whole strength of this mighty empire was employed in beautifying the metropolis, we cannot consider the wonders of that city, as related by Herodotus, as at all incredible. As to what passed about this time in the republic of Carthage we are left quite in the dark; there being a chasm in its history of not less than three hundred years.

Fourth period.

The fourth general period of history, namely, from the end of the fabulous times to the conquest of Babylon by Cyrus, is very short, including no more than thirty-one years. This sudden revolution was occasioned by the misconduct of Evilmerodach, Nebuchadnezzar's son, even in his father's life-time. For having, in a great hunting match on occasion of his marriage, entered the country of the Medes, and some of his troops coming up at the same time to relieve the garrisons in those places, he joined them to those already with him, and without the least provocation began to plunder and lay waste the neighbouring country. This produced an immediate revolt, which quickly extended over all Media and Persia. The Medes, headed by Astyages, and his son Cyaxares, drove back Evilmerodach and his party with great slaughter; nor does it appear that they were afterwards reduced even by Nebuchadnezzar himself. The new empire continued daily to gather strength; and at last Cyrus, grandson to Astyages, a prince of great prudence and valour, being appointed generalissimo of the Median and Persian forces, took Babylon itself in the year 538 before Christ.

During this period the Romans increased in power under the wise administration of their king Servius Tullius, who, though a pacific prince, rendered his people more formidable by a peace of twenty years than his predecessors had done by all their victories. The Greeks, even at this early period, began to interfere with the Persians, on account of the Ionians, or Grecian colonies in Asia Minor. These had been subdued by Crœsus king of Lydia about the year 562, the time of Nebuchadnezzar's death. Whether the Lydians had been subdued by the Babylonian monarch or not, cannot now be ascertained, though it is very probable that they were either in subjection to him, or greatly awed by his power, as before his death nothing considerable was undertaken by them. It is indeed probable, that during the insanity of Nebuchadnezzar, spoken of by Daniel, the affairs of his kingdom must have fallen into confusion; and that many of those princes whom he had formerly retained in subjection must have set up for themselves. Certain it is, however, that if the Babylonians did not regard Crœsus as their subject, they looked upon him as a faithful ally; insomuch that they celebrated an annual feast in commemoration of a victory obtained by him over the Scythians. After the death of Nebuchadnezzar, Crœsus subdued many nations in Asia

Minor, and amongst these the Ionians, as already related. They were, however, greatly attached to his government; for though they paid tribute, and were obliged to furnish some forces in time of war, they were yet free from all kinds of oppression. When Cyrus therefore was proceeding in his conquests of different parts of the Babylonian empire, before he proceeded to attack the capital, the Ionians refused to submit to him, though he offered them very advantageous terms. But soon afterwards Crœsus himself being defeated and taken prisoner, the Ionians sent ambassadors to Cyrus, offering to submit on the terms which had formerly been proposed. But these terms were now refused; and the Ionians, having determined to resist, applied to the Spartans for assistance. The Spartans however could not at that time be prevailed upon to give their countrymen any aid; but they sent ambassadors to Cyrus with a threatening message, to which he returned a contemptuous answer, and then forced the Ionians to yield at discretion, five years before the taking of Babylon. Thus commenced the hatred between the Greeks and Persians; and thus in the first two great monarchies the seeds of destruction were sown even before these monarchies were themselves established. For whilst Nebuchadnezzar occupied himself in raising the Babylonian empire, his son was destroying what his father built up; and at the very time when Cyrus was establishing the Persian monarchy, that prince, by his ill-timed severity to the Greeks, rendered that warlike people his enemies. The transactions of Africa during this period are almost entirely unknown; though we cannot doubt that the Carthaginians enriched themselves by means of their commerce, which afterwards enabled them to attain a considerable share of power.

Fift e- riod

Cyrus having now become master of all the East, Asiatic affairs continued for some time in a state of tranquillity. The Jews obtained liberty to return to their own country, to rebuild their temple, and to re-establish their worship, though from that time they must have been in a state of dependence on the Persians. Cambyses, the successor of Cyrus, added to his empire Egypt, which had either not submitted to Cyrus, or had revolted soon after his death. He intended also to have subdued the Carthaginians; but as the Phœnicians refused to supply him with ships to fight against their own countrymen, he was obliged to lay aside this design.

In 517 before Christ, the Babylonians finding themselves oppressed by their Persian masters, resolved to shake off the yoke, and establish their independence. For this purpose, they took care to store their city with all manner of provisions; and when Darius Hystaspes, then king of Persia, advanced against them, they employed a most barbarous method to prevent an unnecessary consumption of the provisions which they had so carefully amassed. Having collected into one place all the women, old men, and children, they strangled them without distinction, whether wives, fathers, mothers, brothers, or sisters; every one being allowed to save only the wife he liked best, and a maid servant to do the work of the house. But this cruel policy did not avail them. Their city, which could not be carried by force, was taken by treachery; after which the king caused the walls to be reduced from two hundred to fifty cubits in height, that their strength might no longer give encouragement to the inhabitants to revolt. Darius then turned his arms against the Scythians; but finding that his expedition against that people proved both tedious and unprofitable, he directed his course eastward, and reduced all the country as far as the Indus. In the mean time the Ionians revolted; and being assisted by the Greeks, a war commenced between the two nations, which was not thoroughly extinguished till the destruction of the Persian empire, in the year before Christ 330. The Ionians, however, after a war of six years, were for this time obliged to submit, and were treated with great severity by the Persians. The conquest of Greece itself was then projected. But the expeditions undertaken with that view ended most unfortunately for the Persians, and encouraged the Greeks to make reprisals, in which they succeeded according to their utmost wishes; and if they had agreed amongst themselves, the overthrow of the Persian empire would not have been reserved for Alexander.

In 459 the Egyptians made an attempt to recover their liberty, but, after a war of six years, they were reduced to submission. In the year 413 they revolted a second time. On this occasion they were assisted by the Sidonians, a circumstance which drew upon the latter that terrible destruction foretold by the prophets; whilst the principals were themselves so thoroughly humbled, that they never afterwards made any attempt to recover their liberty. The cruelties exercised by the Persians in Egypt were without example even in the annals of the barbarous nation by whom they were perpetrated. The familiar illustration of a bull in a china shop presents but a faint image of a fanatical savage with arms in his hands, let loose amidst the monuments of a high civilization. The Egyptians, however, made two gallant efforts to recover their lost independence. Despair gave them courage; and if they had not been tainted with that degeneracy which always follows in the train of refinement, when untempered and unennobled by the spirit of liberty, success would probably have crowned their efforts. But insurrections are always easily put down in countries where the many exist only for the few, where the people are nothing, and the only point at issue is a question between one despot and another.

The year 403 before Christ proved remarkable for the revolt of Cyrus against his brother Artaxerxes Memnon; a revolt in which, through his own rashness, he miscarried, and lost his life at the battle of Cunaxa, in the province of Babylon. Ten thousand Greek auxiliaries, who had served in his army, made their way back to Greece, though in the heart of a hostile country, and surrounded on all sides by the enemy. In this retreat they were commanded by Xenophon, who has received the highest commendation for his conduct and military skill in bringing it to a happy conclusion. Nor can any praise exceed the merit of having successfully conducted so difficult and perilous an enterprise. A rude barbarian, if success happen to crown the first impulsion of brute force, may easily urge on the rolling tide of conquest; but a retrograde movement, like that executed by Xenophon, requires a combination of the highest and noblest powers of the human mind; anxious prudence, invincible fortitude, prompt decision, inexhaustible fertility in resources, and great knowledge of mankind, blended with superior tactical skill and strategical science, intuitive sagacity in discerning the truth amidst conflicting probabilities, and an entire command of all those artifices or stratagems by which the calculations of an enemy may be deranged, whilst the end contemplated is at the same time accomplished. Two years afterwards the invasions of Agesilaus king of Sparta threatened the Persian empire with total destruction; but from this danger it was relieved by his being recalled to defend his country against the other Grecian states.

During this time the volatile and giddy temper of the Greeks, with their enthusiastic desire of romantic exploits, were preparing for themselves fetters which indeed seemed to be absolutely necessary to prevent them from destroying one another. A zeal for liberty was what they all pretended; but upon most occasions it appeared that this love of liberty was only a desire of dominion. No state in Greece could bear to see another equal to itself; and hence their perpetual contests for pre-eminence, which served to weaken the whole body, and to render them an easy prey to an ambitious and politic prince, capable of taking advantage of their intestine divisions. Being all equally impatient of restraint, they never could endure submission to any regular government; and hence their determinations were little else than the decisions of a mob, of which they had afterwards almost constantly reason to repent. Hence also their unworthy treatment of those eminent men whom they ought most to have honoured; of Miltiades, Aristides, Themistocles, Alcibiades, Socrates, Phocion, and others. The various transactions between the Grecian states, though they cut a considerable figure in their own history, make none whatever in a general sketch of the history of the world. We shall therefore merely observe, that in 404 before Christ, the Athenian power was in a manner totally broken by the taking of their city by the Spartans. In 370 that of the Spartans received a severe check from the Thebans at the battle of Leuctra, and eight years afterwards it was still further reduced by the battle of Mantinea. Epaminondas, the great enemy of the Spartans, was killed; but this proved only a more speedy means of subjugating all the states to a foreign, and at that time despicable power. The Macedonians, a barbarous nation, situated to the north of the states of Greece, were, two years after the death of Epaminondas, reduced to the lowest ebb by the Illyrians. The king of Macedonia being killed in an engagement, Philip his brother departed from Thebes, where he had studied the art of war under Epaminondas, to take possession of his kingdom. Being a man of great prudence and policy, he quickly settled his own affairs, vanquished the Illyrians, and, being no stranger to the weakened situation of Greece, began almost immediately to meditate the conquest of it. As the particulars of this enterprise are related under another head, it is sufficient to notice here, that by first attacking those whom he was sure to overcome, by corrupting those whom he thought it dangerous to attack, by pretending sometimes to assist one state and sometimes another, and by imposing upon all as best served his turn, he at last deprived the Greeks of all power of resistance, at least such as could prevent him from attaining his end. In 338 he caused himself to be elected general of the Amphictyons, or council of the Grecian states, under pretence of settling some disturbances which then existed in Greece; but having once obtained liberty to enter that country with an army, he soon convinced the states that they must all submit to his will. He was opposed by the Athenians and Thebans; but the intestine wars of Greece had cut off all her great men, and no general was now to be found capable of opposing him with success.

The king of Macedonia having thus made himself master of the whole of Greece, projected the conquest of Asia. To this he was encouraged by the reverses which had attended the Persians in their expeditions against Greece, the successes of the Greeks in their invasions, and the memorable retreat of the ten thousand under Xenophon. All these events showed the weakness of the Persians, their vast inferiority to the Greeks in military skill, and how easily their empire might be overthrown by a proper union amongst the states. But whilst Philip was preparing to enter upon his grand enterprise, he was murdered by some assassins. His son Alexander, however, was possessed of every quality necessary for the execution of so great a design; and his impetuosity of temper enabled him to carry it into effect with a rapidity unheard of either before or since. It must be confessed, indeed, that the Persian empire was now ripe for destruction, and could not in all probability have withstood an enemy much less powerful than Alexander. The Asiatics have in all ages been much inferior to the European nations in valour and military skill. They were now sunk in luxury and effeminacy; and, what was worse, they seem at this period to have been seized with that infatuation and distraction of councils which scarcely ever fails to prove the forerunner of destruction. The Persian ministers persuaded their sovereign to reject the prudent advice which was given him, to distress Alexander by laying waste the country, and thus forcing him to return for want of provisions. Nay, they even prevented him from engaging the enemy to advantage, by dividing his forces; and persuaded him to put to death Charidemus the Athenian, who had promised with one hundred thousand men, of whom one third were auxiliaries, to drive the Greeks out of Asia. In his Persian expedition, therefore, Alexander met with only two checks. The one was before Tyre, which for seven months resisted his utmost efforts; and the other was from Memnon the Rhodian, who had undertaken to invade Macedonia. The first of these obstacles Alexander at last surmounted, and treated the governor and inhabitants with the utmost cruelty. The other was scarcely felt; for Memnon died after reducing some of the Grecian islands, and Darius had no other general capable of conducting the enterprise. The Persian empire was totally broken by the victory gained over Darius at Arbela in 331, and next year an end was put to the monarchy by the murder of the king, who fell by the hand of Bessus, one of his own subjects.

The ambition of Alexander was not to be satisfied with the possession of the kingdom of Persia, nor indeed of any other on earth. Nothing less than the total subjection of the world itself seemed sufficient to him; and hence he was now prompted to invade every country of which he could only learn the name, whether it had belonged to the Persians or to other nations. In consequence of this disposition, he invaded and reduced Hyrcania, Bactria, Sogdia, and all the vast tract of country now called Bukharia; and having entered India, he reduced all the nations as far as the Hyphasis, one of the branches of the Indus. But when he desired to proceed farther, and extend his conquests to the eastern extremities of Asia, his troops positively refused to follow him, and he was constrained to return. In 323 before Christ this mighty conqueror died of a fever, without having time to settle the affairs of his vast extended empire, or even to name his successor.

Whilst a Grecian empire thus suddenly sprung up in the East, the rival states of Rome and Carthage were making considerable advances in the West. The Romans were establishing their empire on the most solid foundations, to which their particular situation materially contributed. Being originally little better than lawless banditti, they were despised and hated by the neighbouring states; and this soon produced wars, in which, at first from accidental circumstances, and afterwards from their superior valour and conduct, the Romans proved almost constantly victorious. The jealousies which prevailed amongst the Italian states, and their ignorance of their true interest, prevented them from combining against that aspiring nation, and crushing it in its infancy; whilst the Romans, on the other hand, being kept in a state of continual warfare, became at last such expert soldiers, that no other state on earth was capable of resisting them. During the time of their kings they made a considerable figure amongst the Italian nations; but after the expulsion of the kings, and the commencement of the republic, their conquests became much more rapid and extensive. In 501 before Christ they subdued the Sabines; eight years afterwards the Latins; and in 399 before Christ the city of Veii, the strongest in Italy, was taken after a siege of ten years. But, in the midst of their successes, a sudden irruption of the Gauls had almost put an end to their power and existence as a nation. The city was burned to the ground in 383 before Christ, and the capital on the point of being surprised, when the Gauls, who were climbing up the walls in the night, were accidentally discovered and repulsed. In a short time Rome was rebuilt with greater splendour than before; but now there occurred a general revolt and combination of the nations formerly subdued. The Romans however still proved superior to their enemies; but, even at the time of the death of Camillus, which happened about 352 before Christ, their territories scarcely extended six or seven leagues from the capital. The republic from the beginning was agitated by those dissensions which at last proved its ruin. The people had been divided by Romulus into two classes, *Patricians* and *Plebeians*, answering to our nobility and commonalty. Between these two bodies there existed perpetual jealousies and contentions, which retarded the progress of the Roman conquests, and revived the hopes of the nations whom they had conquered. The tribunes of the people were perpetually opposing the consuls and military tribunes. The senate had often recourse to a dictator intrusted with absolute power, and then the valour and experience of the Roman troops rendered them victorious; but the recurrence of domestic seditions gave the subjugated nations an opportunity of shaking off the yoke. Thus the Romans had continued for nearly four hundred years, running the same round of wars with the same enemies, and reaping very little advantage from their conquests, till at last matters were compounded by choosing one of the consuls from amongst the plebeians; and from this time chiefly we may date the prosperity of Rome, so that by the time when Alexander the Great died, they were held in considerable estimation amongst foreign nations.

The Carthaginians in the mean time continued to enrich themselves by commerce; but being less conversant with military affairs, they were by no means equal to the Romans in power, though they excelled them in wealth. During this period, however, a new state made its appearance, which may be said to have taught the Carthaginians the art of war, and, by bringing them into contact with the Romans, proved the original source of contention between these two powerful nations. This was the island of Sicily. At what precise time this island was first settled, has not been ascertained. The earliest inhabitants we read of were called *Sicani, Siculi, Læstrigones;* but of these we know little or nothing. In the second year of the seventeenth Olympiad, or 710 before Christ, some Greek colonies arrived on the island, and in a short time founded several cities, the chief of which was Syracuse. The Syracusans at length subdued the original inhabitants, though it does not appear that the latter were ever well affected to their government. The first considerable prince, or, as he is called by the Greeks, *tyrant* of Syracuse, was Gelon, who obtained the sovereignty about the year 483 before Christ. At what time the Carthaginians first carried their arms into Sicily is not certainly known; but we are assured that they possessed some part of the island as early as 505 before Christ. In the time of the first consuls, the Romans and Carthaginians entered into a treaty chiefly in regard to matters of navigation and commerce, by which it was stipulated that the Romans who might touch at Sardinia, or that part of Sicily which belonged to Carthage, should be received there in the same manner as the Carthaginians themselves. It hence appears that the dominion of Carthage already extended over Sardinia and part of Sicily; but, twenty-eight years afterwards, the Carthaginians had been totally driven out by Gelon. This was probably the first exploit performed by him; at least such is the conclusion deduced from his speech to the Athenian and Spartan ambassadors, who desired his assistance against the forces of Xerxes king of Persia. To regain their possessions in this island the Carthaginians made many attempts, which occasioned long and bloody wars between them and the Greeks. The island also proved the scene of much slaughter and bloodshed in the wars of the Greeks with one another. Previously to the year 323 before Christ, however, the Carthaginians had made themselves masters of a considerable part of it, and from this all the power of the Greeks failed to dislodge them. It is proper also to observe, that after the destruction of Tyre by Alexander the Great, almost all the commerce in the western part of the world fell to the share of the Carthaginians. Whether they had at this time effected any settlements in Spain is not known. It is certain that they traded to that country for the sake of the silver in which it abounded, as, according to most accounts, they did also to Britain for the tin which it produced.

Sixth period.

The beginning of the sixth period presents us with a state of the world entirely different from any thing that preceded it. We now behold all the eastern part of the world, from the confines of Italy to the Indus, and even beyond it, united into one vast empire, and at the same time ready to fall to pieces for want of a proper head; and the western world filled with fierce and savage nations, whom the rival republics of Carthage and Rome were preparing to enslave as fast as they could. The first remarkable events took place in the Macedonian empire. Alexander, as already observed, had not distinctly named any successor; but he had left behind him a victorious and invincible army, commanded by most expert officers, all of them ambitious of supreme authority. It is not to be supposed that peace could long be preserved in such a situation. For a number of years, indeed, nothing was heard of but horrid slaughters, and wickedness of every kind, until at last the mother, wives, children, brothers, and even sisters, of Alexander, were cut off, not one of the family of that great conqueror being left alive. When these disturbances had somewhat subsided, four new empires, each of them of no small extent, arose out of that of Alexander. Cassander, the son of Antipater, received Macedonia and Greece; Antigonus got Asia Minor; Seleucus had Babylon and the eastern provinces; and Ptolemy Lagus obtained Egypt and the western countries of Africa. One of these empires, however, quickly fell to pieces. Antigonus being defeated and killed by Seleucus and Lysimachus at the battle of Ipsus, in 301 before Christ, the greater part of his dominions fell to Seleucus; but several provinces took the advantage of this confusion to shake off the Macedonian yoke, and thus were formed the kingdoms of Pontus, Bithynia, Pergamus, Armenia, and Cappadocia. The two most powerful and permanent empires, however, were those of Syria, founded by Seleucus, and of Egypt, founded by Ptolemy Lagus. The kings of Macedonia, though they did not preserve the same authority over the Grecian states which Alexander, Antipater, and Cassander, had done, yet effectually prevented them from committing those outrages upon one another for which they had formerly been so remarkable. Indeed it is somewhat difficult to determine whether their condition was better or worse than before they were conquered by Philip; for, though they were now prevented from destroying one another, they were grievously oppressed by the Macedonian tyrants.

Whilst the eastern parts of the world were thus deluged with blood, and the successors of Alexander were pulling to pieces the empire which he had established, the Romans and Carthaginians proceeded in their attempts to enslave the nations of the West. The Romans, ever engaged in war, conquered one city and state after another, till about the year 253 before Christ, when they had made themselves masters of almost the whole of Italy. During this time they had met with only a single check in their conquests, namely, the invasion of Pyrrhus, king of Epirus. That ambitious and fickle prince had projected the conquest of Italy, which he fancied would be an easy achievement. Accordingly, in the year 271 before Christ, he entered that country, and maintained a war with the Romans for six years, till at last, being utterly defeated by Curius Dentatus, he was obliged to return humbled to his own country.

The Romans had no sooner made themselves masters of Italy, than they wanted only a pretence to carry their arms beyond it, and it was not long before this pretence was found. Being invited into Sicily to assist the Mamertines against Hiero king of Syracuse and the Carthaginians, they immediately commenced a war with the latter, which continued with the utmost fury for twenty-three years. The war ended greatly to the disadvantage of the Carthaginians, chiefly owing to the bad conduct of their generals, none of whom, Hamilcar Barcas alone excepted, seem to have been possessed of any military skill; and the state had suffered too many misfortunes before he entered upon the command, for him or any other to retrieve its fortunes at that time. The consequences of this war was the entire loss of Sicily; and soon afterwards the Romans seized on the island of Sardinia.

Hamilcar perceiving that in a short time Carthage must either conquer Rome, or Rome would conquer Carthage, bethought himself of a method by which his country might become equal to the haughty republic by which it was threatened. This was by reducing all Spain, in which the Carthaginians had already considerable possessions, and from the mines of which they derived great advantages. He had, therefore, no sooner finished the war with the mercenaries, which succeeded that with the Romans, than he set about the conquest of Spain. This, however, he did not live to effect, though he had made great progress towards its accomplishment. His son Asdrubal continued the war with success, till at last the Romans, jealous of his progress, persuaded him to enter into a treaty with them, by which he engaged himself to make the river Iberus the boundary of his conquests. This treaty was probably never ratified by the senate of Carthage, nor, even if it had, would it have been regarded by Hannibal, who succeeded Asdrubal in the command, and had sworn eternal enmity with the Romans. The transactions of the second Punic war are amongst the most remarkable which the history of the world exhibits. Certain it is, that nothing can show more clearly the slight foundations upon which the greatest empires are built. We find the Romans, the nation most remarkable for their military skill, and who, for more than five hundred years, had been constantly victorious, unable to resist the efforts of a single man. At the same time we observe this man, though evidently the first general in the world, lost solely for want of timely support. In former times, the republic of Carthage had supplied her generals in Sicily with hundreds of thousands, though their enterprises were almost constantly unsuccessful; but now Hannibal, the conqueror of Italy, was obliged to abandon his design, merely for want of twenty or thirty thousand men. That degeneracy and infatuation which never fail to overwhelm a falling nation, or which are rather the causes of its fall, had now infected the counsels of Carthage; the supplies were denied; and the propitious moment was for ever lost. Neither was Carthage the only infatuated nation. Hannibal, whose prudence never forsook him either in prosperity or adversity, had, in the height of his good fortune, concluded an alliance with Philip, king of Macedonia. If that prince had sent an army to the assistance of the Carthaginians in Italy immediately after the battle of Cannæ, there can be no doubt that the Romans would have been forced to accept of the peace which they so haughtily refused; and indeed this offer of peace, in the midst of so much success, is an instance of moderation which perhaps does more honour to the Carthaginian general than all the military exploits which he had performed. Philip, however, could not be roused from his indolence, nor made to perceive that his own ruin was connected with that of Carthage. The Romans having now made themselves masters of Sicily, recalled Marcellus, with his victorious army, to be employed against Hannibal; and the Carthaginian armies being unsupported in Italy, which they were no longer in a condition to conquer, were recalled into Africa, which the Romans had already invaded. The southern nations seem to have been as blind to their own interest as the northern. They ought to have seen that it was necessary for them to preserve Carthage from being destroyed; but instead of this, Masinissa, king of Numidia, formed an alliance with the Romans, and by his means Hannibal was overcome at the battle of Zama, which terminated the second Punic war, in the year 188 before our era.

The event of the second Punic war determined the fate of almost all the other nations in the world. All this time, indeed, the empires of Egypt, Syria, and Greece, had been accelerating their own ruin by mutual wars and intestine divisions. The Syrian empire was now governed by Antiochus the Great, who seems to have had little right to such a title. His empire, though diminished by the defection of the Parthians, was still very powerful; and to him Hannibal applied, after he had been obliged to leave his own country. Antiochus, however, had not sufficient judgment to discern the necessity of following that great man's advice; nor could the Carthaginians be prevailed on to contribute their assistance against the nation which was soon, without any provocation, to destroy them. The pretence for war on the part of the Romans was, that Antiochus refused to declare his Greek subjects in Asia free and independent states; a requisition which neither the Romans nor any other nation had a right to make. The result was, that Antiochus was everywhere defeated, and forced to conclude a peace upon very disadvantageous terms.

In Europe, the course of events was nearly the same. The states of Greece, weary of the tyranny of the Macedonians, entered into a resolution to recover their liberties. For this purpose was framed the famous Achæan League; but as they could not agree amongst themselves, they at last came to the imprudent determination of calling in the Romans to defend them against Philip king of Macedonia. This produced a war, in which the Romans were victorious. The Macedonians, however, were still formidable; and as the intention of the Romans to enslave the whole world could no longer be doubted, Perseus, the successor of Philip, renewed the war. But through his own cowardice he lost a decisive engagement, and with it his kingdom, which submitted to the Romans in 167 before Christ.

Macedonia being thus conquered, the next step was utterly to exterminate the Carthaginians, whose republic, notwithstanding the many disasters which had befallen it, was still formidable. It is true, the Carthaginians had given no offence; nay, they even made the most abject submissions to the republic of Rome. But all this was not sufficient. War was declared a third time against that unfortunate state; and as there was now no Hannibal to command their armies, the city was utterly destroyed, 146 before Christ. The same year the Romans put an end to the liberties they had pretended to grant the cities of Greece, by the entire destruction of Corinth.

After the death of Antiochus the Great, the affairs of Syria and Egypt proceeded from bad to worse. The degenerate princes who filled the thrones of those empires, regarding only their own pleasures, either spent their time in oppressing their subjects, or in attempting to deprive each other of their dominions, and thus became a more easy prey to the Romans. So far indeed were they from taking any means to secure themselves against the overgrown power of the republic, that the kings both of Syria and Egypt sometimes applied to the Romans as protectors. Their downfall, however, did not take place within the period of which we now treat. The only other transaction which makes any considerable figure in the Syrian empire is the oppression of the Jews by Antiochus Epiphanes. After their return from the Babylonian captivity, they continued in subjection to the Persians till the time of Alexander. From that epoch they were alternately subject to the kings of Egypt or Syria, as the fortune of either happened to prevail. Egypt being reduced to a low ebb by Antiochus Epiphanes, the Jews fell under his dominion; and being severely treated by him, imprudently showed some signs of joy on a report of his death. This brought him against them with a powerful army; and, in 170 before Christ, he took Jerusalem by storm, committing the most horrid cruelties on the inhabitants, insomuch that they were obliged to hide themselves in caverns and in holes of the rocks to avoid his fury. Their religion was totally abolished, their temple profaned, and an image of Jupiter Olympius set up on the altar of burnt-offerings; a profanation which is thought to be the "abomination of desolation" mentioned by the prophet Daniel. This revolution, however, was not of long continuance. In the year 167 before Christ, Mattathias restored the true worship in most of the cities of Judæa; and in 168 the temple was purified, and the worship there restored by Judas Maccabæus. This was followed by a long series of wars between the Syrians and Jews, in which the latter were almost always victorious.

Sev h per .

The beginning of the seventh period presents us with a view of the ruins of the Greek empire in the declining states of Syria and Egypt, both of them much circumscribed in limits. The empire of Syria at first comprehended all Asia as far as the river Indus, and beyond it; but in 312 most of the Indian provinces were ceded by Seleucus to Sandrocottus, or Androcottus, a native, who in return gave him five hundred elephants. Of the empire of Sandrocottus we know nothing further than that he subdued all the countries between the Indus and the Ganges; and that from this time the greater part of India became independent of the Syro-Macedonian princes. In 250 before Christ, however, the empire sustained a much greater loss by the revolt of the Parthians and Bactrians from Antiochus Theus. The former could not be subdued; and as they held in subjection the vast tract which now goes under the name of Persia, their defection must be looked on as an irreparable loss. Whether any part of their country was afterwards recovered by the kings of Egypt or Syria is not very certain; nor is it of much consequence, since we are assured that in the beginning of the seventh period, or about a century and a half before Christ, the Greek empires of Syria and Egypt were reduced by the loss of India, Persia, Armenia, Pontus, Bithynia, Cappadocia, Pergamus, and other countries. The general state of the world in 146 before Christ, therefore, was as follows: In Asia were the empires of India, Parthia, and Syria, with the lesser states of Armenia, Pontus, and others above mentioned; to which must be added that of Arabia, which during the sixth period had grown into some consequence, and had maintained its independence from the days of Ishmael the son of Abraham. In Africa were the kingdoms of Egypt and Ethiopia; the Carthaginian territories, now subject to the Romans; and the kingdoms of Numidia, Mauritania, and Getulia, ready to be swallowed up by the same ambitious and insatiable power, now that Carthage, which served as a barrier, had been overthrown. To the south lay some unknown and barbarous nations, secure, by reason of their situation and insignificance, rather than by their strength or distance from Rome. In Europe we find none to oppose the progress of the Roman arms except the Gauls, Germans, and some Spanish nations, all of whom were brave indeed, but, through want of military skill, incapable of contending with such masters in the art of war as the Romans.

The Spaniards had indeed been subdued by Scipio Africanus in the time of the second Punic war; but in 155 before Christ they revolted, and, under the conduct of one Viriathus, who had previously been a robber, held out for a long time against all the armies Rome could send against them. The city of Numantia defied the whole Roman power for six years longer, till at last the inhabitants, reduced to extremity by famine, set fire to their houses, and perished in the flames, or killed one another, so that not one remained to grace the triumph of the conqueror. This calamitous consummation produced a temporary tranquillity in Spain. About the same time Attalus, king of Pergamus, having left by will the Roman people his heirs, they immediately seized on his kingdom, and reduced it to a Roman province, under the name of Asia Proper. Thus they continued to enlarge their dominions on every side, without the least regard to justice, to the means they employed, or to the miseries they brought upon the conquered nations. In 122 before Christ the Balearic Islands, now called Majorca, Minorca, and Iviça, were subdued, and the inhabitants exterminated; and soon afterwards several of the nations beyond the Alps were obliged to submit.

In Africa the crimes of Jugurtha soon afforded this ambitious republic an opportunity of conquering the kingdoms of Numidia and Mauritania; and indeed this is almost the only war in which we find the Romans engaged where their pretensions had the least colour of justice, though in no case whatever could a nation show more degeneracy than the Romans did upon this occasion. The particulars of this war are related under other heads. The event was the total reduction of Numidia, about the year 105 before Christ; but Mauritania and Getulia preserved their liberty for some time longer.

In the East, the empire of Syria continued daily to decline, and thus the Jews not only had an opportunity of recovering their liberty, but even of becoming as powerful, or at least of extending their dominions as far, as in the days of David and Solomon. This declining empire was still further reduced by the civil dissensions between the two brothers Antiochus Grypus and Antiochus Cyzicenus, during which the cities of Tyre, Sidon, Ptolemais, and Gaza, declared themselves independent; and in other cities tyrants started up who refused allegiance to any foreign power. This happened about a century before the Christian era, and seventeen years afterwards the whole was reduced by Tigranes, king of Armenia. But he was defeated by the Romans, who reduced Syria to the state of a province of their empire. The kingdom of Armenia itself, with those of Pontus, Cappadocia, and Bithynia, soon shared the same fate; Pontus, the most powerful of them all, being subdued about 64 before Christ. About this time the kingdom of Judæa was also reduced under the power of the same people. This state owed the loss of its liberty to the same cause which had ruined several others, namely, calling in the Romans as arbitrators between two contending parties. The two sons of Alexander Jannæus, Hyrcanus and Aristobulus, contended for the kingdom; and Aristobulus, being defeated by the party of Hyrcanus, applied to the Romans. Pompey the Great, who acted as ultimate judge in this affair, decided it against Aristobulus, but at the same time deprived Hyrcanus of all power as a king, and even refused him permission to assume the regal title, or to extend his territory beyond the ancient borders of Judæa. He also obliged Hyrcanus to give up all those cities in Cœlosyria and Phœnicia which had been gained by his predecessors, and added them to the newly-acquired Roman province of Syria.

Thus the Romans became masters of the countries of the East, from the Mediterranean Sea to the borders of Parthia. In the West, however, the Gauls still enjoyed liberty, and the Spanish nations bore the Roman yoke with the greatest impatience. The Gauls infested the territories of the republic by frequent incursions; and though several attempts had been made to subdue them, these always proved insufficient till the time of Julius Cæsar. By him, however, they were totally reduced, from the river Rhine to the Pyrenean Mountains, and many of their tribes or branches were almost exterminated. He carried his arms also into Germany and the southern parts of Britain; but in neither of these attempts did he effect any permanent conquests. The civil wars between him and Pompey gave him an opportunity of seizing on the kingdom of Mauritania, and those parts of Numidia which had been allowed to retain their liberty. The kingdom of Egypt alone remained; but to this nothing belonged excepting the country properly so called. Cyrenaica was bequeathed by will to the Romans in the year 58 before Christ; and about the same time the island of Cyprus was seized by them, without any pretence except a desire of possessing the treasure of the king. The kingdom of Egypt continued for some time longer at liberty; but this must in some measure be ascribed to the internal dissensions of the republic, more especially to the amours of Pompey, Julius Cæsar, and Mark Antony, with the famous Cleopatra, queen of Egypt. The battle of Actium, however, determined at one blow the fate of Antony, Cleopatra, and Egypt, which last was reduced to a Roman province about nine years before our era.

Whilst the Romans thus employed every means to reduce the world to subjection, they were making one another feel the same miseries at home which they inflicted upon other nations abroad. The first civil dissensions took their rise at the siege of Numantia, in Spain, which, as we have already observed, resisted the whole power of Rome for six years. On one occasion thirty thousand Romans fled before four thousand Numantines. Twenty thousand were killed in the battle, and the remaining ten thousand were so shut up that they had no means of escape. In this extremity they were obliged to negotiate with the enemy, and a peace was concluded upon the conditions, first, that the Numantines should suffer the Romans to retire unmolested; and, secondly, that Numantia should maintain its independence, and be reckoned amongst the allies of Rome. But the Roman senate, with unexampled injustice and ingratitude, broke this treaty, and in return ordered the commander of their army to be delivered up to the Numantines; but they refused to accept of him unless his army was delivered along with him, and the war was renewed, and ended as already related. The fate of Numantia, however, was soon revenged. Tiberius Sempronius Gracchus, brother-in-law of Scipio Africanus the second, had been the chief promoter of the peace with the Numantines already mentioned, and of consequence had been in danger of being delivered up to them along with the commander-in-chief. This disgrace he never forgot or forgave; and, in order to revenge himself, undertook the cause of the plebeians against the patricians, by whom the former were greatly oppressed. He began with reviving an old law, which had enacted that no Roman citizen should possess more than five hundred acres (*jugera*) of land; and he designed to distribute the excess amongst those who had no lands, and to reimburse the rich out of the public treasury. This law met with great opposition, produced many tumults, and at last ended in the death of Gracchus and the persecution of his friends, several hundreds of whom were put to death in the most cruel manner, without any form of law.

But the disturbances did not cease with the death of Gracchus. New contests ensued on account of the Sempronian law, and particularly giving to the Italian allies the privilege of Roman citizens, which not only produced great commotions in the city, but occasioned a general revolt of the states of Italy against the republic of Rome. This rebellion was not quelled without great difficulty; and in the mean time the city was deluged with blood by the contending factions of Sylla and Marius, the former of whom sided with the patricians, and the latter with the plebeians. These disturbances ended in the perpetual dictatorship of Sylla, about 80 years before Christ.

From this time we may date the loss of Roman liberty; for though Sylla resigned his dictatorship two years afterwards, the succeeding contests between Cæsar and Pompey proved equally fatal to the republic. These contests were decided by the battle of Pharsalia, 43 before Christ, which rendered Cæsar in effect master of the empire. Without loss of time he then passed into Africa, totally defeated the republican army in that continent, reduced the country of Mauritania to a Roman province, and completed the Roman conquests in those parts. His victory over the sons of Pompey at Munda, 40 before Christ, secured him from any further apprehensions of a rival. Being therefore sole master of the Roman empire, and having all the power in his hands, he projected great schemes, tending, according to some, not less to the happiness than to the glory of his country; but he was assassinated in the senate-house, in the fifty-sixth year of his age, and 39 before Christ.

Without investigating the political justice of this action, or the motives of the perpetrators, it is impossible not to regret the death of this great man, when we contemplate the designs which he is said to have formed. Nor is it possible to justify even the most virtuous of the conspirators, when we consider the obligations under which they lay to him they slew; and as to the measure itself, even in the view of expediency, it seems to be generally condemned. But, from the transactions which had long preceded, as well as those which immediately followed, the murder of Cæsar, it is evident that Rome was incapable of preserving its liberty, and that the people had become unfit for being free. The efforts of Brutus and Cassius were therefore unsuccessful, and ended in their own destruction, as well as in that of great numbers of their followers, at the battle of Philippi. The defeat of the republicans was followed by numberless disturbances, proscriptions, and murders, till at last Octavianus, having cut off all who had the courage to oppose him, and finally obtained the superiority over his rivals by the victory at Actium, put an end to the republic in the year 27 before Christ.

The destruction of the Roman commonwealth proved advantageous to the few nations of the world who still retained their liberty. That outrageous desire of conquest which had so long marked the Roman character in a great measure ceased; there was now another way of satisfying the desires of ambitious men, namely, by courting the favour of the emperor. After the final reduction of the Spaniards, therefore, and the conquests of the countries of Mæsia, Pannonia, and some others adjacent to the Roman territories, and which in a manner seemed naturally to belong to them, the empire enjoyed for some time a profound peace.

The only remarkable transactions which took place during the remainder of the period of which we treat, were the conquest of Britain by Claudius and Agricola, and the destruction of Jerusalem by Vespasian and Titus. The war with the Jews began A. D. 67, and was occasioned by their obstinately claiming the city of Cæsarea, which the Romans had added to the province of Syria. It ended with the destruction of their city and nation, in 73; and since that time they have never been able to assemble as a distinct people. The southern parts of Britain were totally subdued by Agricola about ten years afterwards.

In the 98th year of the Christian era, Trajan was created emperor of Rome; and being a man of great valour and experience in war, he carried the Roman conquests to their utmost extent. Having conquered the Dacians, a German nation beyond the Danube, who had proved extremely troublesome, he turned his arms eastward; reduced all Mesopotamia, Chaldæa, and Assyria; and having taken Ctesiphon, the capital of the Parthian empire, appointed a king, which he thought would be a proper method of keeping the warlike population in subjection. After this he proposed to return to Italy, but died by the way; and with his reign the seventh general period above mentioned concluded.

Eig period

The beginning of the eighth period presents us with a view of one vast empire, in which almost all the nations of the world as then known were swallowed up. This empire comprehended the best part of Britain, all Spain, France, the Netherlands, Italy, part of Germany, Egypt, Barbary, Bildulgerid, Turkey in Europe, Turkey in Asia, and Persia. The state of India was at this time nearly unknown. The Chinese lived in a remote part of the world, unheard of and unmolested by the western nations who struggled for the empire of the world. The northern parts of Europe and Asia were filled with barbarous nations, already formidable to the Romans, and who were destined soon to become more so. The vast empire of Rome, however, had no sooner attained its utmost degree of power, than, like those which had preceded it, it began to decline. The provinces of Babylonia, Mesopotamia, and Assyria almost instantly revolted, and were abandoned by Hadrian, the successor of Trajan in the empire. The Parthians having recovered their liberty, proved formidable enemies, and the barbarians of the northern parts of Europe continued to increase in strength; whilst the Romans, weakened by intestine divisions, became daily less able to resist them. At different times, however, some warlike emperors arose, who put a stop to the incursions of these barbarians; and, about the year 215, the Parthian empire was totally overthrown by the Persians, who had long been subject to it. But this revolution proved of little advantage to the Romans. The Persians were enemies still more troublesome than the Parthians had been; and though often defeated, they still continued to infest the empire on the east, as the barbarous nations of Europe did on the north. In the year 260, the defeat and captivity of the Emperor Valerian by the Persians, with the disturbances which followed, threatened the empire with utter destruction. Thirty tyrants seized the government at once, and the barbarians pouring in on all sides in prodigious numbers, ravaged almost all the provinces of the empire. By the vigorous conduct of Claudius, Aurelian, Tacitus, Probus, and Carus, the empire was restored to its former lustre; but as the barbarians were only repulsed, and never thoroughly subdued, this proved merely a temporary relief; and, what was worse, the Roman soldiers, growing impatient of all restraint, commonly murdered those emperors who attempted to revive the ancient military discipline, which alone could insure victory. Under Diocletian the disorders were so great, that, though the government was held by two persons, they found themselves unable to bear the weight of it, and therefore assumed two other partners in the empire. Thus was the Roman empire divided into four parts; a division which is considered by all historians to have been productive of the greatest evils. For as each of these four sovereigns had as many officers, both civil and military, and the same number of forces which had been maintained by the state when governed only by one emperor, the people were unable to pay the sums necessary for supporting them. Hence the taxes and imposts were increased beyond measure, the inhabitants in several provinces were reduced to beggary, and the land was left untilled for want of labourers. An end was put to these evils when the empire was again united under Constantine the Great; but in 330 a mortal blow was given to it by removing the imperial seat to Byzantium, now Constantinople, and making it co-ordinate with Rome. The introduction and establishment of Christianity, already corrupted with the grossest superstitions, proved also a grievous detriment to the empire. Instead of that steady and obstinate valour in which the Romans had so long been accustomed to put their trust, they now imagined themselves secured by signs of the Cross, and other external symbols of the Christian religion, which they used as a kind of magical incantations; and hence proceeded in some measure the great revolution which took place in the next period.

Ninth period.

The ninth general period includes the decline and fall of the western empire. That empire, which formerly occupied almost the whole world, was now weakened by division and surrounded by enemies. On the east the Persians, on the north the Scythians, Sarmatians, Goths, and other barbarous nations, watched all occasions to break into it; and though they miscarried in their attempts, this was owing more to their own barbarity than to the strength of their enemies. The devastations committed by these barbarians, when they made their incursions, are incredible in themselves, and the relation is shocking to human nature. Some authors seem much inclined to favour them, and even to insinuate that barbarity and ignorant ferocity were their chief, if not their only defects. But from their history it appears, that not only barbarity and the most shocking cruelty, but the highest degree of avarice, perfidy, and disregard to the most solemn promises, were to be numbered amongst their vices. It was ever a sufficient reason for them to make an attack, that they thought their enemies could not resist them. Their only reason for making peace, or for keeping it when made, was because their enemies were too strong; and if they gained a victory, this was, in their estimation, sufficient to justify the most horrid massacres, rapes, and all manner of crimes. The Romans, degenerate as they had become, were yet esteemed much better than these savages; and therefore we find that not a single province of the empire would submit to the barbarians whilst the Romans could possibly defend it.

Some of the Roman emperors indeed withstood this inundation of savages; but as the latter grew daily more numerous, and the Romans continued to weaken themselves by their intestine divisions, they were at last obliged to take large bodies of barbarians into their pay, and to teach them military discipline, in order to drive away their countrymen, or others who had invaded the empire. This policy at last proved its total destruction. In 476, the barbarians who had served in the Roman armies, and were dignified with the title of "allies," demanded the third part of the lands of Italy as the reward of their services; but meeting with a refusal, they revolted, and made themselves masters of the whole country, and of Rome itself, which from that time ceased to be even nominally the head of an empire.

This period exhibits a most unfavourable view of the western parts of the world. The Romans, from the height of grandeur, had sunk to the lowest slavery, and in fact were almost exterminated; the provinces which they formerly governed were inhabited by human beings scarcely a degree above the brutes; every art, every science, was lost; and the savage conquerors were even in danger of starving for want of a sufficient knowledge of agriculture, having now no longer the means of supplying themselves by plunder and robbery. Britain had long been abandoned to the mercy of the Scots and the Picts; and in 450 the inhabitants had called to their assistance the Saxons, whom they soon found worse enemies than those against whom they had implored their aid. Spain was held by the Goths and Suevians; Africa, that is, Barbary and Bildulgerid, was occupied by the Vandals; the Burgundians, Goths, Franks, and Alans, had erected several small states in Gaul; and Italy was subjected to the Heruli under Odoacer, who had assumed the title of king of Italy. In the East, indeed, matters wore an aspect somewhat more favourable. The Roman empire continued to live in that of Constantinople, which was still extensive. It comprehended all Asia Minor and Syria, as far as Persia; in Africa, the kingdom of Egypt; and in Europe the territory of Greece. The Persians were powerful, and rivalled the emperors of Constantinople; and beyond them lay the Indians, Chinese, and other nations, who, unheard of by the inhabitants of the more western parts, enjoyed unmolested peace and liberty.

The Constantinopolitan empire continued to decline by reason of the continual wars in which it was engaged with the Persians, Bulgarians, and other barbarous nations; and to this also superstition and relaxation of military discipline largely contributed. The Persian empire likewise declined from similar causes, together with the intestine broils, from which it was seldom free. The history of the eastern part of the world during this period, therefore, consists only of the wars between the two empires, which were productive of no other consequence than that of weakening both, and rendering them a more easy prey to those enemies who were ere long to erect an empire almost as extensive as that of the Greeks or Romans.

Amongst the western nations, revolutions succeeded one another with unprecedented rapidity. The Heruli under Odoacer were driven out by the Goths under Theodoric. The Goths again were expelled by the Romans; and, whilst the two parties were contending, both were attacked by the Franks, who carried off an immense booty. The Romans were in their turn expelled by the Goths. The Franks again invaded Italy, and made themselves masters of the province of Venetia; but at last the superior fortune of the emperor of Constantinople prevailed, and the Goths were finally subdued in 553. Narses, the conqueror of the Goths, governed Italy as a province of the eastern empire till the year 568, when Longinus his successor made considerable alterations. The Italian provinces had, ever since the time of Constantine the Great, been governed by *consulares*, *correctores*, and *præsides*, no alteration having been made either by the Roman emperors, or even by the Gothic kings. But Longinus, being invested with absolute power by Justinian, suppressed these magistrates, and, instead of them, placed in each city of note a governor, whom he distinguished with the title of *duke*. The city of Rome was not more honoured than any other; for Longinus, having abolished the very name of senate and consuls, appointed a duke of Rome as well as of other cities. For himself he reserved the title of *exarch;* and as he resided at Ravenna, his government was styled the exarchate of Ravenna. But whilst he was establishing this new empire, the greater part of Italy was conquered by the Lombards.

In France a considerable revolution also took place. In 487, Clovis, the founder of the French monarchy, possessed himself of all the countries situated between the Rhine and the Loire; and, by force or treachery, he conquered all the petty kingdoms which had been erected in that country. His dominions had been divided, united, and divided again; and were on the point of being again united, when the followers of Mahommed began to make a figure in the world, and to threaten all the countries of the West.

In Spain, the Visigoths had erected a kingdom ten years before the conquest of Rome by the Heruli. This kingdom they had extended to the eastward, about the same time that Clovis was extending his conquests to the westward; so that the two kingdoms were separated only by the Loire. The consequence of this approximation was an immediate war. But Clovis proved victorious, and, having subdued the greater part of the country of the Visigoths, put a final stop to their conquests on that side.

Another kingdom had been founded in the western part of Spain by the Suevi, a considerable time before the Romans were finally expelled from that country. But in 409 this kingdom was entirely subverted by Theodoric king of the Goths; and the Suevi were so pent up in a small district of Lusitania and Galicia, that it seemed impossible for them ever to recover the ground they had lost. During the above-mentioned period, however, whilst the attention of the Goths was turned another way, they found means again to erect themselves into an independent state, and to become masters of considerably extended territories. But this success proved of short duration. In 584 the Goths attacked them, and having totally destroyed their power, became masters of all Spain, excepting a small part which still owned subjection to the emperors of Constantinople. Of this part, however, the Goths also possessed themselves in the year 623, which concludes the ninth general period.

Africa, properly so called, had changed masters three times during this period. The Vandals had expelled the Romans, and erected an independent kingdom, which was at length overturned by the emperors of Constantinople; and from them the greater part of it was taken by the Goths in the year 620.

Tenth riod.

At the commencement of the tenth general period, which begins with the flight of Mahommed in the year 622, whence his followers date their era called the *Hejira*, we see every thing prepared for the great revolution which was now about to take place. The Roman empire in the west was annihilated; the Persian empire and that of Constantinople were weakened by mutual wars and intestine divisions; the Indians and other eastern nations, unaccustomed to war, were ready to fall a prey to the first invader; and the southern parts of Europe were in a distracted and barbarous state; whilst the inhabitants of Arabia, from their earliest origin accustomed to war and plunder, and now united by the most fanatical superstition and enthusiastic desire of conquest, were, like a pent-up flood, ready to overwhelm the rest of the world. The northern nations of Europe and Asia, which became so formidable in after times, were at present unknown to their southern neighbours; and in no quarter of the globe was there any power capable of opposing the conquests of the Arabs. With amazing celerity, therefore, they overran all Syria, Palestine, Persia, Bukharia, and India, extending their conquests farther to the eastward than Alexander, and carrying all before them. In the west, their empire extended over Egypt, Barbary, and Spain, together with the islands of Sicily, Sardinia, Majorca, Minorca, and the islands of the Archipelago; nor were the coasts of Italy itself free from their incursions, which are even said to have reached as far as Iceland. But at last this great empire began, like others, to decline. Its ruin was sudden, and mainly owing to its internal divisions. Mahommed had not taken care to establish the apostleship in his family, or to give any particular directions about a successor. The consequence of this was, that the caliphate, or succession to the Prophet, was seized by many usurpers in different parts of the empire; whilst the true caliphs, who resided at Bagdad, gradually lost all power, and were regarded only as a kind of high priests. Of these divisions the Turks took advantage to establish their authority in many provinces of the Mahommedan empire; but as they embraced the same religion with the Arabs, and were filled with the same enthusiastic desire of conquest, it is of little consequence to distinguish between them, for it signified nothing to the world whether the Turks or Saracens were the conquerors, since both were equally cruel, barbarous, ignorant, and superstitious.

Whilst the barbarians of the East were thus grasping at the empire of the world, great disturbances happened amongst the hardly less barbarous nations of the West. Superstition seems to have been the ruling principle in both cases. The Saracens and Turks conquered for the glory of God, or of his prophet Mahommed and his successors; the western nations professed an equal regard for the divine glory, which, however, was only to be perceived in the respect they paid to the pope and the clergy. Ever since the establishment of Christianity by Constantine, the bishops of Rome had been gradually extending their power, and attempting not only to render themselves independent, but even to assume an authority over the emperors themselves. The destruction of the empire was so far from weakening their power, that it afforded them opportunities of greatly extending it, and becoming judges of the sovereigns of Italy themselves, whose barbarity and ignorance prompted them to submit to their decisions. During all this time, however, they themselves had been in subjection to the emperors of Constantinople; but upon the decline of that empire, they found means to get themselves exempted from this subjection. The principal authority in the city of Rome was then engrossed by the bishop, though of right it belonged to the duke appointed by the exarch of Ravenna. But though they had now little to fear from the eastern emperors, they were in great danger from the ambition of the Lombards, who aimed at the conquest of all Italy. This aspiring people the bishops of Rome determined to check; and therefore, in 726, when Luitprand king of the Lombards had taken Ravenna and expelled the exarch, the pope undertook to restore the latter. For this purpose he applied to the Venetians, who are now first mentioned in history as a state of any consequence; and by their means the exarch was restored. Some time before this a quarrel had taken place between the pope, Gregory II., and Leo, emperor of the East, about the worship of images. Leo, who in the midst of so much barbarism had still preserved some share of common sense and reason, reprobated in the strongest terms the worship of images, and commanded them to be destroyed throughout his dominions. But the pope, whose cause was favoured by the most absurd superstitions, and by these alone, refused to obey the emperor's commands. The exarch of Ravenna, as a subject of the emperor, was ordered to force the pope to yield a compliance, and even to seize or assassinate him in the event of a refusal. This excited the pious zeal of Luitprand to assist the pope, whom he had formerly designed to subdue. The exarch was first excommunicated, and then torn in pieces by the enraged multitude; the duke of Naples shared the same fate; a vast number of the *Iconoclasts*, or Image-breakers, as they were called, were slaughtered without mercy; and, to complete all, the subjects of the exarchate, at the instigation of the pope, renounced their allegiance to the emperor.

Leo was no sooner informed of this revolt than he ordered a powerful army to be raised, in order to reduce the rebels, and to take vengeance on the pope. Alarmed at these warlike preparations, Gregory looked round for some power upon which he might depend for protection. The Lombards were possessed of sufficient force, but they were too near and too dangerous neighbours to be trusted; the Venetians, though zealous Catholics, were as yet unable to withstand the force of the empire; and Spain was overrun by the Saracens. The French seemed, therefore, the only people to whom it was advisable to apply for aid, as they were able to oppose the emperor, and were likewise enemies to his edict. Charles Martel, who at that time governed France as mayor of the palace, was therefore applied to; but before a treaty could be concluded, all the parties concerned were removed by death. Constantine Copronymus, who succeeded Leo at Constantinople, not only persisted in the opposition to image-worship begun by his predecessor, but also prohibited the invocation of saints. Zachary, who succeeded Gregory III. in the pontificate, proved as zealous an adversary as his predecessor. Pepin, who succeeded Charles Martel in the sovereignty of France, proved as powerful a friend to the pope as his father had been. The people of Rome had nothing to fear from Constantinople, and therefore drove out all the emperor's officers. The Lombards, awed by the power of France, for some time allowed the pope to govern in peace the dominions of the exarchate; but in 752, Astolphus king of Lombardy not only reduced the greater part of the pope's territories, but threatened the city of Rome itself. Upon this an application was made to Pepin, who obliged Astolphus to restore the places he had taken, and gave them to the pope, or, as he said, to St Peter. The Greek emperor, to whom they of right belonged, remonstrated to no purpose. The pope from that time became possessed of considerable territories in Italy, which, from the manner of their donation, go under the name of the Patrimony of St Peter. It was not, however, before the year 774 that the pope was fully secured in these new dominions. This was accomplished when the kingdom of the Lombards was totally destroyed by Charlemagne, who was then crowned king of Italy. Soon after this, that monarch made himself master of all the Low Countries, Germany, and part of Hungary; and in the year 800 he was solemnly crowned by the pope, Emperor of the West.

Thus the world was once more divided into three great empires. That of the Arabs or Saracens extended from the river Ganges to Spain, comprehending almost all those parts of Asia and Africa which were known to Europeans, except the kingdoms of China and Japan. The eastern Roman empire was reduced to Greece, Asia Minor, and the provinces adjoining to Italy. The empire of the West, under Charlemagne, comprehended France, Germany, and the greater part of Italy. The Saxons, however, as yet possessed Britain unmolested by external enemies, though the seven kingdoms erected by them were engaged in perpetual contests. The Venetians also enjoyed a nominal independence, though their situation rendered them dependent upon the great powers which surrounded them. But of all the European potentates, the popes certainly exercised the greatest authority; for even Charlemagne himself condescended to accept the crown from their hands, and his successors made them the arbitrators of their differences.

Matters, however, did not long continue in this state. The empire of Charlemagne, upon the death of his son Louis, was divided amongst his three children. Endless disputes and wars ensued, till at last the sovereign power was seized by Hugh Capet in 987. The Saxon heptarchy was dissolved in 827, and the whole of England reduced under one head. The Danes and Normans now began to make depredations, and to infest the neighbouring states. The former conquered the English Saxons, and seized the government, but were in their turn expelled by the Normans in 1066. In Germany and Italy great disturbances arose out of the disputes between the popes and the emperors; and, if to all this we add the internal contests which sprung from the ambition of the powerful barons of every kingdom, some idea may be formed of these calamitous times. All Europe, nay, all the world, was one great field of battle; for the empire of the Mahommedans was not in a more settled state than that of the Europeans. Caliphs, sultans, emirs, and others, waged continual war in every quarter; new sovereignties every day sprung up, and were as quickly destroyed. In short, through the ignorance and barbarity with which the world was then overspread, it seemed in a manner impossible that the human race could long continue to exist; when happily the crusades, by directing the attention of the Europeans to a foreign object, forced them to suspend their domestic feuds.

Eleventh period.

The Crusades originated in the superstition of the two grand parties into which the world was at that time divided, namely, the Christians and Mahommedans. Both looked upon the small territory of Palestine, which they denominated the Holy Land, as an invaluable acquisition, for which no sum of money could be any equivalent; and both took the most unjustifiable methods to accomplish their objects. The superstition of Omar, the second caliph, had prompted him to invade this country, part of the territories of the Greek emperor, who had done him no injury; and now, when it had been so long under the subjection of the Mahommedans, a similar superstition prompted the pope to send an army for the recovery of Palestine. The crusaders accordingly poured forth in multitudes, like those with which the kings of Persia formerly invaded Greece; and their fate was in some respects similar. At first, indeed, their impetuous valour carried every thing before them, and they recovered all Palestine, Phœnicia, and part of Syria, from the infidels; but their want of skill soon lost what their valour had obtained, and very few of the vast multitudes which had left Europe ever revisited their native lands. A second, a third, and other crusades, were preached, and attended with like success in both respects. Vast numbers took the cross, and repaired to the Holy Land, which they polluted with the most abominable massacres and treacheries, and from which very few of them ever returned. In the third crusade embarked Richard I. of England, who seems to have been the best general that ever went into the East; but even his valour and skill were not sufficient to repair the faults of his companions, and he was obliged to return after having entirely defeated his antagonists, and been within sight of Jerusalem. See the article CRUSADES.

But whilst the Christians and Mahommedans were thus surreptitiously contending for a small territory in the western parts of Asia, the nations in the more easterly parts were threatened with total extermination. Genghiz Khan, the greatest as well as the most bloody conqueror that ever existed, now made his appearance. The rapidity of his conquests seemed to emulate those of Alexander the Great, and the cruelties which he committed were altogether unparalleled. It is worth observing, that Genghiz Khan and all his followers were neither Christians nor Mahommedans, but strict deists. For a long time even the sovereign had not heard of a temple, nor of any particular place on earth appropriated by the Deity to himself, and treated the notion with ridicule when it was first mentioned to him.

The Moguls, over whom Genghiz Khan assumed the sovereignty, were a people of Eastern Tartary, divided into a great number of petty governments, as they are at this day, but who owned subjection to one sovereign, whom they called *Vang Khan*, or the Great Khan. Temujin, afterwards Genghiz Khan, was one of these petty princes; but being unjustly deprived of the greater part of his inheritance at the age of thirteen, he could not recover it till he arrived at that of forty. This corresponds with the year 1201, when he totally reduced the rebels, and, as a specimen of his lenity, caused seventy of their chiefs to be thrown into as many caldrons of boiling water. In 1202 he defeated and killed Vang Khan himself, known to the Europeans by the name of *Prester John of Asia*; and possessing himself of his vast dominions, became thenceforth altogether irresistible. In 1206, having still continued to enlarge his dominions, he was declared khan of the Moguls and Tartars, and took upon him the title of *Genghiz Khan*, or *The Great Khan of Khans*. This was followed by the reduction of the kingdom of Hya in China, Tangut, Kitay, Turkestan, Karazm (the kingdom of Gazna, founded by Mahmud Gazni), Great Bukharia, Persia, and part of India; all of which vast regions were reduced in twenty-six years. The devastations and slaughters with which these conquests were accomplished are unparalleled, no fewer than 14,470,000 persons being computed to have been massacred by Genghiz Khan during the last twenty-two years of his reign. In the beginning of 1227 he died, thereby freeing the world from a most bloody tyrant. His successors completed the conquest of China and Korea, but were foiled in their attempts on Cochin-China, Tong-king, and Japan. On the western side the Tartar dominions were not much enlarged till the time of Hulaku, who conquered Media, Babylonia, Mesopotamia, Assyria, Syria, Georgia, Armenia, and almost all Asia Minor; putting an end to the empire of the Saracens by the taking of Bagdad in 1258.

The empire of Genghiz Khan shared the fate of all others. Being far too extensive to be governed by one head, it split into a multitude of small kingdoms, such as had existed before his time. All the princes of these, however, owned allegiance to the family of Genghiz Khan till the time of Timur Beg, or Tamerlane. The Turks, in the mean time, urged forward by the inundation of Tartars, who poured in from the East, were forced upon the remains of the Greek empire; and, at the time of Tamerlane above mentioned, they had almost confined this once mighty empire within the walls of Constantinople.

In the year 1335 the family of Genghiz Khan having become extinct in Persia, a long civil war ensued, during which Timur Beg, one of the petty princes among whom the Tartar dominions were divided, found means to aggrandise himself in a manner similar to that in which Genghiz Khan had done about a hundred and fifty years before. Genghiz Khan, indeed, was the model whom he proposed to imitate; but it must be allowed that Timur was more merciful, if indeed the word can be applied to such inhuman tyrants. The plan on which Genghiz Khan had conducted his expeditions was that of total extermination. For some time he utterly extirpated the inhabitants of those places which he conquered, designing to people them anew with his Moguls; and, in consequence of this resolution, he employed his army in beheading a hundred thousand prisoners at once. Timur's cruelty, on the other hand, seldom went farther than the pounding of three or four thousand people in large mortars, or building them amongst bricks and mortar into a wall. We must observe, however, that Timur was not a deist, but a Mahommedan, and conquered expressly for the purpose of spreading the Mahommedan religion; for the Moguls had now adopted all the superstitions and absurdities of Islamism. Thus the eastern part of the world was threatened anew with the most dreadful devastations, whilst the western nations were exhausting themselves in fruitless attempts to recover the Holy Land. The Turks were the only people who seem at this period to have been gathering strength, and who, by their perpetual encroachments, threatened to swallow up the western nations, as the Tartars had done those of the East.

In 1362 Timur invaded Bukharia, which he reduced in five years, and proceeded in his conquests, though not with the same celerity as Genghiz Khan, till the year 1387, when he had subdued all Persia, Armenia, Georgia, Karazm, and the greater part of Tartary. After this he advanced westward, subduing all the countries as far as the Euphrates, made himself master of Bagdad, and even entered Russia, where he pillaged the city of Moscow. He then turned his arms to the East, and totally subdued India. In 1393 he invaded and reduced Syria; and having turned his arms against the Turks, he forced their sultan Bajazet to raise the siege of Constantinople. This brought on an engagement, in which Bajazet was entirely defeated and taken prisoner; an event which so broke the power of the Turks, that they were not for some time able to recover themselves. At last this great conqueror died in the year 1405, whilst on his way to conquer China, as Genghiz Khan had done before him.

The death of Timur was followed almost immediately by the dissolution of his empire, and most of the nations which he had conquered recovered their liberty. The Turks had now no further obstacle to their conquest of Constantinople. The western nations having exhausted themselves in the Holy Wars, as they were called, had now lost that insatiable thirst of conquest which so long possessed the minds of men. They had already made considerable advances in civilization, and begun to study the arts of peace. Gunpowder was invented, and its application to the purposes of war already known; and, although no invention threatened to be more destructive, perhaps none has ever proved more beneficial to the human race. By the use of fire-arms, nations are placed more on a level than they formerly were; and war is reduced to a regular system, which must be studied with as much care as any other science. Conquests are not now to be made with the same ease as formerly; the defensive force of states has been increased; and hence latterly the world has been much more peaceable and tranquil than in former ages. In 1453 the conquest of Constantinople by the Turks fixed that wandering people to one place; and though they long possessed extensive dominions in Europe, in Asia, and in Africa, an effectual stop has long been put to their further progress, and their power is now rapidly declining.

About this time, also, learning began to revive in Europe, where it had long been lost; and the invention of printing, which happened about the same time, rendered it in a manner impossible for barbarism ever again to recover its ancient empire. All the nations of the world, indeed, seem now to have laid aside much of their former ferocity; and, although wars have been by no means uncommon, these have not been carried on with such circumstances of atrocity and cruelty as before. Instead of attempting to enrich themselves by the spoils of their neighbours, mankind have in general applied themselves to commerce, the only true and durable source of riches. This soon produced improvements in navigation, which again led to the discovery of many regions formerly unknown. At the same time, the European powers, being at last thoroughly sensible that extensive conquests could never be permanent, applied themselves rather to provide for the security of the dominions which they already possessed, than to attempt the conquest of one another; and this produced the policy to which so much attention was subsequently paid, namely, that of preserving the balance of power in Europe, or preventing any one nation from acquiring sufficient strength to overpower another.

In the end of the fifteenth century the vast continent of America was discovered; and, almost at the same time, Vasco de Gama opened the passage to the East Indies by the Cape of Good Hope. The discovery of these new regions gave a new turn to the ambition of the Europeans. To enrich themselves by the gold and silver produced in these countries, or by traffic with the natives, now became the object of the more adventurous and enterprising. The Portuguese had the advantage of being the first discoverers of the countries in the eastern, and the Spaniards in the western hemisphere. Nor did the former neglect so favourable an opportunity of enriching themselves by commerce. Many settlements were formed by them in the East India islands, and on the continent; but their avarice and perfidious behaviour towards the natives proved at last the cause of their total expulsion. The Spaniards enriched themselves by the vast quantities of the precious metals imported from America, but which were only obtained by the most horrid massacres committed on the natives. The possessions of the Spaniards and Portuguese soon excited other European nations to make attempts to share with them in their treasures, by planting colonies in different parts of America, and effecting settlements in the East Indies; and thus the rage of war was in some measure transferred from Europe to these distant regions, whilst, after various contests, the British at last obtained a great superiority both in America and the East Indies.

The revolutions which took place in Europe during this period were, some of them, productive of important results. The total expulsion of the Moors and Saracens from Spain followed the capture of Granada in 1491. The fall of their capital terminated the long struggle which they had maintained to preserve a footing in the country to which they were so much attached; and the barbarous act which consummated their overthrow (an act highly characteristic of the age, though equally at variance with sound policy and common humanity) recoiled on the victorious perpetrators, by annihilating art, destroying industry, and extinguishing the light of science in the Peninsula. Spain felt severely the shock occasioned by the expulsion of this people, amongst whom knowledge and refinement had made considerable advances; but, on the other hand, the union of Aragon and Castille by the marriage of Ferdinand and Isabella formed the first step towards the consolidation under one monarchy, of the different petty kingdoms into which the country was divided, and laid the foundation of that power and ascendency which, in less than a century, Spain acquired amongst the nations of Europe. Her advancement was rapid, and, in the brilliant reign of Charles V., she reached the zenith of her glory. But at this culminating point of splendour and power she was not destined to remain, even for a short period, stationary; for the sun of her glory, having passed his meridian, began immediately to decline in the quarter opposite to that in which he had arisen. Philip, the son and successor of the emperor, unable to wield the power which had been committed to his hands, misgave in all his enterprises; and whilst the spirit of the nation was humbled by his reverses, its resources were exhausted by the obstinate but ill-directed efforts made to repair them. The blow, however, which fell most heavily on the power of Spain was the revolt of the states of Holland. The Dutch, animated by that spirit of liberty which commerce always inspires, and driven to despair by a ruthless and implacable despotism, which attempted to impose its fetters on the mind as well as the body, rose in arms against their oppressors, and, after a sanguinary struggle, most unequal in its commencement but glorious in its results, they conquered their independence, and were, in the year 1609, declared a free people. Thus Spain lost the brightest jewel in its crown, freedom gained a new ally, and the despots of Europe were taught the important lesson that nothing is impossible for a brave people who have resolved, at all hazards, to establish their liberty.

In Asia nothing of importance had occurred since the capture of Constantinople by the Turks. Comparative tranquillity reigned throughout that vast continent, which had so often been the theatre of violent revolutions, sudden conquests, and mushroom empires. Siberia had fallen under the dominion of Russia. To the southward, from Asia Minor to China and Corea, the Tartars roamed through their inhospitable deserts, formidable, indeed, by their numbers, but, from their disunion and barbarism, no longer capable of pouring in overwhelming masses on the nations of the East or of the West. The Turks possessed the western part of the continent, or Asia Minor, as far as the river Euphrates, which formed their boundary on the east. The Arabs were again confined within their own peninsula, which they possessed, as they had ever done, without owning subjection to any foreign power, in a state of wild independence. Contiguous to Turkey on the east lay Persia, now more restricted in its limits than before, but still powerful; whilst India, destined ere long to change masters, and yield to the supremacy of European arts and arms, slumbered under the dominion of the Mogul. Of the countries still farther to the east little was as yet known to the nations of the west; but an era of more active enterprise and daring adventure was rapidly approaching. The vast empire of China, occupying the most easterly portion of the Asiatic continent, enjoyed, as before, an almost entire immunity from revolution, or, if visited by a Tartar inroad, soon absorbed the invaders into its own vast mass, without the least disturbance to its laws, its institutions, or its government, or any other change than that of a dynasty or a name.

In Africa, the Turks possessed Egypt, which they had conquered in 1517, though by a very insecure tenure, and exercised a sort of nominal jurisdiction over the Barbary states, the principal of which, Algiers, has at length been subdued and converted into a troublesome colonial dependency of France. Of the barbarous nations who occupied the interior little or nothing was as yet known. On the western coast the British and Portuguese had established settlements; and the southern extremity was occupied by the Dutch, who were at length dispossessed by the British, when the latter found it necessary, for the security of their power in India, to occupy that advanced position in the Southern Ocean. The eastern coasts remained almost wholly unknown; whilst the Asiatic and African islands were either possessed by Europeans, or inhabited by savage tribes.

The European nations, at the beginning of the seventeenth century, were Britain, France, Holland, Spain, Portugal, Italy, Turkey in Europe, and in the north and east Germany, Poland, Russia, Sweden, and Denmark. Of these, Russia, though the most barbarous, was nevertheless, in point of territory and population, by far the most considerable; but the situation of that power, at a distance from the centre of European policy and civilization, the poverty of its resources, the unsettled nature of its government, the rude and sluggish character of its population, immersed in profound ignorance and grovelling superstition, and, above all, its state of political isolation, rendered it in no respect formidable to other nations, and, in fact, made it be, in a great measure, overlooked in adjusting the balance of power in Europe. The kingdom of Poland, which had existed for upwards of six centuries, proved a barrier between Russia and Germany; it formed, as it were, the frontier defence of the nations of the south and west of Europe, to which it was naturally allied by a community of civilization, against the inroads of the northern barbarians, its immediate and natural enemies; it seemed established by Providence, in short, as a powerful advanced guard for the protection of Central Europe on the side where it was weakest and most easily assailable. As long, therefore, as the necessity of maintaining a balance of power entered into the calculations of cabinets, it might have been supposed, that, whatever wars Europe might be engaged in, and whatever changes of territory might in consequence be effected, the most obvious views of interest, of policy, and even of self-defence, would have recommended the preservation of a kingdom, which, both from its peculiar situation, and from the high and chivalrous character of its people, formed, or at least should have formed, an important element in the European system. So far from this, however, Poland was first dismembered, and afterwards destroyed. Whilst the cupidity of Austria and Prussia was appeased by a share of the spoil, Russia attained the first object of her ambition by the removal of the grand obstacle which had hitherto prevented her from interfering in the affairs of the Continent; the equilibrium of power was entirely destroyed; and the other nations of Europe tamely acquiesced in a change of system, all the consequences of which have not yet been foreseen. The immediate results of this great public crime are matters of universal notoriety. Russia, elevated at once to the rank of a first-rate power, has attained an ascendency in continental affairs, and, by means of systematic encroachments, has at length so completely humbled Turkey, that the period is not very distant when she will attempt to transfer the seat of her empire from Petersburg to Constantinople. Her ambitious designs were all along of the most grasping and comprehensive character; but as these were slowly and cautiously developed, at times and seasons most favourable for their advancement, her artful and insidious policy excited no suspicion or alarm until it was almost too late to check, far less to arrest, her career. It remains to be seen how far the other powers of Europe may yet have cause to regret the passive indifference with which they so long regarded the progressive aggrandisement of an empire, which already seems to aim at universal dominion, and the influence of which is now felt from the Indus to the Bosphorus.

The wars of the eighteenth century were not productive of any great or memorable changes, until the successful revolt of the British colonies in North America issued in the establishment of their independence. This important event, which gave birth to a kindred nation on the other side of the Atlantic, and laid the foundation of liberty in the New World, was generally regarded by the enemies of Britain as a fatal shock to her power and wonted superiority; and France, in assisting the colonies to conquer their independence, no doubt imagined that she was contributing in the most effectual manner to humble her ancient and formidable rival. But the result has shown that all such expectations were founded on error. The colonies, it is true, were disjoined from the mother country, and formed into an independent nation, which is now advancing with rapid strides in wealth, in power, and in greatness, and which is certainly destined, at no very distant date, to form one of the mightiest communities of freemen on the face of the earth. But Great Britain has had no cause to lament the separation, or to repine at their prosperity. Divested only of a splendid encumbrance, an expensive and invidious appanage, she has been left at liberty to reap the undivided benefits of her native vigour, to display new energies, to extend her industry and enterprise, and, in the profits of an active commerce with a great and rising nation, to indemnify herself for the barren distinction of maintaining unproductive establishments beyond the Atlantic. The separation, in fact, has proved equally advantageous to both parties. To America it formed the commencement of a career of prosperity unexampled in the history of nations, and of which it is yet impossible to foresee the full development; whilst Britain, relieved from a burden that exhausted her strength and crippled her vigour, started with fresh vigour in the race of improvement, and rose rapidly in greatness and power after the event which shortsighted politicians had considered as the forerunner of her humiliation and decay. Every addition made to the great community of free nations is in fact a common benefit to all.

On the other hand, the flame which, it was thought, would scorch Britain, soon blazed out with consuming violence in the bosom of her principal foe. The course of time, and, above all, the accumulated evils of ages of tyranny and misgovernment, had long been silently preparing in France those combustible elements which sooner or later explode in political convulsions. In the old system there was no self-correcting or regenerative principle; despotism can never stop short in its career, far less retrace its steps; its character is to persevere, its progress is from bad to worse. It is only by passing through a course of revolution, perhaps through anarchy, that long-lost liberty can be recovered, and the dominion of equal laws established; and to this transition every thing now tended in France. All the props of the old system were either undermined or decayed; the state of opinion and knowledge had prodigiously outrun a government which existed only on the recollections of the past; religion, having degenerated into superstition, had lost its hold on the public mind; free discussion had given rise to a new set of opinions, and bold doctrines were boldly promulgated; the decay of the finances weakened the power of the state, and whilst the country groaned under every sort of abuse, odious privileges inflamed the resentment of the people. In short, a crisis of the most tremendous description was evidently preparing; and it is probable enough that those who had served an apprenticeship to liberty in America, were not backward, on their return to their own country, in endeavouring to set up for themselves. Be this as it may, however, the crisis arrived even more speedily than could have been expected, and a constitution, extorted from the court, was at first thankfully received by the nation. But it is not of the nature of such political revulsions to stop short with a partial success. The re-action was too violent to be arrested after the first recoil, and soon swept away those who had vainly attempted to control and regulate it. The monarchy was overthrown, and in its fall dragged down the degenerate and corrupt church on which it had leaned for support. Anarchy for a season reigned in tumultuous and sanguinary supremacy. The prisons were crowded with victims, the scaffolds were drenched with gore. But victory declared in favour of the republic; and whilst torn by the violence of faction within, her arms were triumphant on the frontiers, and latterly both Germany and Italy were humbled at the feet of a government, the offspring of anarchy and revolution. Prussia, after suffering severe humiliation, withdrew early from the contest with France, to repair the injuries she had sustained, and brook in silence her disgrace. Austria, stimulated by British counsels, and subsidised by British gold, persisted longer, but was ultimately compelled, by the advance of a victorious army within a few marches of her capital, to submit to the law of the conqueror. Britain, triumphant on the ocean, still maintained an attitude of defiance; but seeing her allies struck down and humbled, she eventually concluded a peace, or at least a truce, with the new republic.

The shock produced by this contest was quite unprecedented. The impulse of the Revolution had proved irresistible, especially on the Continent. Marengo had decided the fate of Italy, which was in consequence wrenched from the grasp of Austria, whilst that power had almost simultaneously received a severe body blow at Hohenlinden. France having obtained the Rhine as her boundary, threatened Germany, and necessarily acquired an ascendency over the smaller states along the river, as well as those interposed between that limit and the hereditary dominions of Austria. Naples was effectually humbled, and the power of the pope as a temporal sovereign almost annihilated. In a word, France had become lord of the ascendant on the Continent. But the Revolution had already passed the term of its ascending movement; the fiery impulse of republicanism had nearly exhausted itself. Napoleon became the heir of all that the Revolution had created; and the consulate had superseded the directorial government, to give way in its turn to the empire. It is unnecessary to retrace here the course of events, which have been fully detailed in the articles BRITAIN and FRANCE. A military despotism was reared on the ruins of the republic, and for a time the genius and fortune of Napoleon proved irresistible. Coalition after coalition was formed under the auspices of Britain; but each in its turn was dissolved, and in its overthrow served only to aggravate the humiliation of the states of the Continent, and in the same proportion to augment the power of France. Austria was compelled to receive the law of the conqueror; Prussia, which had acted with equal faithlessness to her allies and her enemy, was at Iena almost blotted from the map of Europe; whilst Russia, defeated amidst the snows of Eylau, concluded a peace with the victor of Friedland. Soon afterwards another effort was made by Austria to check the career of the conqueror, but without success. But the doubtful advantage of Essling was effectually obliterated by the decisive victory of Wagram; and Germany was once more placed at the feet of Napoleon, to whom the vista of universal dominion now presented itself in all its illusive magnificence. This indeed was the marsh-fire which led him on to his destruction. The disastrous result of the expedition to Russia sealed his doom. The elements warred against him; and that mighty host which overwhelmed all armed opposition, being breathed upon by the frosty North, perished in the Russian deserts. All that genius and energy could achieve to repair this calamity was done, but in vain. Napoleon's hour was come, and he yielded to his destiny. Another astonishing effort to retrieve his fortunes, made in circumstances without a parallel in the history of nations, had no better success, and at Waterloo this wonderful man saw his last hope extinguished.

Thus the old monarchies of Europe, after a long and disastrous struggle, were once more victorious. They had contrived to awaken in their favour the patriotism of the people of the Continent; by promises of free constitutions, they had led, not armies, but nations, against their common enemy. In the intoxication of success, however, they forgot all the stipulations they had made during the agony of the struggle. The obligations they had come under to their people were disregarded; the division of the spoil alone occupied their attention. France saw herself reduced to her ancient limits, with an army of observation quartered on her soil. Austria recovered her ascendency in Italy; Genoa was handed over to the king of Sardinia; Saxony was dismembered to gratify the rapacity and revenge of Prussia; the third and fourth-rate states of Germany, which had accepted the alliance of France, were humbled; a new Germanic Confederation was organized under the auspices of Austria and Prussia; a shadow of independence was, with a cruel mockery, conferred on the duchy of Warsaw, a miserable remnant of what had once been the kingdom of Poland, and Russia was constituted the protectress thereof, on the same principle that the foolish shepherds intrusted the guardianship of their fold to the hypocritical but voracious wolf; and, lastly, a Holy Alliance was organized, for the purpose of repressing the slightest manifestation of a free spirit in any nation or state of the Continent. For the time, the principle of despotism was surrounded by the glare of recent triumph, enthroned amidst the shouts of victorious legions, and all-powerful for the repression of any attempt to secure the performance of those promises on the faith of which the nations had risen in arms to overthrow Napoleon. In Spain, in Naples, and in Piedmont, the constitution of the Cortes, which the allies had themselves sanctioned, was scarcely proclaimed, when the armies of the holy alliance, of France and of Austria in particular, marched to re-establish the old despotisms, and to extinguish constitutional liberty in both peninsulas.

But a short period wrought a wonderful change in the sentiments of men and in the prospects of nations. The government of Britain, which can never long act in opposition to public opinion, first withdrew from all connexion with, and ultimately declared pretty unequivocally against, the confederacy of despots formed for the extinction of liberty. A general re-action took place, and this was aided by a number of circumstances propitious to the popular cause. In South America the contest for independence continued steadily progressive, and excited deep sympathy in Europe. In Greece the sacred flame also burst forth, and, though at times nearly extinguished by the exterminating fury of the Moslemin hordes, was constantly rekindled, and fanned up afresh, until at length that glorious country, the parent of the noblest form of civilization that existed in the ancient world, has been added to the great community of free and independent nations. A new era now opened upon the world. Throughout all Europe there thrilled one common feeling in favour of liberty, accompanied by an ardent desire of political improvement. An impulse had been silently given, which nothing has yet been able to check, far less withstand, and which, we have no doubt, will ultimately overcome all opposition. Even Turkey felt its force, and, under the auspices of the successor of the Prophet himself, commenced the work of reform. In France, in Britain, in Spain, and in Portugal, the working of this spirit has been signally illustrated, and in different degrees crowned with success. Nearly contemporaneous with the third expulsion of the elder branch of the house of Bourbon from the throne of France, and the re-establishment of constitutional liberty in that country, was the great but bloodless revolution effected in Britain by the passing of the Reform Act, which, with all its defects, is one of the greatest securities for good government which this nation has ever obtained. No sooner had France disencumbered herself of the burden of an antiquated dynasty, which even the severe lessons of adversity had failed to enlighten, instruct, or amend, than Belgium, profiting by the example, cast off the yoke of Holland, and declared herself independent. In Portugal the expulsion of a cruel and perfidious usurper has been followed by the re-establishment of that constitution which he solemnly swore to maintain, and immediately thereafter trampled under foot; and Spain, under a new sovereign and an altered law of succession, though exposed to all the horrors and miseries of a civil war, continues firm in her adherence to those principles which can alone secure the social happiness and improvement of her still noble and generous people. In a word, the progressive advancement of knowledge amongst the nations is now producing its natural fruits; and though some of them are still in a state of transition, whilst in others the despotic principle continues to be an overmatch for its redoubtable antagonist; though Poland lies bleeding and lacerated in the clutches of Russia, and Germany bristles with bayonets, ready to pierce any who should dare to hoist the banners of liberty; yet there can be little doubt that the period of their deliverance is not distant, that the kingdom of Poland will ere long be reconstituted, and that grave and learned Germany will soon be free.

The principal difficulty of modern politics consists in the state of affairs in the East, or, in other words, in the peculiar relations of Russia and Turkey. The ambitious designs of the former power have long ceased to be doubtful, and, though cautiously pursued, they are in themselves of the most daring and comprehensive character. But although the weakness of the latter has been painfully exemplified, and although some errors of policy on the part of Britain and of France gave to Russia an advantage which she was not slow in profiting by, there seems to be no good ground for the apprehension and alarm which some profess to entertain upon this subject. For, besides the direct interposition of Britain and France, Egypt, which has proved under its victorious viceroy so instrumental in humbling the Porte, would, in the event of another war with Russia, become the natural and powerful ally of the Sultan; the interests of the new state of Greece would also lead the government of that country to make common cause against a power which sought to obtain an ascendency in the Mediterranean; and, what is more important than all, the boom of the first cannot-shot fired in a general war in Europe would announce to the nations the re-establishment of the kingdom of Poland. Nor is even this all. For if, as is well known, Austria already feels uneasy on account of the number of the points of contact between her dominions and those of Russia, to whose encroaching and aggrandising spirit she is no stranger, it is scarcely to be imagined that she would remain a silent spectator of any aggression which, if successful, would as it were envelope her in the coils of the great northern serpent, and enable that hideous snake to crush her at his leisure. Whilst the policy of nations is governed by a regard to their interest and their safety, these causes must continue to operate. Besides, there is a point beyond which aggression is the first step to destruction; and, in our estimation, Russia has already approximated closely, if she has not actually reached that ultimate term. Her resources are not equal to a great and sustained effort; and though her power, statistically considered, is formidable, it suffers great abatements before it can be displayed in action. This all her campaigns have illustrated; and this she has herself tacitly confessed, by trusting more to her able but insidious diplomacy than to the force of arms, which some imaginative alarmists regard as so irresistible.

II. ECCLESIASTICAL HISTORY.

The history of religion amongst the different nations of the world is a subject no less important and interesting than that of civil history. It is, however, less fertile of great events, affords an account of fewer revolutions, and is much more uniform. The reason of this is obvious. Religion is conversant about things which cannot be seen, and which consequently cannot suddenly and strongly affect the senses of mankind. The expectation of worldly riches may easily induce one nation to attack another; but it is not easy to find out any thing which will induce a nation to change its religion. The invisible nature of spiritual things, and the prejudice of habit and of early education, all stand in the way of changes of this kind. Hence revolutions in religion have been but few, and the duration of almost every religion has been of longer standing than the most celebrated empires; the changes which happened have, in general, required a long time to bring them about, and history scarcely affords an instance of the religion of any nation being essentially and suddenly changed.

With regard to the origin of religion, we must have recourse to the Scriptures, and adopt the account there given, because no other has made its appearance which seems in any degree rational, or consistent with itself. In what manner the true religion given to Adam was falsified or corrupted by his descendants before the Flood, does not clearly appear. Idolatry is not mentioned, yet we are nevertheless assured that the inhabitants of the world were then exceedingly wicked; and as their wickedness did not consist in worshipping false gods, it may be concluded that they worshipped none at all, or that the crime of the antediluvians was deism or atheism.

After the Flood, idolatry quickly made its appearance; but what gave rise to it is not certainly known. This form of superstition indeed seems to be natural to man, especially when placed in such a situation as affords him little opportunity of instruction, or of improving his rational faculties. Such a conclusion may be deduced from the caution given to the Jews, lest, when they looked up to the sun, moon, and stars, and the rest of the host of heaven, they should be driven to worship them. The origin of idolatry amongst the Syrians and Arabians, and also in Greece, is therefore accounted for with reference to their situation and the general aspect of nature. In those uncomfortable deserts, where the day presents nothing to the view but the uniform, tedious, and melancholy prospect of barren sands, the night discloses a most delightful and magnificent spectacle, and appears arrayed with charms of the most attractive kind. For the most part unclouded and serene, it exhibits to the wondering eye the host of heaven in all their variety and glory. In the view of this stupendous scene, the transition from admiration to idolatry was but too easy to uninstructed minds; and a people whose climate offered no beauties to contemplate but those of the firmament, would naturally look thither for the objects of their worship. The form of idolatry in Greece was different from that of the Syrians, which perhaps may be attributed to that smiling and variegated scene of mountains, valleys, rivers, woods, groves, and fountains, which the transported imagination, in the midst of its pleasing astonishment, supposed to be the seats of invisible deities.

A difficulty, however, arises on this supposition; for if idolatry is naturally produced in the mind of uninstructed and savage man from a view of the creation, why has not idolatry of some kind or other existed amongst all the different nations of the world? This certainly has not been the case, for the Persians of old, and the Moguls in modern times, were not idolators. Both these nations professed strict deism, so that some other causes must have concurred in producing idolatry besides those already mentioned; and of these causes an imperfect and obscure notion of the true religion appears to be by far the most probable.

Though idolatry, therefore, was formerly prevalent, it neither extended over the whole earth, nor were the superstitions of idolators all of one kind. Every nation had its respective gods, over which one more excellent than the rest was said to preside; yet in such a manner that this supreme deity himself was controlled by the rigid empire of the fates, or by what philosophers denominate eternal necessity. The gods of the East were different from those of the Gauls, the Germans, and the other northern nations. The Grecian divinities differed from those of the Egyptians, who deified plants, animals, and a great variety of the productions both of nature and art. Each people also worshipped and appeased their respective deities in a manner entirely different from the sacred rites of other countries. All this variety of religions, however, produced neither wars nor dissensions amongst the different nations; and each nation suffered its neighbours to follow their own method of worship, without discovering any hostility on that account. But there is nothing surprising in this mutual toleration, when we consider that they all looked upon the world as one great empire, divided into various provinces, over each of which a certain order of divinities presided; and hence they imagined that none could behold with contempt the gods of other nations, or force strangers to pay homage to theirs. The Romans exercised this toleration in the most ample manner; for though they would not allow any change to be made in the religions which were publicly professed in the empire, nor any new form of worship to be openly introduced, yet they granted to their citizens a full liberty of observing in private the sacred rites of other nations, and of honouring such foreign deities as they thought worthy of their homage.

The heathen deities were honoured with rites and sacrifices of various kinds, according to their respective natures and offices. But their rites were absurd and their observances ridiculous; whilst the priests appointed to preside over this strange worship abused their authority, by imposing upon the people in the grossest manner.

From the time of the Flood till the coming of Christ, idolatry prevailed amongst almost all the nations of the world, the Jews alone excepted; and even they were on all occasions ready to fall into it, as is evident from their history in the Old Testament. At the time of Christ's appearance, the religion of the Romans, as well as their empire, extended over a great part of the then known world. There were amongst the heathens indeed some who perceived the absurdities of that system; but being destitute of means, as well as of ability, to effect a reformation, matters went on in their old way. Though there were at that time various sects of philosophers, yet all of them proceeded upon false principles, and consequently could be of no service to the advancement or reformation of religion. Nay, some, amongst whom were the Epicureans and Academics, declared openly against every kind of religion.

At this time two religions flourished in Palestine, the Jewish and Samaritan, between the respective followers of which there reigned the most violent hatred and contempt. The difference between them seems to have been chiefly about the place of worship, which the Jews contended should be in Jerusalem, and the Samaritans on Mount Gerizzim. But though the Jews were certainly right as to the locality, they had in other respects greatly corrupted their religion. They expected a Saviour indeed; but they mistook his character, imagining that he was to be a powerful and warlike prince, who should set them free from the Roman yoke, which they bore with the utmost impatience. They also conceived that the whole of religion consisted in observing the rites of Moses, and some others which they had added to these, without the least regard to what is commonly called morality or virtue. This seems evident from the many charges which our Saviour brings against the Pharisees, who had the greatest reputation for sanctity in the whole nation. To these corrupt and vicious principles they added several absurd and superstitious notions concerning the divine nature, invisible powers, magic, and the like, which they had partly imbibed during the Babylonian captivity, and partly derived from their neighbours in Arabia, Syria, and Egypt. The principal sects amongst them were the Essenes or Essenians, Pharisees, and Sadducees. The Samaritans, according to the most general opinion, had corrupted their religion still more than the Jews.

Hence, when the true religion was preached by the Saviour of mankind, it is not to be wondered at if he became on that account obnoxious to a people so deeply sunk as the Jews then were in corruption and ignorance. It is not requisite here to enter into the particulars of the doctrine advanced by him, or of the opposition which he met with from the Jews. The rapid progress of the Christian religion, under its faithful and inspired ministers, soon alarmed the Jews, and raised various persecutions against its followers. The Jews, indeed, appear at first to have been everywhere the chief promoters of persecution. We find indeed that they officiously went from place to place, wherever they heard of the increase of the gospel, and by their calumnies and false suggestions endeavoured to excite the people against the apostles. The Heathens, however, though at first they showed no very violent spirit of persecution against the Christians, soon came to hate them as much as the Jews themselves. Tacitus acquaints us with the cause of this hatred, when speaking of the first general persecution under Nero. That inhuman emperor having, as was supposed, set fire to the city of Rome, to avoid the imputation of this wickedness, transferred the odium of the atrocious act to the Christians. The historian informs us that they were already abhorred on account of their many and enormous crimes. "The author of this name (Christians)," says he, "was Christ, who, in the reign of Tiberius, was executed under Pontius Pilate, procurator of Judæa. The pestilent superstition was for a while suppressed; but it revived again, and spread, not only over Judæa, where this evil was first broached, but reached Rome, whither is constantly flowing from every quarter of the earth whatever is hideous and abominable amongst men, and where it is readily embraced and practised. First, therefore, were apprehended such as openly avowed themselves to be of that sect; then by them were discovered an immense multitude; and all were convicted, not of the crime of burning Rome, but of hatred and enmity to mankind. Their death and tortures were aggravated by cruel derision and sport; for they were either covered with the skins of wild beasts, and torn in pieces by devouring dogs, or fastened to crosses, or wrapped up in combustible garments, that, when the day-light failed, they might, like torches, serve to dispel the darkness of the night. Hence, towards the miserable sufferers, however guilty and deserving of the most exemplary punishment, compassion arose, seeing they were doomed to perish not with a view to the public good, but to gratify the cruelty of one man."

That the account here given by Tacitus is downright misrepresentation and calumny, must be evident to every one who reads it. It is impossible that any person can be convicted of hatred and enmity to mankind, without specifying the facts by which this hatred showed itself. The burning of Rome would indeed have been a very plain indication of enmity to mankind; but of this Tacitus himself clears them, and mentions no other crime of which they were guilty. It is probable, therefore, that the only reason of this charge against the Christians, was their absolute refusal to have any share in the Roman idolatrous worship, or to countenance in any degree the absurd superstitions of Paganism.

The persecution under Nero was succeeded by another under Domitian, during which the apostle John was banished to Patmos, where he saw the visions, and wrote the book called the Apocalypse, which completes the canon of Scripture. This persecution commenced in the ninety-fifth year of the Christian era; and John is supposed to have written his Revelation the year after, or in the one that followed.

During the first century, the Christian religion spread over a great number of different countries; but as we have now no authentic records concerning the travels of the apostles, or the success which attended their ministry, it is impossible to determine how far the gospel was carried during this period. We are, however, assured, that even during this early period many corruptions were creeping in, the progress of which was with difficulty prevented even by the apostles themselves. Some corrupted their profession by an intermixture of Judaism, others by blending it with the oriental philosophy; whilst others, again, were already attempting to deprive their brethren of liberty, setting themselves up as eminent pastors, in opposition even to the apostles, as we learn from the epistles of St Paul, and the third epistle of St John. Hence arose the sects of the Gnostics, Cerinthians, Nicolaitans, Nazarenes, Ebionites, and many others, with which the church was troubled during this century.

Concerning the ceremonies and method of worship used by the Christians of the first century it is impossible to state any thing with certainty. Neither has the church order, government, and discipline, during this period, been ascertained with any degree of exactness. Each of those parties, therefore, which exist at this day, contends with the greatest earnestness for that particular mode of worship which they themselves have adopted; and some of the most bigoted would willingly monopolize the word Church in such a manner as to exclude from all hope of salvation every one who is not attached to their particular party. It does not, however, appear that, excepting baptism, the Lord's Supper, and anointing the sick with oil, any external ceremonies or symbols were properly of divine appointment. According to Dr Mosheim, there are several circumstances which seem to indicate that the friends and apostles of our blessed Lord either tolerated through necessity, or appointed for wise reasons, many other external rites in various places. "At the same time we are not to imagine that they ever conferred upon any person a perpetual, indelible, pontifical authority, or that they enjoined the same rites in all churches. We learn, on the contrary, from authentic records, that the Christian worship was from the beginning celebrated in a different manner in different places; and that, no doubt, by the orders, or at least with the approbation, of the apostles and their disciples. In those early times, it was both wise and necessary to show, in the establishment of outward forms of worship, some indulgence to the ancient opinions, manners, and laws, of the respective nations to whom the gospel was preached."

The second century commences with the third year of the Emperor Trajan. The Christians were still persecuted; but as the Roman emperors of this century were for the most part princes of a mild and moderate temper, they persecuted less violently than formerly. Marcus Aurelius, notwithstanding the clemency and philosophy for which he is so much celebrated, treated the Christians worse than Trajan, Hadrian, or even Severus himself, who was noted for his cruelty. This respite from rigorous persecution proved a favourable circumstance for the diffusion of the Christian religion; yet it is by no means easy to point out the particular countries through which it had already spread. We are, however, assured, that in the second century, Christ was worshipped as God throughout almost the whole East, as also amongst the Germans, Spaniards, Celts, and many other nations; but which of them received the gospel in the first century, and which in the second, is a question which at this distance of time cannot be satisfactorily determined. The writers of this century attribute the rapid progress of Christianity chiefly to the extraordinary gifts which were imparted to the first Christians, and the miracles which were wrought at their command; without supposing that any part of the success ought to be ascribed to the intervention of human means, or secondary causes. Many of the moderns, however, are so far from being of this opinion, that they are willing either to deny the authenticity of all miracles said to have been wrought since the days of the apostles, or to ascribe them to the power of the devil. But to enter into the particulars of this controversy is foreign to our present purpose; and for this reason we must refer to the writers on polemical divinity, who have largely treated of this and other points of a similar nature.

The corruptions which had been introduced in the first century, and which were almost coeval with Christianity itself, continued to gain ground in the second. Ceremonies, in themselves futile and useless, but which must be considered as highly pernicious when joined to a religion incapable of any other ornament than the upright and virtuous conduct of its professors, were multiplied for no other purpose than to please the ignorant multitude. The immediate consequence of this was, that the attention of Christians was drawn aside from the important duties of morality; and they were led to imagine, that a careful observance of the ceremonies might make amends for the neglect of moral duties. This was the most pernicious opinion which could possibly be entertained; and was indeed the very foundation of that enormous system of ecclesiastical power which was afterwards organized, and which for many ages held the whole world in barbarism and slavery.

Another mischief was the introduction of *mysteries*, as they were called, into the Christian religion; that is, insinuating that some parts of the worship in common use had a hidden efficacy and power far superior to the plain and obvious meaning assigned to them by the vulgar. By paying peculiar respect to these mysteries, the pretended teachers of the religion of Jesus accommodated their doctrines to the taste of their heathen neighbours, whose religion consisted in a multitude of mysteries, of which nobody knew the meaning.

By these, and other means of a similar description, the Christian pastors greatly abridged the liberty of their flocks. Being masters of the ceremonies and mysteries of the Christian religion, they had it in their power to make their followers believe and worship whatever they might think proper; and this they did not fail to make use of for their own advantage. They persuaded the people that the ministers of the Christian church succeeded to the character, rights, and privileges, of the Jewish priesthood; and the bishops considered themselves as invested with a rank and character similar to those of the high priest amongst the Jews, whilst the presbyters represented the priests, and the deacons the Levites. This notion, which was first introduced in the reign of Hadrian, proved a source of considerable honour and profit to the clergy.

The form of ecclesiastical government was in this century rendered uniform and permanent. An inspector or bishop presided over each Christian assembly, and to this office he was elected by the voice of the people. To assist him in his office he formed a council of presbyters, which was not confined to any stated number. To the bishops and presbyters the ministers or deacons were subject; and the latter were divided into a variety of classes, as the different exigencies of the church required. During the greater part of this century, the churches were independent of each other; nor were they united together by any other bonds than those of charity. Each assembly was a little state governed by its own laws, which were either enacted, or at least approved of, by the society. But in process of time all the Christian churches of a province were formed into one large ecclesiastical body, which, like confederate states, assembled at certain times, in order to deliberate concerning the common interests of the whole. This institution had its origin amongst the Greeks; but in a short time it became universal, and similar assemblies were formed in all places where the gospel had been planted. These assemblies, which consisted of the deputies or commissioners from several churches, were called Synods by the Greeks, and Councils by the Latins; and the laws enacted in these general meetings were called Canons, or rules.

These councils, of which we find not the smallest trace before the middle of this century, changed the whole face of the church, and gave it a new form; for by them the ancient privileges of the people were considerably diminished, and the power and authority of the bishops proportionally augmented. The humility and prudence of these pious prelates indeed hindered them from assuming all at once the power with which they were invested. At their first appearance in these general councils, they acknowledged that they were no more than the delegates of their respective churches, and that they acted in the name and by the appointment of their people. But afterwards changing this humble tone, they imperceptibly extended the limits of their authority; turned their influence into dominion, their counsels into laws; and at length openly asserted that Christ had empowered them to prescribe to his people authoritative rules of faith and manners. Another effect of these councils was the gradual abolition of that perfect equality which had reigned amongst all bishops in the primitive times. For the order and decency of these assemblies required, that some one of the provincial bishops met in council should be invested with a superior degree of power and authority; and hence originated the rights of metropolitans. In the mean time, the bounds of the church were enlarged; the custom of holding councils was followed wherever the sound of the gospel had reached; and the universal church had now the appearance of one vast republic, formed by a combination of a great number of small states. This occasioned the creation of a new order of ecclesiastics, who were appointed in different parts of the world as heads of the church, and whose office it was to preserve the consistence and union of that immense body, the members of which were so widely dispersed throughout the nations. Such was the nature and office of the Patriarchs, amongst whom, at length, ambition, having arrived at its greatest excess, formed a new dignity, investing the bishop of Rome with the title and authority of the Prince of the Patriarchs.

During the second century, there continued all the sects which had sprung up in the first, with the addition of several others, the most remarkable of which were the Ascetics. This sect owed its rise to an error propagated by some doctors of the church, who asserted that Christ had established a double rule of sanctity and virtue for two different orders of Christians. Of these rules, the one was ordinary and the other extraordinary; the one of a lower dignity, the other more sublime; the first for persons engaged in the active scenes of life, the second for those who, in a sacred retreat, aspired after the glory of a celestial state. They accordingly divided into two parts all those moral doctrines and instructions which they had received either by writing or tradition, calling one of these divisions precepts, and the other counsels. The name of precepts they gave to those laws which were universally obligatory upon all orders of men; and that of counsels to those which related to Christians of a more sublime rank, who proposed to themselves great and glorious ends, and breathed after an intimate communion with the Supreme Being. Thus were produced all at once a new set of men, who made pretensions to uncommon sanctity and virtue, and declared their resolution of obeying all the precepts and counsels of Christ, in order to their enjoyment and communion with God here, and also that, after the dissolution of their mortal bodies, they might ascend to him with the greater facility, and find nothing to retard their approach to the centre of happiness and perfection. They looked upon themselves as prohibited from the use of things which it was lawful for other Christians to enjoy, such as wine, flesh, matrimony, and commerce. They thought it their indispensable duty to extenuate their body by watchings, abstinence, labour, and hunger. They looked for felicity in solitary retreats, and in desert places, where, by severe and assiduous efforts of sublime meditation, they sought to raise the soul above all external objects, and all sensual pleasures. They were distinguished from other Christians, not only by the titles of *Ascetics*, *Σπουδαιοι*, *Εκλεκτοι*, and philosophers, but also by their garb. In this century, indeed, those who embraced such an austere mode of life submitted themselves to all these mortifications in private, without breaking asunder their social bands, or withdrawing themselves from mankind; but in process of time they retired into deserts, and, after the example of the Essenes and Therapeutæ, formed themselves into regular companies.

This austere sect originated in a belief which has been more or less prevalent in all ages and in all countries, namely, that religion consists more in prayers, meditations, and a kind of secret intercourse with God, than in fulfilling the social duties of life, and in acts of benevolence and humanity to mankind. Nothing can be more evident indeed than that the Scripture reckons the fulfilling of these infinitely superior to the observance of all the ceremonies which can be imagined. Yet it somehow or other happens, that almost everybody is more inclined to observe the ceremonial part of devotion than the moral; and hence, according to the different humours or constitutions of different persons, there have been numberless forms of Christianity, and the most virulent contentions amongst those who professed themselves followers of the Prince of Peace. It is obvious, that if the moral conduct of Christians was to be made the standard of faith, instead of speculative opinions, all these divisions must cease in a moment; but whilst Christianity, or any part of it, is made to consist in speculation, or the observance of ceremonies, it is impossible there can be any end of sects or heresies. No opinion whatever is so absurd, but some people have pretended to argue in its defence; no ceremony is so insignificant, but it has been explained and sanctified by hot-headed enthusiasts; and hence sects, ceremonies, and absurdities, have been multiplied without number, to the prejudice of society and the detriment of the Christian religion. This short relation of the rise of the Ascetic sect will also serve to account for the rise of any other; so that we apprehend it is needless to enter into particulars concerning the rest, as they all took their origin from the same general principle variously modified, according to the different dispositions of mankind.

The Ascetic sect originated in Egypt, whence it passed into Syria and the neighbouring countries. At length it reached the European nations; and hence that train of austere and superstitious vows and rites which totally obscured, or rather annihilated, Christianity, together with the celibacy of the clergy, and many other absurdities of a similar description. The errors of the Ascetics, however, did not stop here. In compliance with the doctrines of some Pagan philosophers, they affirmed that it was not only lawful, but even praiseworthy, to deceive, and to use the expedient of a lie, in order to advance the cause of piety and truth; and hence the "pious frauds" with which the church of Rome has been so often reproached.

In proportion as Christians thus deviated from the true practice, they became more zealous in the external profession of their religion. Anniversary festivals were celebrated in commemoration of the death and resurrection of Christ, and of the effusion of the Holy Ghost on the apostles. But concerning the days on which these festivals were to be kept there arose violent contests. The Asiatic churches in general differed in this point from those of Europe; and towards the conclusion of the second century, Victor, bishop of Rome, took it into his head to force the eastern churches to follow the rules laid down by those of the West. But this they absolutely refused to comply withal, upon which Victor cut them off from communion with the church of Rome; though, by the intercession of some prudent persons, the difference was temporarily composed.

During most of the third century the Christians were allowed to enjoy their religion, such as it was, without molestation. The emperors Maximinus and Decius, indeed, made them feel all the rigours of a severe persecution; but the reigns of these persecutors were short, and from the death of Decius till the time of Diocletian the church enjoyed tranquillity. Vast multitudes were accordingly converted; but at the same time the doctrine of the church grew daily more corrupt, and the lives of professed Christians became more wicked and scandalous. New ceremonies were invented in great numbers, and an unaccountable passion prevailed for the oriental superstitions concerning dæmons, whence sprung the whole train of exorcisms, spells, and fears for the apparition of evil spirits, which are not yet entirely eradicated. From the same source was also derived the custom of avoiding all connections with those who were not baptized, or who lay under the penalty of excommunication, as persons supposed to be under the dominion of some evil spirit; and hence the rigorous severity of that discipline and penance imposed upon those who had incurred, by their immoralities, the censure of the church. Several alterations were now made in the manner of celebrating the eucharist. The prayers used on this occasion were lengthened, the solemnity and pomp with which it was attended were considerably increased, and gold and silver vessels were used in its celebration. It was now thought essential to salvation, and for that reason administered even to infants. Baptism was celebrated twice a year to such as, after a long course of trial and preparations, offered themselves as candidates for admission into the church. The remission of sins was believed to be its immediate consequence, whilst the bishop, by prayer and imposition of hands, was supposed to confer those sanctifying gifts of the Holy Spirit which were necessary to a life of righteousness and virtue. An evil dæmon was supposed naturally to reside in every person, and was accounted the author and source of all the corrupt dispositions and unrighteous actions of that person. The expulsion of this dæmon therefore formed an essential requisite for baptism; and hence the baptized persons returned home clothed in white garments, and adorned with crowns, as sacred emblems, the former of their inward purity and innocence, and the latter of their victory over sin and the world. Fasting began now to be held in more esteem than formerly. A high degree of sanctity was attributed to this practice; it was even looked upon as indispensably necessary, from a notion that the dæmons directed their force chiefly against those who pampered themselves with delicious fare, and were less troublesome to the lean and hungry who lived under the severities of a rigorous abstinence. The sign of the cross was also supposed to possess a victorious power over all sorts of trials and calamities; it was more especially considered as the surest defence against the snares and stratagems of malignant spirits; and for this reason no Christian undertook any thing of moment, without arming himself, as he imagined, with the power of this triumphant sign. The heresies which troubled the church during this century were those of the Gnostics, whose doctrines were new-modelled and improved by Manes, the founder of the Manicheans, the Hieracites, Noetians, Sabellians, and Novatians; but for a particular account of these sects, the reader is referred to the articles under their respective names.

The fourth century is remarkable for the establishment of Christianity by law in the Roman empire, which took place in the year 324. In the beginning of this century the empire was governed by four chiefs; Diocletian, Maximian, Constantius Chlorus, and Galerius, under whom the church enjoyed complete toleration. Diocletian, though much addicted to superstition, entertained no hatred of the Christians; and Constantius Chlorus, having abandoned polytheism, treated them with condescension and benevolence. This alarmed the Pagan priests, whose interests were so closely connected with the continuance of the ancient superstitions, and who apprehended, not without reason, that the Christian religion would at length prevail throughout the empire. To prevent the downfall of the Pagan superstition, therefore, they applied to Diocletian and Galerius Cæsar, by whom a bloody persecution was commenced in the year 303, and continued till 311. An asylum, however, was opened for the Christians in the year 304. Galerius having dethroned Diocletian and Maximian, declared himself emperor in the East, leaving to Constantius Chlorus all the western provinces, to which great numbers of Christians resorted to avoid the cruelty of the persecutor. But Galerius being at length overtaken with a dreadful and incurable disease, published an edict ordering the persecution to cease, and restoring freedom to the Christians, whom, for eight years, he had most inhumanly oppressed. Galerius died the same year; and in a short time afterwards, when Constantine the Great ascended the throne, the Christians were freed from any further uneasiness, by his abrogating all the penal laws enacted against them, and afterwards issuing edicts by which no other religion than the Christian was tolerated throughout the empire.

But this event, so favourable to the outward peace of the church, was far from promoting its internal harmony, or the reformation of its leaders. The clergy, who had all this time been augmenting their power at the expense of the liberty of the people, now set no bounds to their ambition. The bishop of Rome was the first in rank, and distinguished by a sort of pre-eminence above the rest of the prelates. He surpassed all his brethren in the magnificence and splendour of the church over which he presided, in the riches of his revenues and possessions, in the number and variety of his ministers, in his credit with the people, and in his sumptuous and splendid manner of living. Hence it happened, that when a new pontiff was to be chosen by the presbyters and people, the city of Rome was generally agitated with dissensions, tumults, and cabals, which often produced fatal consequences. The intrigues and disturbances which prevailed in that city in the year 366, when, upon the death of Liberius, another pontiff was to be chosen in his room, are a sufficient proof of what we have advanced. Upon that occasion, one faction elected Damasus to that high dignity; whilst the opposite party chose Ursicinus, a deacon of the vacant church, to succeed Liberius. This double election gave rise to a dangerous schism, and to a sort of civil war within the city of Rome, which was carried on with the utmost fury and barbarity, and produced the most cruel massacres and desolations. The inhuman contest ended in the victory of Damasus; but whether his cause was more or less just than that of Ursicinus, cannot now be determined with any degree of certainty.

Notwithstanding the pomp and splendour which surrounded the Roman see, it appears that the bishops of Rome had not yet acquired that pre-eminence of power and jurisdiction which they afterwards enjoyed. In the ecclesiastical commonwealth, indeed, they were the most eminent order of citizens; but still they were citizens as well as their brethren, and subject, like them, to the laws and edicts of the emperors. All religious causes of extraordinary importance were examined and determined either by judges appointed by the emperors, or in councils assembled for that purpose; whilst those of inferior moment were decided in each district by its respective bishop. The ecclesiastical laws were enacted either by the emperor or by the councils. None of the bishops acknowledged that they derived their authority from the permission and appointment of the bishop of Rome, or that they were created bishops by the favour of the Apostolic See. On the contrary, they all maintained that they were the ambassadors and ministers of Jesus Christ, and that their authority was derived from above. It must, however, be observed, that even in this century several of those steps were laid by which the bishops of Rome afterwards ascended to the summit of ecclesiastical power and authority. This happened partly by the imprudence of the emperors, partly by the dexterity of the Roman prelates themselves, and partly by the inconsiderate zeal and precipitate judgment of certain bishops. The imprudence of the emperor, and the precipitation of the bishops, were remarkably discovered in an event which greatly favoured the ambition of the Roman pontiff. About the year 372, Valentinian enacted a law, empowering the bishop of Rome to examine and judge other bishops, in order that religious disputes might not be decided by any profane or secular judges. The bishops assembled in council at Rome in 378, not considering the consequences which might ensue from this imprudent law, both to themselves and to the church, declared their approbation in the strongest terms, and recommended the execution of it in their address to the emperor Gratian. Some think, indeed, that this law empowered the bishop of Rome to judge only the bishops within the limits of his jurisdiction; but others are of opinion that his power was given only for a certain time, and for a particular purpose. This last notion seems the most probable; but still the privilege in question must have proved an excellent instrument for the advancement of sacerdotal ambition.

By the removal of the seat of empire to Constantinople, the emperor raised up, in the bishop of this new metropolis, a formidable opponent to the bishop of Rome, and erected a bulwark which threatened a vigorous opposition to his growing authority. For as the emperor, desiring to render Constantinople a second Rome, enriched it with all the rights and privileges, honours and ornaments, of the ancient capital of the world; so its bishop, measuring his own dignity and rank by the magnificence of the new city, and its eminence as the seat of empire, assumed an equal degree of authority with the bishop of Rome, and claimed a superiority over the rest of the episcopal order. Nor did the emperors disapprove of these high pretensions, since they considered their own dignity as connected in a certain measure with that of the bishop of the imperial city. Accordingly, in a council held at Constantinople in the year 381, by the authority of Theodosius the Great, the bishop of that city was, during the absence of the bishop of Alexandria, and against the consent of the Roman pontiff, placed, by the third canon of that council, in the first rank after the bishop of Rome, and consequently above those of Alexandria and Antioch. Nectarius was the first bishop who enjoyed the new honours accumulated on the see of Constantinople. His successor, the celebrated John Chrysostom, extended still further the privileges of that see, and submitted to its jurisdiction all Thrace, Asia, and Pontus; nor were the succeeding bishops of the imperial city destitute of a fervent zeal to augment their privileges and extend their dominion. By this unexpected promotion, however, the most disagreeable effects were produced. The bishops of Alexandria were not only filled with the most inveterate hatred against those of Constantinople, but a contention was excited between the bishops of Rome and Constantinople, which, after being carried on for ages, terminated at last in the separation of the Greek and Latin churches.

Constantine the Great, in order to prevent civil commotions, and to fix his authority on a stable and solid foundation, made several changes not only in the laws of the empire, but also in the form of the Roman government. And as many important reasons induced him to adapt the administration of the church to these changes in the civil constitution, this necessarily introduced amongst the bishops new degrees of rank and eminence. The four bishops, of Rome, Constantinople, Antioch, and Alexandria, were distinguished by a certain degree of pre-eminence over the rest. These four prelates answered to the four prætorian prefects created by Constantine; and it is possible, that even in this century they were distinguished by the Jewish title of patriarchs. After them followed the exarchs, who had the inspection of several provinces, and answered to the appointment of certain civil officers who bore the same title. In a lower class were the metropolitans, who had only the government of one province; under whom were the archbishops, whose inspection was confined to certain districts. In this gradation the bishops brought up the rear; but the sphere of their authority was not in all places equally extensive, being in some considerable, and in others confined within narrow limits. To these various ecclesiastical orders we might add that of the *Chorepiscopi*, or superintendents of the country churches; but this last order was in most places suppressed by the bishops, with the design of extending their own authority, and enlarging the sphere of their own power and jurisdiction. The administration of the church itself was divided by Constantine into an external and internal inspection. The latter, which was committed to bishops and councils, related to religious controversies, the forms of divine worship, the offices of priests, the vices of the ecclesiastical orders, and other matters. The external administration of the church the emperor assumed to himself. This comprehended all those things which related to its outward state and discipline; it likewise extended to all contests which might arise between the ministers of the church, superior as well as inferior, concerning their possessions, their reputation, their rights and privileges, their offences against the laws, and other matters, but no controversies which related to matters purely spiritual were cognizable by this external inspection. In consequence of this artful division of the ecclesiastical government, Constantine and his successors called councils, presided in them, appointed the judges of religious controversies, terminated the differences which arose between the bishops and the people, fixed the limits of the ecclesiastical provinces, took cognizance of the civil causes which originated between the ministers of the church, and punished the crimes committed against the laws by the ordinary judges appointed for that purpose, giving over all causes purely ecclesiastical to the bishops and councils. But this division of the administration of the church was never explained with sufficient accuracy; and hence both in the fourth and fifth centuries there are frequent instances of the emperors determining matters purely ecclesiastical, and likewise of bishops and councils determining matters which related merely to the external form and government of the church.

After the time of Constantine many additions were made by the emperors and others to the wealth and honours of the clergy; and these additions were followed by a proportional increase of their vices and luxury, particularly amongst those who lived in great and opulent cities. The bishops, on the one hand, contended with each other in the most scandalous manner concerning the extent of their respective jurisdictions; whilst, on the other, they trampled on the rights of the people, violated the privileges of the inferior clergy, and imitated in their conduct and in their manner of living the arrogance, voluptuousness, and luxury of magistrates and princes. This pernicious example was soon followed by the several ecclesiastical orders. The presbyters, in many places, assumed an equality with the bishops in point of rank and authority. Many complaints are also made by the authors of this century concerning the vanity and effeminacy of the deacons. Those more particularly of the presbyters and deacons who filled the first stations of these orders, carried their pretensions to an extravagant length, and were offended at the notion of being placed on an equality with their colleagues. For this reason they not only assumed the titles of Archpresbyters and Archdeacons, but also claimed a degree of authority and power much superior to that which was vested in the other members of their respective orders.

In the fifth century, the bishops of Constantinople having already reduced under their jurisdiction all the Asiatic provinces, began to aim at a still further increase of power. By the twenty-eighth canon of the council held at Chalcedon in 451, it was resolved that the same rights and honours which had been conferred upon the bishop of Rome were due to the bishop of Constantinople, on account of the equal dignity and lustre of the two cities in which these prelates exercised their authority. The same council by a solemn act confirmed the bishop of Constantinople in the spiritual government of those provinces over which he had usurped the jurisdiction. Leo the Great, bishop of Rome, opposed with vehemence the enactment of these laws; and his opposition was seconded by that of several other prelates. But their efforts were vain, as the emperors threw in their weight into the balance, and thus supported the decisions of the Grecian bishops. In virtue of the decisions of this famous council, therefore, the bishop of Constantinople began to contend obstinately with the Roman pontiff for the supremacy, and to crush the bishops of Antioch and Alexandria. About the same time, Juvenal, bishop of Jerusalem, attempted to withdraw himself and his church from the jurisdiction of the bishop of Cæsarea, and aspired to a place amongst the first prelates of the Christian world. The high degree of veneration and esteem in which the church of Jerusalem was held amongst all the other Christian societies, on account of its rank amongst the apostolical churches, and its title to the appellation of *mother church*, as having succeeded the first Christian assembly formed by the apostles, was extremely favourable to the ambition of Juvenal, and rendered his project much more practicable than it would otherwise have been. Encouraged by this, and likewise by the protection of Theodosius the younger, this aspiring prelate not only assumed the dignity of patriarch of all Palestine, a rank which rendered him independent of all spiritual authority; but also invaded the rights of the bishop of Antioch, and usurped his jurisdiction over the provinces of Phœnicia and Arabia. Hence there arose between Juvenal, and Maximus bishop of Antioch, a warm contest, which the council of Chalcedon decided, by restoring to the latter the provinces of Phœnicia and Arabia, and confirming the former in the spiritual possession of all Palestine, and in the high rank which he had assumed in the church.

In 588, John, bishop of Constantinople, surnamed the *Faster*, either by his own authority, or by that of the emperor Mauritius, summoned a council at Constantinople, to inquire into an accusation brought against Gregory, bishop of Antioch; and upon this occasion he assumed the title of Œcumenical or Universal Bishop. This title had been formerly enjoyed by the bishop of Constantinople without any offence; but Gregory the Great, at that time bishop of Rome, suspecting that John was aiming at establishing supremacy over all the churches, opposed his claim with the greatest vigour. For this purpose he applied by letters to the emperor, and others whom he thought capable of assisting him in his opposition; but all his efforts were without effect; and the bishops of Constantinople were allowed to enjoy the disputed title, though not in the sense which had alarmed the Roman pontiff.

Gregory, however, adhered tenaciously to his purpose; raised new tumults and dissensions amongst the clergy; and aimed at nothing less than an unlimited supremacy over the Christian church. This ambitious design succeeded in the West; but in the eastern provinces his arrogant pretensions were scarcely respected by any excepting those who were at enmity with the bishop of Constantinople. How much the people were at this time deluded by the Roman pontiffs, appears from the expression of Ennodius, one of the flatterers of Symmachus, a prelate of but ambiguous fame, that the Roman pontiff was constituted judge in the place of God, and acted as the vicegerent of the Most High. On the other hand, from a variety of authentic records, it may be concluded that both the emperors and the nations in general were far from being disposed to bear with patience the yoke of servitude which the see of Rome was thus labouring to impose on the whole church.

In the beginning of the seventh century, according to the most learned historians, Boniface III. engaged Phocas, emperor of Constantinople, to deprive the bishop of that metropolis of the title of œcumenical or universal bishop, and to confer it upon the Roman pontiff; and thus was first introduced the supremacy of the pope. Meanwhile the Roman pontiffs employed every method to maintain and enlarge their authority and pre-eminence.

In the eighth century, the power of the bishop of Rome, and of the clergy in general, increased prodigiously. The principal cause of this was the method at that time employed by the European princes to secure themselves on their thrones. All these princes being then occupied either in usurpation or in self-defence, and the whole Continent being in the most unsettled and barbarous condition, they endeavoured to attach to their interests those whom they considered as their friends and clients. With this view they distributed amongst the latter extensive territories, cities, and fortresses, with the various rights and privileges belonging to them; reserving only to themselves the supreme dominion, and the military service of these powerful vassals. Hence the European princes reckoned it a high instance of political prudence to distribute amongst the bishops and other Christian doctors the same sort of donations which had formerly been given to their generals and clients. By means of the clergy, they hoped to check the seditious and turbulent spirits of their vassals, and to maintain them in obedience by the influence and authority of their bishops, whose commands were highly respected, and whose spiritual thunderbolts, rendered formidable by ignorance, struck terror into the boldest and most resolute hearts.

This prodigious accession to the opulence and authority of the clergy in the West began at their head, the Roman pontiff; and from him it descended, spreading gradually amongst the inferior sacerdotal orders. The barbarous nations who had received the gospel looked upon the bishop of Rome as the successor of their chief druid or high priest; and as this druid had, under the darkness of Paganism, enjoyed boundless authority, so these barbarous nations thought proper to confer upon the supreme pontiff the same authority which had belonged to the chief druid. The pope received these august privileges with undisguised satisfaction; and lest attempts should be made to deprive him thereof, he strengthened his titles to these extraordinary honours by a variety of passages drawn from ancient history, and even by arguments of a religious nature. This increased the power of the pope enormously, and gave to the see of Rome that high pre-eminence and despotic authority in civil and political matters which were unknown to former ages. Hence, amongst other unhappy circumstances, arose the pernicious opinion, that such persons as were excluded from the communion of the church by the pontiff himself, or by any of the bishops, forfeited not only their civil rights and advantages as citizens, but even the common claims and privileges of humanity. This monstrous opinion, which proved a fatal source of wars, massacres, and rebellions, and which contributed more than any thing else to confirm and augment the papal authority, was borrowed by the clergy from the Pagan superstitions. Though, from the time of Constantine the Great, excommunication was, in every part of the Christian world, attended with many disagreeable consequences, yet its highest terrors were confined to Europe, where its aspect was truly formidable and hideous. But in the eighth century it acquired a new accession of terror; and from that period the excommunication practised in Europe differed entirely from that which was in use in other parts of Christendom. Excommunicated persons were indeed considered in all places as objects of hatred both to God and man; but they were not on that account robbed of the privileges of citizens, nor of the rights of humanity; much less were those kings and princes, whom an insolent bishop had thought proper to exclude from the communion of the church, supposed to forfeit on that account their crowns or their territories. But from this century it was quite otherwise in Europe. Excommunication received that plenary power which dissolved all connections; those whom the bishops or their head excluded from church communion were degraded to a level with the beasts. This unnatural power took its origin in an ignorant misconception. Upon the conversion of the barbarous nations to Christianity, these proselytes confounded the excommunication in use amongst Christians with that which had been practised in the times of Paganism, and which was attended with all the dreadful effects above mentioned. The Roman pontiffs, on the other hand, were too artful not to encourage this error; and hence they employed all sorts of means to gain credit to an opinion so well calculated to gratify their ambition, and to aggrandize the episcopal order.

The annals of the French nation furnish us with an instance of the enormous power which was at this time vested in the Roman pontiff. Pepin, who was mayor of the palace to Childeric III. king of France, and who in the exercise of that high office possessed in reality the royal power and authority, aspired to the titles and honours of majesty, and formed a scheme for dethroning his sovereign. For this purpose he assembled the states in 751; and although they were devoted to the interests of the ambitious usurper, they gave it as their opinion that the bishop of Rome was previously to be consulted whether the execution of such a scheme was lawful or the contrary. Ambassadors were accordingly sent by Pepin to Zachary, the reigning pontiff, with the following question: "Whether the divine law did not permit a valiant and warlike people to dethrone a pusillanimous and indolent prince, who was incapable of discharging any of the functions of royalty, and to substitute in his place one more worthy to rule, and who had already rendered most important services to the state?" The situation of Zachary, who stood much in need of the succours of Pepin against the Greeks and Lombards, rendered his answer such as the usurper desired; and when this favourable decision of the Roman pontiff was published in France, the unhappy Childeric was stripped of his royalty without the least opposition, and Pepin stepped into the throne of his sovereign and master. This decision was solemnly confirmed by Stephen II. the successor of Zachary, who undertook a journey into France in the year 754, in order to solicit assistance against the Lombards. The pontiff at the same time dissolved the obligation of the oath of fidelity and allegiance which Pepin had violated by his usurpation in the year 751; and to render his title to the crown as sacred as possible, Stephen anointed and crowned him, with his wife and two sons, for the second time. This complaisance of the pope was rewarded with the exarchate of Ravenna and all its dependencies, as has already been related.

In the succeeding centuries, the Roman pontiffs continued by every means to increase their power; and by continually taking advantage of the civil dissensions which prevailed throughout Italy, France, and Germany, their influence in civil affairs rose to an enormous height. The increase of their authority in religious matters was not less rapid. The wisest and the most impartial amongst the Roman Catholic writers acknowledge, that from the time of Louis the Meek the ancient rules of ecclesiastical government were gradually changed in Europe by the counsels and instigation of the church of Rome, and new laws substituted in their stead. The European princes suffered themselves to be divested of the supreme authority in religious matters, which they had derived from Charlemagne; the power of the bishops was greatly diminished, and even the authority of both provincial and general councils began to decline. The popes, elated with their overgrown power, and rendered arrogant by the daily accessions which were made to their authority, sought to establish the maxim, that the bishop of Rome was constituted and appointed by Jesus Christ as supreme legislator and judge of the universal church, and that consequently the bishops derived all their authority from him. This opinion, which they inculcated with the utmost zeal and ardour, was opposed in vain by such as were acquainted with the ancient ecclesiastical constitutions, and the government of the church in the primitive ages. But in order to gain credit to this new ecclesiastical code, and to support the pretensions of the popes to supremacy, it was necessary to produce the authority of ancient deeds, in order to shut the mouths of such as were disposed to set bounds to their usurpations. The bishops of Rome were aware of this; and as all means were looked upon as lawful which tended to the accomplishment of their designs, they employed some of their most ingenious and zealous partisans in forging conventions, acts of councils, epistles, and such like records, by which it might appear that in the first ages of the church the Roman pontiffs were clothed with the same spiritual majesty and supreme authority which they now assumed. There were not wanting amongst the bishops, however, some men of prudence and sagacity, who saw through these pious frauds, and perceived the chains which were forging both for them and for the church. The French bishops distinguished themselves eminently in this respect; but their opposition was soon quashed; and as all Europe had sunk in the grossest ignorance and darkness, none remained who were capable of detecting these impostures, or disposed to support the expiring liberty of the church. It is proper to add, however, that these grievous charges are strenuously denied by Catholic writers.

In the eleventh century the power of the bishops of Rome seems to have attained its utmost height. They now received the pompous titles of masters of the world, and popes, or universal fathers. They presided everywhere in the councils by their legates, assumed the authority of supreme arbiters in all controversies which arose concerning religion or church discipline, and maintained the pretended rights of the church against the encroachments and usurpations of kings and princes. Their authority, however, was confined within certain limits. On the one hand, it was restrained by sovereign princes, that it might not arrogantly aim at civil dominion; and on the other, it was opposed by the bishops themselves, that it might not degenerate into a spiritual despotism, and utterly destroy the privileges and liberty of synods and councils. From the time of Leo IX. the popes employed every method which ambition could suggest to remove those limits, and to render their dominion both despotic and universal. They not only aspired to the character of supreme legislators in the church, to an unlimited jurisdiction over all synods and councils, whether general or provincial, and to the sole distribution of all ecclesiastical honours and benefices, as divinely authorized and appointed for that purpose; but they carried their pretensions so far as to give themselves out as lords of the universe, arbiters of the fate of kingdoms and empires, and supreme rulers over the kings and princes of the earth. Hence we find instances of their giving away kingdoms, and loosing subjects from their allegiance to their sovereigns, as in the case of King John of England. They even assumed the whole earth as their property, as well where Christianity was planted as where it was not. Accordingly, on the discovery of America and the East Indies, the pope, by virtue of this spiritual property, granted to the Portuguese a right to all the countries lying to the eastward, and to the Spaniards a right to all those lying to the westward, of Cape Non in Africa, which they were able to conquer by force of arms.

During all this time superstition reigned triumphant over the remains of Christianity which had escaped the corruptions of the first four centuries. In the fifth century commenced the invocation of the happy souls of departed saints. Their assistance was entreated by fervent prayers, whilst none stood up in opposition to this preposterous kind of worship. The images of those who during their lives had acquired the reputation of uncommon sanctity, were now honoured with a particular homage in several places; and many ignorant persons imagined that this drew into the images the propitious presence of the saints or celestial beings whom they were supposed to represent. A singular efficacy was attributed to the bones of martyrs, and to the figure of the cross, in defeating all the attempts of Satan, removing all sorts of calamities, and in healing not only the diseases of the body, but also those of the mind. The famous Pagan doctrine concerning the purification of departed souls by means of a certain kind of purgation, was also confirmed and explained more fully than it had formerly been; and it is well known of how much consequence this doctrine at one time proved to the wealth and the power of the church of Rome.

In the sixth century Gregory the Great advanced an opinion, that all the words of the sacred writings were images of invisible and spiritual things; and for this reason he loaded the churches with a multitude of ceremonies the most insignificant and futile that can well be imagined. Hence arose a new and most difficult science, namely, the explication of these ceremonies, and the investigation of the causes and circumstances whence they derived their origin. A new method was contrived of administering the Lord's Supper, with a magnificent assemblage of pompous ceremonies. This was called the Canon of the Mass. Baptism, excepting in cases of necessity, was administered only on the great festivals. An incredible number of temples were erected in honour of the saints. The places set apart for public worship were also very numerous. But now they were considered as the means of purchasing the protection and favour of the saints; and the ignorant and barbarous multitude were persuaded that these departed spirits defended and guarded against evils and calamities of every kind, the provinces, lands, cities, and villages in which they were honoured with temples. The number of these temples was almost equalled by that of the festivals, which were increased beyond all bounds, and formed a grievous deduction from the time of the people.

In the seventh century religion seemed to be altogether buried under a heap of superstitious ceremonies; the worship of the true God and Saviour of the world was exchanged for that of bones, relics, and images. The eternal state of misery threatened in Scripture to the wicked was commuted for the temporary punishment of purgatory; and the expressions of faith in Christ by an upright and virtuous conduct, for the augmentation of the riches of the clergy by donations to the church, and the observance of a heap of idle ceremonies. New festivals were still added; one in particular was instituted in honour of the true cross on which our Saviour had suffered; and churches were declared to be sanctuaries to all who fled to them, whatever their crimes might have been.

Superstition, it would seem, had now attained its highest pitch; nor is it easy to conceive any degree of ignorance and degeneracy greater than that which we have already mentioned. If any thing can possibly be imagined more contrary to true religion, it is an opinion which prevailed in the eighth century, that Christians might appease an offended deity by voluntary acts of mortification, or by gifts and oblations lavished on the church; and that people ought to place their confidence in the works and merits of the saints. Piety in this and some succeeding ages consisted in building and embellishing chapels; in endowing monasteries and basilicas; in hunting after the relics of saints and martyrs, and treating them with an absurd and excessive veneration; in procuring the intercession of the saints by rich oblations or superstitious rites; and in pilgrimages to those places which were esteemed holy, particularly to Palestine. The genuine religion of Jesus was now in a great measure unknown both to clergy and people. In this century also the superstitious custom of solitary masses had its origin. These were celebrated by the priest alone in behalf of the souls detained in purgatory, as well as upon other occasions. They were prohibited by the laws of the church, but proved a source of immense wealth to the clergy. Under Charlemagne they were condemned by a synod assembled at Mentz, as the result of avarice and sloth. A new superstition, however, sprung up in the tenth century. It was imagined that Antichrist was to make his appearance upon the earth, and that soon afterwards the world itself would be destroyed. An universal panic ensued. Vast numbers of people, abandoning all their connections in society, and giving over to the churches and monasteries all their worldly effects, repaired to Palestine, where they imagined that Christ would descend from heaven to judge the world; whilst others devoted themselves by a solemn and voluntary oath to the service of the churches, convents, and priesthood. All this proceeded from a notion that the supreme Judge would diminish the severity of their sentence, and look upon them with a more favourable eye, on account of their having made themselves the servants of his ministers. When an eclipse of the sun or moon happened to be visible, the cities were deserted, and their miserable inhabitants, flying for refuge to hollow caverns, hid themselves amongst the craggy rocks, and under the bending summits of steep mountains. The opulent attempted to bribe the saints and the Deity himself by rich donations conferred upon the sacerdotal order, who were looked upon as the immediate vicegerents of heaven. In many places, temples, palaces, and noble edifices, both public and private, were suffered to decay, or were deliberately pulled down, from a notion that they were no longer of any use, as the final dissolution of all things was at hand. In a word, no language is sufficient to express the confusion and despair which tormented the minds of miserable mortals upon that occasion. The general delusion was indeed opposed and combated by the discerning few, who endeavoured to dispel these terrors, and to efface the notion from which they arose in the minds of the people. But their attempts were ineffectual; nor could the dreadful apprehensions of the superstitious multitude be removed until the end of the century, when this terror became one of the accidental causes of the Crusades.

That nothing might now be wanting to complete the system of religion which had overspread all Europe, it was in the eleventh century determined that divine worship should be celebrated in the Latin tongue, though now almost unknown. During the whole of this century, also, Christians were employed in rebuilding and ornamenting their churches, which they had destroyed through the superstitious fears which have already been noticed.

Matters went on in much the same way till the time of the Reformation. The clergy were immersed in sloth, ignorance, and vice; and the laity, imagining themselves able to purchase the pardon of their sins for money, followed the examples of their pastors without remorse. The absurd principle formerly mentioned, that religion consists in acts of austerity, and an unknown mental correspondence with God, produced the most extravagant and ridiculous effects in the conduct of devotees and reputed saints. They not only lived amongst the wild beasts, but also after the manner of these savage animals; they ran naked through the lonely deserts with a furious aspect, and all the agitations of frenzy; they prolonged their wretched life by grass and wild herbs, avoided the sight and conversation of men, remained almost motionless in certain places for several years, exposed to the rigour and inclemency of the seasons, and towards the conclusion of their lives shut themselves up in narrow and miserable cells. But of all the instances of superstitious fanaticism which disgraced the times we are now speaking of, none was held in higher veneration, or excited more the wonder of the multitude, than that of a certain order of men who were called *Stylites* by the Greeks, and *Sancti Columnares*, or Pillar Saints, by the Latins. These were persons of a singular and extravagant turn of mind, who stood motionless on the tops of pillars raised expressly for this exercise of their patience, and remained there for several years amidst the admiration and applause of the populace. The inventor of this strange discipline was one Simeon, a Syrian, who commenced his career by exchanging the agreeable employment of a shepherd for the austerities of a monkish life. He began his devotion on the top of a pillar six cubits high; but as he increased in sanctity, he also augmented the height of his pillar, till, towards the conclusion of his life, he had established his piety on the top of a pillar forty cubits in height. Many of the inhabitants of Syria and Palestine, seduced by a false ambition and an utter ignorance of true religion, followed the example of this fanatic, though not with the same degree of austerity. This superstitious practice began in the fifth century, and continued in the East for nearly six hundred years. The Latins, however, had too much wisdom and prudence to imitate the Syrians and orientals in this whimsical superstition; and when a certain fanatic or impostor named Wulfilaicus erected one of these pillars in the country of Treves, and proposed to live upon it after the manner of Simeon, the neighbouring bishops ordered it to be pulled down.

The practices of austere worship and discipline in other respects, however, gained ground throughout all parts of Christendom. Monks of various kinds were to be found in every country in prodigious numbers. But though their discipline was at first exceedingly severe, it became gradually relaxed, and the monks gave in to all the prevailing vices of the times. Other orders succeeded, who pretended to still greater degrees of sanctity, and to reform the abuses of the preceding ones; but these in their turn became corrupted, and fell into the very same vices which they had blamed in others. The most violent animosities, disputes, and hatreds, also reigned amongst the different orders of monks, as well as amongst the clergy of all ranks and degrees, whether we consider them as classed in different bodies, or as individuals of the same body. To enter into a detail of their wranglings and disputations, the methods which each of them took to aggrandise themselves at the expense of their neighbours, and to keep the rest of mankind in subjection, would lead us far beyond the limits prescribed to this rapid sketch. We may only observe, that even the external profession of the austere and absurd piety which took place in the fourth and fifth centuries gradually declined. Some there were, indeed, who boldly opposed the torrent of superstition and depravity which threatened to overflow the whole world; but their opposition proved fruitless, and towards the era of the Reformation all of them had either been silenced or destroyed.

Whilst superstition and degeneracy thus reigned in the West, the absurd and sanguinary doctrines of Mahommed overspread all the East. The rise of this impostor is related elsewhere. (See ARABIA.) His successors conquered in order to establish the religion of their apostle; and thus the very name of Christianity was extinguished in many places where it had formerly flourished. The conquests of the Tartars having brought them in contact with the Mahommedans, they greedily embraced the superstitions of that religion, which thus almost entirely overspread the continents of Asia and Africa; and the conquest of Constantinople by the Turks in 1453 likewise established the faith of the Prophet throughout a considerable part of Europe.

About the beginning of the sixteenth century the Roman pontiffs lived in the utmost tranquillity; nor had they, according to all appearance, any reason at that time to fear an opposition to their authority in any respect, since the commotions which had been raised by the Waldenses, Albigenses, and other sects, were now entirely suppressed. We must not, however, conclude from this apparent tranquillity and security that the measures of the pontiffs were universally applauded. Not only private persons, but even the most powerful princes and sovereign states, exclaimed loudly against the tyranny of the popes, and the unbridled licentiousness of the clergy of all denominations; and they demanded, therefore, a reformation of the church, and the assembling a general council to accomplish that necessary purpose. But these demands were not successful in awakening attention to the full extent of the evil; and though some of the more flagrant abuses were corrected, nothing effectual was done to restore the wholesome rigour of ecclesiastical discipline. Besides, these complaints proceeded from persons who never entertained any doubt respecting the supreme authority of the pope in religious matters, and who consequently, instead of attempting themselves to bring about the reformation which they so ardently desired, remained inactive, looking for redress to the court of Rome, or to a general council. But whilst the reform appeared to be at a great distance, it suddenly arose from a quarter whence it was not at all expected. A single person, Martin Luther, a monk of the order of St Augustin, ventured to oppose himself to the whole weight of papal power and authority. This bold attempt was first publicly made on the 30th of September 1517; and notwithstanding all the efforts of the pope and his adherents, the doctrines of Luther continued daily to gain ground. Others, also, encouraged by his success, lent their assistance in the great and important work of reformation, which at length produced churches, founded upon principles altogether different from that of Rome.

But on this subject it is unnecessary here to enter into particulars. We shall therefore conclude this section with a few remarks on the power of the pope, ecclesiastically considered.

The ecclesiastical power of the pope may be considered under three different aspects: his power and privileges as bishop of the diocese of Rome; his power and privileges as patriarch of the West; and his power, privileges, and rank, as supreme head of the Catholic church. As, however, it is generally in the last capacity that the pope is considered in this country, we may observe, in the first place, that the actual state of the papal power is the same now as it ever was; it can never change, although the exercise of it may vary, and has varied, according to circumstances. The power of the pope, though, in the belief of the Catholic church, universally acknowledged and respected from the beginning, was less felt in the primitive ages, when the lives and circumstances of Christians were such as seldom to call for any other interference than that of their immediate ecclesiastical superiors; but, in proportion as abuses crept in, and disputes, schisms, and heresies arose, this power was exercised with a greater degree of activity, and naturally attracted a greater share of public attention. Hence it was exerted to its fullest extent during those ages of ignorance and anarchy into which Europe was thrown by the invasions of the different hordes of barbarians which followed the breaking up of the Roman empire. But, in proportion as order has been restored, and a greater degree of civilization introduced, the exercise of the power of the pope as head of the Catholic church has become more limited, because its interposition is less called for. In all ages, however, the ecclesiastical power inherent in the pope as head of the Catholic church has been the same, and must ever be so, in the belief of that church, because, according to its creed, the pope holds his power from God, through a continued succession of predecessors downwards, and can transmit to his successors in office neither more nor less than what he has received. Now, the doctrine of the Catholic church on the authority of the pope as its head may be stated, in general terms, to be what it was defined in the tenth session of the council of Florence, viz. "That full power was delegated to the bishop of Rome, in the person of St Peter, to feed, regulate, and govern the universal church, as expressed in the general councils and holy canons."

The doctrine of this council respecting the supremacy of the pope may be stated in the words of Mr Butler, as contained in his *Book of the Roman Catholic Church*, upon the accuracy of which, as far as doctrine is concerned, the most implicit reliance may, we believe, be placed. "It is an article of the Roman Catholic faith," says he, "that the pope has, by divine right, 1*st*, a supremacy of rank; 2*d*, a supremacy of jurisdiction in the spiritual concerns of the Roman Catholic church; and, 3*d*, the principal authority in *defining* articles of faith. In consequence of these prerogatives, the pope holds a rank splendidly pre-eminent over the highest dignitaries of the church; he has a right to convene councils, and preside over them by himself or his legates, and to confirm the election of bishops. Every ecclesiastical cause may be brought before him, as the last resort, by appeal; he may promulgate definitions and formularies of faith to the universal church; and when the general body, or a great majority of her prelates, have assented to them, either by formal consent or tacit assent, all her members are bound to acquiesce in them. 'Rome,' they say, in such a case, 'has spoken, and the cause is determined.' To the pope, in the opinion of all Roman Catholics, belongs also a general superintendence of the concerns of the church; a right, when the canons provide no line of action, to direct the proceedings, and, in extraordinary cases, to act in opposition to the canons. In those spiritual concerns in which, by strict right, his authority is not definitive, he is entitled to the highest respect and deference.”

These are the points which, as there is no dispute about them, are admitted and believed by the Catholic church. As to the different opinions of different divines, every Catholic is at liberty to adopt or reject them, according as his own judgment and reason may dictate. Has the pope a controlling power over the whole church, should she chance to oppose his decrees, and, consequently, over a general council, her representative? Has he the same power, even in ordinary cases, over the canons of the universal church? Has he the power of calling all spiritual causes to his cognisance; of evoking to himself, or to judges appointed by him, any cause actually depending in an ecclesiastical court? Has he the power of constituting and deposing bishops; of conferring all ecclesiastical dignities and benefices, in or out of his dominions, by paramount authority? Is he personally infallible when he undertakes to issue a solemn decision upon any point of faith? In answer to these interrogatories, some say, yes; others say, no. Both opinions are tolerated by the Catholic church; but, according to Butler, neither speaks its faith. As to the question, whether the pope has a divine right to the exercise, indirectly at least, of temporal power, for effecting a spiritual good, it is no longer a subject of discussion, since all parties have acquiesced in the opinion of those who maintained that he has not; a proof of which was given to Mr Pitt in 1788, in the answers which were returned to his questions upon that head by the universities of Louvain, Douay, Sorbonne, Alcala, and Salamanca.

COMPOSITION OF HISTORY.

History has been defined, philosophy teaching by examples. But this definition is too artificial. History may exist apart from philosophy, just as philosophy may exist apart from history. The alliance of these two is natural, but not necessary. History, considered as a faithful record of past experience, is no doubt fertile in instruction; it is a great magazine of facts from which, reasoning inductively, important conclusions may be deduced. But the lights which the experience of the past may be made to supply for the conduct of the future must not in strictness be confounded with the elements or materials out of which they are struck; in other words, it is most desirable to distinguish between the facts which it is the peculiar business of history to record, and the inferences or general truths which they are calculated to evolve. Narration is the primary, philosophising only the secondary object of history. Every thing depends upon the accurate arrangement and detail of events; on preserving unbroken the sequence which nature has established, and, at the same time, distinguishing between mere coincidence in time or in place, and accidental or necessary connection. Hence radical truth is the foundation of history, the only basis upon which a solid superstructure can be reared. But historical truth consists of two parts; first, not to state what is in its own nature false; and, secondly, not to omit any thing which is true, and necessary to place the subject in a clear and proper light. It is possible to tell the truth, and yet to create a most erroneous impression by not telling the whole truth. The most dangerous, because the most insidious, mode of corrupting history and misleading the judgments of mankind, is the suppression or concealment of important circumstances, which, if known, might give a totally different complexion to the actions or events recorded; and, next to this in pernicious effect, is the less glaring but equally dishonest artifice of giving a disproportionate prominence to one feature of a character, or one aspect of a subject, whilst others, which truth requires to be brought out in commensurate fulness and relief, are either thrown into the shade, or so slightly touched as almost to escape observation. Of this last vice, which, more than any other, is calculated to taint the stream of history, Gibbon, in his narrative of the progressive diffusion of Christianity, presents a notorious and highly censurable example; exaggerating the faults, follies, and errors of the early professors of that faith, without making any account of their heroic fortitude under suffering and persecution, and reserving all his sympathies for material grandeur and barbaric splendour, whilst moral greatness is treated with cold indifference or sarcastic disdain.

But whilst strict truth is thus the grand and sole object of history, or that which distinguishes it from romance on the one hand, and mere party declamation on the other, it must be confessed that nothing is of more difficult attainment, and that the highest faculties of the human mind, moral as well as intellectual, are essentially requisite to him who enters upon the search of it with a view to enlighten and instruct mankind. On all subjects with which the interests, the passions, and the prejudices of men naturally connect themselves, and which are consequently viewed by different observers through different media, we must of course be prepared to expect not only the most opposite opinions, but also the most discordant statements; what is solemnly affirmed by one party or class will be denied with equal emphasis by another; the same event will be presented under the most incongruous aspects, the same character delineated in the most opposite colours; what is found in one authority may be sought for in vain in another; what this writer represents as of the last importance, another may treat as of no moment whatever; whilst the misconceptions of ignorance, uniting with the honest prejudices of party, and the studied misrepresentations of interest or artifice, lend their aid to augment the difficulties and embarrassments which obstruct the search for truth in this entangled and bewildering region. Seeing, then, that it is from such materials that history must be written, it will not be difficult to form a general estimate of the qualities which are essential to constitute an historian in the only just sense of the term. It is not merely necessary that he should be without bias himself, but that he should be capable of making due allowances for all the leanings and prejudices, whether religious, political, or national, which are calculated more or less to affect the judgments and opinions of other men. He must possess an intimate acquaintance with the laws of evidence, or those tests by the application of which the quality or value of evidence, of whatever description, may be ascertained and determined. To extract the truth from a mass of conflicting testimony is one of the most refined and difficult operations which the human mind can be called to perform. It implies patient research, vigilant attention, careful comparison, nice discrimination, prompt perception, and an aptitude for pursuing to their consequences all sorts of investigations, whether direct or collateral; yet this operation the historian, like the judge before whom issues of fact are sent to be tried, is continually required to perform, and that too in circumstances often far more difficult and complicated. The cases which come before the judge arise, for the most part, out of recent occurrences, in the investigation of which many facilities are supplied; those which the historian is called to unravel are frequently overshadowed by the obscurity, and perplexed by the accumulated misrepresentations, of ages. Judicial inquiries commonly relate to a single transaction or set of transactions connected with the ordinary affairs of human life, in which all have more or less experience. Historical researches frequently embrace systems of polity or religion, by which not merely the opinions, but the

Composition of History.

destinies of mankind, may have been powerfully affected, either for good or for evil: they comprehend government, laws, commerce, agriculture, arts, sciences, in different states of advancement, with those mighty changes in the fortunes of nations which are effected by war and revolutions, as well as the more gradual modifications superinduced on society by the slow and silent operation of physical, moral, and political causes. The judge plays his part upon a narrow theatre, where his business is merely to unravel a little plot, all the circumstances of which are, in general, brought pretty fully before him. The historian has to explore, and, as it were, map out, an entire country, to unfold a thousand mysteries, to correct a vast multiplicity of errors, and to puzzle his way through the gloom of an obscure and entangled region, where the landmarks are few, and often calculated to mislead.

From all this, then, it will not be difficult to form a general idea of the duties of an historian, as well as of the qualities and accomplishments which are indispensable to fit him for discharging them in a proper manner. The first, and by far the most important of these, is laborious research and patient investigation. Many of the most gifted men who have applied themselves to the composition of history, have not only failed to attain the truth, but have adopted and given currency to falsehood, because they wanted the perseverance necessary for discovering the one and detecting the other. Of this Hume presents a conspicuous and instructive example. That he was deeply prejudiced is known to all; but his indolence has proved infinitely more detrimental to his historical reputation than even his partiality; it has betrayed him into errors the most gross, and led him to commit injustice the most scandalous. The very authorities to which he refers frequently disprove his statements, and others within his reach would have enabled him to discover the truth if he had been at the pains to seek for it, as well as to correct the errors which he had committed. But he was careless of facts, or at least shrunk from the labour necessary to ascertain them; in general he took the statements of the writers upon his own side as he found them, and, without examination or comparison, scrupled not to hold up to derision and contempt some of the purest and brightest names in English history. He misapplied his great talents, and threw around the grossest perversions of English history all the fascination of his delightful style, and sometimes also the attraction of a profound philosophy. His authority as an historian, however, has been rudely shaken by the searching criticism of Mr Brodie, who, in exposing the errors and misrepresentations of Hume, has, at the same time, done justice to the illustrious men, maligned and defamed by the apologist of the house of Stuart. As a further illustration of his carelessness, if not bad faith, we may refer to Mr Tytler's *Life of Sir Walter Raleigh*, in which it is conclusively shown that Hume might, from the very authorities to which he has referred, have discovered the falsehood of the charges which he has brought against that illustrious but unfortunate victim of royal injustice, whose memory he has sought to load with unmerited obloquy. In this case, the truth was at his hand, had he given himself the smallest trouble to look for it.

The next quality which we shall mention as essential to an historian is strict probity. We do not mean to affirm that prejudice is necessarily dishonest, however much it may tend to blind the understanding and warp the judgment. Where it is avowed or manifest, the reader is thereby put on his guard, and, being forewarned, is seldom deceived. But there is a species of dishonesty which tends more than any other to corrupt the purity of history, yet, by reason of its latent and insidious character, frequently escapes detection, and indeed can seldom be exposed by definite arguments. We refer particularly to the artifice by which the whole gist and bearing of a narrative is insensibly inclined, in favour perhaps of the very individual whose vices or crimes are occasionally exposed with ostentatious fairness and candour, though seldom without the charitable suggestion of some palliating or mitigating circumstance to qualify the sentiments which the statement itself is calculated to awaken. Take, for instance, the history of Scotland by Dr Robertson. In that eloquent and masterly performance, the vices, follies, and crimes of Queen Mary are neither concealed nor directly extenuated; and subjoined to it there is a dissertation on the murder of Darnley, in which the question of her guilty participation in that atrocious crime is for ever put to rest. But notwithstanding all this, the general tendency and effect of the work is decidedly in her favour; and, when the final balance is struck, the remembrance of her guilt is absorbed in sympathy for her misfortunes. We are suffered gradually to lose sight of the one, and are continually reminded of the other. She is, in fact, the heroine of the story, in whom all the interest ultimately centres. By an insensible transition, the criminal, who had dishonoured her station and her sex, is converted into a victim and a martyr. We see before us only an injured queen, who, after an imprisonment of unexampled duration, is at length dragged forth to end her sufferings and her sorrows on the block. The understanding, in fact, is misled through the heart, and the moral judgment is perverted by artfully calling into play some of the best feelings of humanity. Now, in a romance, all this might be highly fitting and proper, because there the grand object is to interest us deeply in favour of the fortunes of the principal personage displayed on the canvass of the romancer. But in a work of history, truth should be exhibited in severe and stern simplicity, not dressed in the fairy attire of fiction, or concealed under the trappings and pageantry of worldly greatness. If an erroneous impression be deliberately and artfully produced, it matters little, in a question of historical probity, how or by what means that is effected; but it may be truly said that honest and avowed prejudice is immeasurably less injurious to the cause of truth than those ingenious but insidious devices which, like that here mentioned, array the feelings against the judgment, and call forth the emotions of the heart, only to counteract the perceptions of the understanding.

Cicero has laid it down that an accomplished orator should be possessed of almost universal knowledge. The same thing applies with much greater force to the historian, who has to treat of almost every subject which is interesting or important to mankind; science, philosophy, legislation, government, religion, war, commerce, art, and industry. On this standard Gibbon laboured for years to form himself, and it must be confessed that, in the acquisitions necessary for the performance of the mighty task which he had prescribed to himself, he stands almost alone amongst modern historians. His learning was equally varied and profound, and the more it is explored the higher will be the estimate formed, not only of the extent of his treasures, but also of the judgment and skill with which these are almost invariably brought to bear upon the subject before him, whatever it may be. Nor has his example proved fruitless or unavailing. The cultivation of the historical sciences, which had so long been neglected, has latterly engaged the attention and occupied the labours of some of the first minds in Europe; of men who, to the investigations which such pursuits render necessary, have brought all the resources of deep learning and original thought, of profound philosophy, and an intimate acquaintance with the true interests of states. In the hands of Von Hammer light has been shed on many of the darkest passages of Ottoman history; Heeren has traced, with great clearness, sagacity, and learning, the intercommunications of ancient nations, and the routes pursued by ancient commerce; and Niebuhr, having dissipated the mist of fable and romance which overshadowed the early history of Rome, has reduced the exaggerations of chroniclers and poets to their true dimensions, and laid a foundation for all ages, though, unfortunately, without being permitted to raise the superstructure. Michaud's *Histoire des Croisades* is also a work of extensive research and profound investigation, in which the various resources afforded by the science of criticism have been employed to rectify errors, and to shed a new and steady light on what was formerly obscure; whilst new views or new facts, derived from sources previously unexplored, are unfolded in almost every page. It is thus that history ought to be written, if intended to be instructive. By applying the powerful instrument of an enlightened and philosophical criticism, we shall no doubt dispel almost every ingredient allied to the marvellous, and sadly disenchant the gorgeous creations of romance; but truth, in her divine simplicity, will remain to atone for the destruction of these airy and unsubstantial fabrics, and to command the respect and homage of enlightened worshippers. We have fallen upon an utilitarian age, when men, having ceased to pursue shadows, seek for the substance of knowledge, when glitter and tinsel are disregarded, when amusement is sought through the medium of instruction, and when nothing is considered as agreeable which is altogether useless. Besides, as mankind rise in political importance, and feel that they have rights to exercise, interests to advance, and privileges to defend, their desire to seek lessons for the future in the experience of the past receives a corresponding increase; they lose their relish for romance, and acquire a taste for simple, unadulterated truth, which is alone calculated to extend their knowledge and promote their happiness.

History of Nature, or *Natural History.* See Natural History.

HISTRIO, in the ancient drama, signified an actor or comedian; but more especially a pantomime, who exhibited his part by gestures and dancing. Livy informs us that the histriones were brought to Rome from Etruria, in the year of the city 391.

HIT, a village of Irak Arabia, situated on a river of the same name, which is a tributary of the Euphrates. There are abundant pits of bitumen in the neighbourhood, from which it is supposed that supplies were derived for the construction of ancient Babylon.

HITCHEN, a town in the county of Hertford, which gives its name to the hundred, thirty-four miles from London. It was once of some note for its manufactures, but none is left except that of making malt. It is a well-built town, with a good market held on Tuesday, at which much corn is sold. The inhabitants amounted in 1801 to 3161, in 1811 to 3608, in 1821 to 4486, and in 1831 to 5211.

HITTITES, the descendants of Heth. See Heth.

HIVE, a convenient receptacle for bees. See Bee.

HIVITES, a people descended from Canaan, who dwelt at first in the country afterwards possessed by the Caphtorims or Philistines.

HOADLY, Benjamin, successively bishop of Bangor, Hereford, Salisbury, and Winchester, was born in the year 1676. His first preferment in the church was to the rectory of St Peter-le-Poor, and the lectureship of St Mildred's in the Poultry. In the year 1706 he published some remarks on Bishop Atterbury's sermon at the funeral of Mr Bennet, in which Dr Atterbury had, in the opinion of Mr Hoadly, laid down some dangerous propositions. Two years afterwards Mr Hoadly again entered the lists against this formidable antagonist; and in his exceptions against a sermon published by Dr Atterbury, entitled The Power of Charity to cover Sin, he attacked the doctor with his usual strength of reasoning and dispassionate inquiry. In 1709 another dispute arose between these two learned combatants concerning the doctrine of non-resistance, occasioned by a performance of Mr Hoadly's, entitled the Measures of Obedience; some positions in which Dr Atterbury endeavoured to confute in an elegant Latin sermon which he preached that year before the London clergy. In this debate Mr Hoadly signalised himself in so eminent a degree, that the House of Commons conferred on him a particular mark of respect, by representing, in an address to the queen, the signal services he had done to the cause of civil and religious liberty. The principles which he espoused, however, being repugnant to the general temper of those times, drew on him the virulence of a party; yet it was at this period, 1710, when, as he himself expressed it, fury seemed to be let loose upon him, that Mrs Howland presented him to the rectory of Streatham in Surrey, unasked, unapplied to, and without his ever having seen his benefactress. Soon after the accession of King George I. Mr Hoadly was consecrated to the see of Bangor; and, in 1717, having broached some opinions concerning the nature of Christ's kingdom, he again became the object of popular clamour. At this juncture he was distinguished by a particular mark of the royal regard, inasmuch as the convocation was successively prorogued, nor was it permitted to sit, or to do any business, until that resentment had entirely subsided. In 1721 he was translated to Hereford; and from thence, in 1723, to Salisbury. In 1734 he was, on the demise of Dr Willis, translated to Winchester, and published his Plain Account of the Sacrament; a performance which served as a butt for his adversaries to shoot their arrows at, yet impartiality must own it to be clear, rational, and manly, written with candour and judgment, and suited to the capacity of every serious and considerate inquirer after truth. His latter days were embittered by an instance of fraud and ingratitude. The bishop took under his protection a French priest, who pretended to abjure his religion, and who had no other recommendation than that of his necessities. In return for this act of humanity, the priest found an opportunity of getting the bishop's name written by his own hand, and, causing a note of some thousand pounds to be placed before it, offered it in payment. But the bishop denying it to be his, it was brought before a court of justice, and was there found to be a gross imposition. The ungrateful villain had now recourse to a pamphlet, in which he charged the bishop with being a drunkard; and alleged that he had received the note from him when he was in liquor. To this calumny the bishop made a full and nervous answer, in which he exposed the man's falsehood, and solemnly averred that he was never drunk in his whole life. The world with becoming ardour embraced his defence, and he had the happiness to find himself perfectly acquitted even of any suspicion of such a charge. As a writer, he possessed uncommon abilities. But his style was defective and cumbrous, owing to the extreme length of his periods. His sermons, published in 1754 and 1755, are esteemed inferior to few writings in the English language, for plainness and perspicuity, energy and strength of reasoning, and a free and masterly manner. In private life he was naturally facetious, easy, and complying; and, though fond of company, accustomed frequently to retire for the purposes of study or devotion. He was everywhere happy, and particularly in his own family, where he took all opportunities of instructing by his influence and example. Bishop Hoadly died in 1761, aged eighty-three. Besides the works already mentioned, he wrote, 1. Terms of Acceptance, 8vo; 2. Reasonableness of Conformity; and 3. On the Sacrament. His tracts and pamphlets are extremely numerous. A complete edition of his works, in three volumes folio, was published by his son Dr John Hoadly, in 1773, with a short life of the author prefixed. The appendix to this edition contains some portion of his correspondence with Lady Sundon, formerly Mrs Clayton, bed-chamber woman to Queen Anne, and a person to whom he appears to have been chiefly indebted for his influence at court.

Hoadly, *Benjamin*, son of the former, was born in 1706, and studied at Bennet College, Cambridge, under the tuition of Dr Herring, afterwards archbishop of Canterbury. He took his degree in physic; and having, when young, applied himself to mathematical and philosophical studies, he was admitted a member of the Royal Society. He was made registrar of Hereford whilst his father filled that see, appointed physician to his majesty's household, and died at his house in Chelsea in 1757. He wrote, 1. Three letters on the Organs of Respiration, 4to; 2. The Suspicious Husband, a comedy; 3. Observations on a series of Electrical Experiments; 4. Oratio Anniversaria, in Theatro Col. Med. Londin. ex Harvei instituto habita 1742.

HOAIN-Gan-Foo, a large city of China, in the province of Kiangnan, situated on the bank of the great canal, which is above the level of the city, and occasions perpetual danger of inundation. It occupies a large area, including gardens and cultivated grounds; and, from the crowds of spectators seen by the British embassy, it seemed as if there was a numerous population. Long. 118. 47. E. Lat. 53. 30. N.

HOANGHO, or Yellow River, a great river of China, which has its rise in the unknown and mountainous regions of Thibet, probably the loftiest portion of the Asiatic continent. The Hoangho, after entering China, turns to the north, and flows even beyond the limits of the empire. But after winding for a short time, it re-crosses the frontier, and spreads fertility over some of the finest provinces of China. It falls into the Yellow Sea about the thirty-fourth degree of north latitude, at no very great distance from the Yang-tse-Kiang or Blue River, another of the vast streams by which China is watered. The course of the Hoangho is estimated, though with some uncertainty, to be in length about 1800 British miles. Though broad and rapid, it is in many places so shallow as to be unfavourable for navigation. It is also liable to overflow its banks; and it has been found necessary, in consequence, to protect the surrounding country against its inroads, by means of dikes and mounds.

HOARSENESS, in *Medicine*, a diminution of the voice, commonly attended with a great asperity and roughness of intonation. The parts usually affected are the arteria aspera and the larynx.

HOBAL, in *Mythology*, an idol of the ancient Arabs, the worship of which at Mecca was destroyed by Mahommed.

HOBBES, Thomas, a metaphysical and political writer of the greatest eminence, was born at Malmesbury on the 5th of April 1588. He was the son of a clergyman; and having completed his studies at Oxford, he was appointed governor to the eldest son of William Cavendish, earl of Devonshire. He travelled with that young nobleman through France and Italy, and at length applied himself entirely to the study of literature. He translated Thucydides into English, and in 1628 published his translation, in order to show his countrymen, from the Athenian history, the disorders and confusions of a democratical government. In 1626 his patron the Earl of Devonshire died, and in 1628 the earl's son also died; a loss which affected Mr Hobbes to such a degree, that he willingly accepted an offer made him of going abroad a second time with the son of Sir Gervase Clifton, whom he accordingly accompanied to France. But whilst he resided there, he was solicited to return to England, and resume his charge of the hope of that family to which he had so early attached himself. In 1631 the Countess Dowager of Devonshire desired to put under his care the young earl, who was then about the age of thirteen. This proved agreeable to the inclinations of Mr Hobbes, who discharged the trust with great diligence and fidelity. In 1634 he republished his translation of Thucydides, and prefixed to it a dedication to that young nobleman, in which he gives a high character of his father, and represents in the strongest terms the obligations he was under to the Devonshire family. The same year he accompanied his pupil to Paris, where he applied his leisure hours to the study of natural philosophy, and more especially to the understanding of mechanism, and the causes of animal motion. Upon these subjects he had frequent conversations with Father Mersenne, a man deservedly celebrated, and who maintained a correspondence with almost all the learned in Europe. From Paris he accompanied his pupil to Italy, where, on visiting Pisa, he became known to Galileo, who freely communicated to him his discoveries; and after having seen all that was remarkable in that country, he returned with the Earl of Devonshire to England. Afterwards, foreseeing the civil wars, he went to seek a retreat at Paris, where, by the good offices of his friend Father Mersenne, he became known to Descartes, and afterwards corresponded with him upon several mathematical subjects, as appears from the letters of Mr Hobbes published in the works of Descartes. But when this philosopher afterwards printed his Meditations, in which he attempted to establish points of the highest consequence, on the assumption of innate ideas, Mr Hobbes took the liberty of dissenting from him; and so also did Gassendi, with whom Mr Hobbes contracted a very intimate friendship, which was not interrupted till the death of the former. In 1642 Mr Hobbes printed a few copies of his book *De Cive*, which, in proportion as it became known, raised him many adversaries, who charged him with instilling principles which had a dangerous tendency. Amongst many illustrious persons who, upon the shipwreck of the royal cause, retired to France for safety, was Sir Charles Cavendish, brother of the Duke of Newcastle; and this gentleman, being skilled in every branch of the mathematics, proved a constant friend and patron of Mr Hobbes, who, having in 1645 embarked in a controversy about squaring the circle, became so celebrated, that in 1647 he was recommended to instruct the Prince of Wales, afterwards Charles II., in mathematical learning. His diligence in the discharge of this office gained him the esteem of that prince; and though he afterwards withdrew his public favour from Mr Hobbes on account of his writings, yet he always retained a sense of the services which the latter had rendered him, showed him various marks of favour after the Restoration, and, as some say, had his picture suspended in his closet. This year also was printed in Holland, under the care of Sorbière, a second and more complete edition of the treatise *De Cive*, to which are prefixed two Latin letters to the editor, the one by M. Gassendi, the other by Father Mersenne, in commendation of it; and in 1650 was published at London his small but profound and original treatise on Human Nature, with another *De Corpore Politico*, or on the Elements of the Law.

All this time Mr Hobbes had been occupied in digesting his religious, political, and moral principles into a complete system, which he called *Leviathan*, and which was printed in English at London in 1650 and 1651. After the publication of his *Leviathan* he returned to England, and passed the summer commonly at the seat of his patron the Earl of Devonshire, in Derbyshire, and spent some of his winters in town, where he had as his intimate friends some of the greatest men of the age. Upon the occurrence of the Restoration in 1660, he repaired to London, where he obtained from the king assurance of protection, and had an annual pension of L.100 settled upon him out of the privy purse. Yet even this did not render him entirely safe; for, in the year 1666, his *Leviathan* and his treatise *De Cive* were censured by parliament; a circumstance which, taken in connexion with the bringing in of a bill into the House of Commons to punish atheism and profaneness, gave him serious alarm. When the storm had blown over, however, he began to think of publishing a beautiful edition of his pieces in Latin; but finding this impracticable in England, he caused it to be undertaken abroad, where they were published in three volumes quarto in 1668, from the press of John Bleau. In 1669 he was visited by Cosmo de' Medicis, then prince, and afterwards Duke of Tuscany, who gave him ample proofs of esteem and respect, and having received his picture, with a complete collection of his writings, caused them to be deposited, the former amongst his curiosities, and the latter in his noble library at Florence. He received similar visits from foreign ambassadors and other strangers of distinction, who were curious to see a person whose singular opinions and numerous writings had made so much noise all over Europe. In 1672 he wrote his own life in Latin verse, when he had completed his eighty-fourth year; and, in 1674, he published, in English verse, four books of Homer's Odyssey, which was so well received, that it encouraged him to undertake the whole Iliad and Odyssey, both of which he translated and published in 1675. About this time he took leave of London, and went to spend the remainder of his days in Derbyshire. He died on the 4th of December 1679, aged ninety-two.

As to his deportment and manners, they are thus described by Dr White Kennet, in his Memoirs of the Cavendish family. "The Earl of Devonshire," says he, "for his whole life entertained Mr Hobbes in his family, as his old tutor rather than as his friend or confidant. He let him live under his roof in ease and plenty, and in his own way, without making use of him in any public, or so much as domestic affairs. He would frequently put off the mention of his name, and say, 'He was a humorist, and nobody could account for him.' There is a tradition in the family, of the manners and customs of Mr Hobbes, somewhat observable. His professed rule of health was to dedicate the morning to his exercise, and the afternoon to his studies. And therefore, at his first rising, he walked out, and climbed any hill within his reach; or, if the weather was not dry, he fatigued himself within doors by some exercise or other, to be in a sweat; recommending that practice upon this opinion, that an old man had more moisture than heat, and therefore by such motion heat was to be acquired and moisture expelled. After this, he took a comfortable breakfast; and then went round the lodgings to wait upon the earl, the countess, and the children, and any considerable strangers, paying some short addresses to all of them. He kept these rounds till about twelve o'clock, when he had a little dinner provided for him, which he ate always by himself without ceremony. Soon after dinner he retired to his study, and had his candle, with ten or twelve pipes of tobacco laid by him; then shutting his door, he fell to smoking, thinking, and writing for several hours. He retained a friend or two at court, and especially the Lord Arlington, to protect him if occasion should require. He used to say, that it was lawful to make use of ill instruments to do ourselves good: 'If I were cast,' says he, 'into a deep pit, and the devil should put down his cloven foot, I would take hold of it to be drawn out by it.' After the Restoration, he watched all opportunities to ingratiate himself with the king and his prime ministers; and looked upon his pension to be more valuable, as an earnest of favour and protection, than upon any other account. His future course of life was to be free from danger. He could not endure to be left in an empty house. Whenever the earl removed, he would go along with him, even to his last stage, from Chatsworth to Hardwick. When he was in a very weak condition, he dared not to be left behind, but made his way upon a feather-bed in a coach, though he survived the journey but a few days. He could not bear any discourse of death, and seemed to cast off all thoughts of it. He delighted to reckon upon longer life. The winter before he died, he made a warm coat, which he said must last him three years, and then he would have such another. In his last sickness his frequent questions were, Whether his disease was curable? and when intimations were given that he might have ease, but no remedy, he used this expression, 'I shall be glad to find a hole to creep out of the world at;' which are reported to have been his last sensible words; and his lying some days following in a silent stupefaction, did seem owing to his mind more than to his body."

Lord Clarendon says of him, that he "was a man for whom he had a great esteem, and who was always regarded as a person of probity, and of a life free from scandal." As to his character as a philosopher and political writer, it is only necessary here to refer to the admirable sections regarding him in the Dissertations by Mr Stewart and Sir James Mackintosh, prefixed to this work. A collection of his "moral and political" writings, comprised in a folio volume, was published at London in the year 1750.

HOBGOBLIN is a name vulgarly applied to spectres or apparitions. Skinner calls the word *robgoblins*, and derives it from Robin Goodfellow, Hob being the nickname of Robin; but Wallis and Junius, with greater probability, derive it from *hopgoblins*, because they are supposed to hop without moving both their feet.

HOBLERS, or HOBILERS, *Hobelarii*, in our ancient customs, were men who, by their tenure, were obliged to maintain a light horse or hobby, for announcing any invasion from the seaward. The name was also employed to signify certain Irish knights, who used to serve as light horsemen upon hobbies.

HOB-NAIL, a nail with a thick strong head, used in shoeing a hobby or little horse.

HOB-NOB, or HAB-NAB, a cant word formed from *hap ne hap*, and denoting an event which happens at random, or by mere chance.

HOBSON'S CHOICE, a vulgar proverbial expression, applied to that kind of choice in which there is no alternative. It is said to be derived from the name of a carrier at Cambridge, who let out hackney horses, and obliged each customer to take in his turn that horse which stood next the stable door.

HOCHHEIM, a market-town of the duchy of Nassau, in Germany, the capital of a bailiwick of the same name. It stands on an elevated spot, at the junction of the Nidda with the Maine. It contains a church, and 440 houses, with 1850 inhabitants. The neighbourhood is celebrated for producing the best wines of the Rhine, which have generally been known in England by the name of Hock. That of peculiar excellence is, however, the growth of a particular vineyard, which is not more than ten acres in extent, and sells, even when new, at a very high price.

HOCHOU, a walled city of China, in the province of

Kiangnan, about three miles from the banks of the Yang-tse-Kiang. It appears to be about three or four miles in circuit, and to have been at one time more populous than at present. The country around is highly cultivated. It is thirty miles south-west of Nanking. Long. 118. 14. E. Lat. 29. 57. N.

HOCHSTEDT, a town of Bavaria, the capital of the bailiwick of the same name in the circle of the Upper Danube. It stands on the Danube, and contains two churches, 396 houses, and 2240 inhabitants. It is celebrated as the scene of one of Marlborough's most splendid victories gained in 1704, and as the field of defeat of the Austrians by the French in 1800. Long. 10. 28. 25. E. Lat. 48. 36. 30. N.

HOCUS POCUS, a cant expression, with which the exhibitors of legerdemain tricks generally prefaced their feats. This term is supposed to be a corruption of the words *hoc est corpus*.

HOD, a sort of tray for carrying mortar, in use among bricklayers.

HODDESDON, a town of the county of Hertford, in the parishes of Amwell and Brockborn, seventeen miles from London. It stands on the river Lea, and on the great road to the eastern counties. It consists of one long street, in the middle of which is a fountain that supplies the town with water. There is a market which is held on Wednesday. The inhabitants amounted in 1801 to 1221, in 1811 to 1249, in 1821 to 1354, and in 1831 to 1615.

HODMAN, a cant term formerly used for a young scholar admitted from Westminster school to be student in Christ Church in Oxford.

HODNET, a town, or rather a parish, in the hundred of North Bradford, in the county of Salop, on the river Terne, 135 miles from London. It is only remarkable as the birth-place and residence of the late Bishop of Calcutta, Heber. The inhabitants amounted in 1801 to 1386, in 1811 to 1499, in 1821 to 1795, and in 1831 to 1769.

HODY, Humphry, an eminent English divine, was born at Odcombe, in Somersetshire, on the 1st of January 1659. Whilst yet a boy he discovered a strong propensity to learning, and in 1676 was admitted into Wadham College, Oxford, of which he was chosen fellow in 1684. At the age of twenty-one he published his Dissertation against the History of the Seventy-two Interpreters by Aristeas. In this production Hody shows that the story told by Aristeas as to the occasion of the Septuagint translation is the invention of some Hellenist Jew; that it is full of blunders and anachronisms; and that it was originally circulated on purpose to recommend the Greek version of the Old Testament. This dissertation was received with much approbation by the learned, excepting Isaac Vossius, who having espoused the contrary, could not endure to see a mere youth enter the lists against one of his age and reputation in letters. He therefore published an appendix to his Observations on Pomponius Mela, containing an answer to Hody's Dissertation, in which, neglecting arguments, he contents himself with indulging in the utmost petulance and scurrility towards his opponent. In 1704, Hody published his four books *De Bibliorum textis originalibus, versionibus Græcis, et Latina Vulgata*; the first containing his dissertation on Aristeas's history, the second treating of the true authors of the Greek version called the Septuagint; the third comprising a history of the Hebrew text, the Septuagint version, and the Latin Vulgate; and the fourth giving an account of the other Greek versions, namely, those of Symmachus, Aquila, and Theodotion, with the *Hexapla* of Origen, and other ancient editions. In 1689, Hody wrote the Prolegomena to the Chronicle of John Malela, printed at Oxford; and in 1690 he was made chaplain to Stillingfleet, bishop of Worcester. The deprivation of the nonjuring bishops involved him in a controversy with Mr Dodwell, and gave occasion to a number of polemical pieces, which have long ceased to possess any interest. The part which he took in this controversy, however, recommended him to Archbishop Tillotson, who appointed him his domestic chaplain, an office which he continued to hold under Dr Tennyson, Tillotson's successor. In 1698 he was appointed regius professor of Greek in the university of Oxford, and in 1704 he was instituted to the archdeaconry of the same place. But he did not long survive these preferments, having died on the 20th of January 1705. Hody left behind him in manuscript a valuable work, comprising the substance of his lectures as professor, and containing an account of those learned Greeks who retired to Italy before and after the taking of Constantinople by the Turks, and there revived the study of the language and literature of Greece, which had long been entirely neglected. This work was published in 1742 by Dr Jebb, and entitled *De Græcis Illustribus linguæ Græcæ literarumque humaniorum instauratoribus, eorum vitis, scriptis, et elogiis libri duo*; prefixed to which is an account in Latin of the author's life, extracted from a manuscript in English left by himself. (A.)

HOE, or How, a husbandman's tool, made like a cooper's adze, to cut up weeds in gardens, fields, &c.

HOF, a city of Bavaria, in the circle of Upper Maine. It is situated on the river Saale, is surrounded with walls, and is the seat of the revenue officer of the circle. It contains four churches, an orphan-house, an hospital richly endowed, and 650 houses, with 5730 inhabitants, who find occupation in manufactures of woollen, linen, and cotton goods, and in breweries, distilleries, and paper-making.

HOFFMANN, John James, a celebrated philologist, was born at Basil in 1635. His father, who was professor of law in the academy of that city, inspired him betimes with a taste for application, and directed his early studies. Young Hoffmann went through his courses of philosophy and theology with distinction, and was ordained to the holy ministry. But as the delicacy of his health did not admit of his pursuing that career, he applied himself to teaching; and after having, for several years, given private instructions, he was, in 1667, appointed to the chair of Greek in the academy, whence he was, in 1683, translated to that of history, the duties of which he discharged with indefatigable zeal until his death, which occurred in 1706, without his having ever quitted his native country. The best known of all his works is the *Lexicon Universale, Historico-Geographico-Chronologico-Poetico Philologicum*, Basil, 1677, in two volumes folio, with a Supplement, also in two volumes, 1683. The work at first met with indifferent success. This dictionary is constructed upon a very extensive plan; but all the parts leave much to be desired. The articles on ancient geography are considered as the best; those on history are superficial and inaccurate. The title of the book announces various synonymes of geographical names derived from twenty different languages; but the execution does not come up to the announcement. The author omits no opportunity to declaim against the Catholic religion and against France. The other works of Hoffmann are, 1. Numerous Theses on subjects of little or no interest; 2. A Collection of Poems, *Poemata*, Basil, 1684, in 12mo; 3. Epitome metrica Historiæ Universalis civilis et sacræ ab orbe condito, ibid. 1686, in 12mo; 4. Historia Paparum, 1687, in two vols. 12mo; 5. Two Memoirs on the *Miscellanea Berolinensia*. (A.)

Hoffmann, *Frederick*, a celebrated physician of the university of Halle in Saxony, was born in that city in 1660. He received his early education in his native town, and made great progress in the mathematics, which his parents had caused him to study, and to which he ascribed advances in the study of medicine. At the age of fifteen he lost both his father and his mother during the prevalence of an epidemical distemper. In 1680, he established himself at Erfurt, there to study chemistry under Gaspar Cramer, and the following year he received the degree of doctor of physic at Iena. In 1682, he published an Essay *De Cinnabari Antimonii*, which was reprinted at Leyden in 1685, 12mo, and laid the foundation of his reputation as an able chemist, which he afterwards increased by professing chemistry in the schools of Iena. It is to him we are indebted for the preparation known by the name of the Anodyne Liquor of Hoffmann, which is considered as one of the best sedatives. Frederick III. elector of Brandenburg, having founded the university of Halle in 1693, Hoffmann was appointed primarius professor, and alone prepared the statutes of the faculty of medicine. His fame soon spread throughout all Germany, and thence into foreign parts; and several learned bodies, including the academies of Berlin and Petersburg, and the Royal Society of London, enrolled him among their members. During his residence at Halle he divided his time between instruction, practice, and study; but more than once he interrupted his pursuits by visits to the different courts of Germany, where his professional successes procured him honours, titles, and rewards. He was solicited by the king of Prussia to fix his residence at Berlin; but he preferred remaining in his native country, where he died on the 12th of November 1742. At the age of sixty Hoffmann undertook his great work entitled *Medicina Rationalis Systematica*, Halle, 1730, in nine vols. 4to, of which Bruhier d'Ablaincourt has given a translation under the title of *Médécine Raisonnée d'Hoffmann*, 1739, in nine vols. 12mo. The same physician has also translated from the Latin of Hoffmann, a Treatise on Fevers, Paris, 1746, in three vols. 12mo; the Politics of Medicine, ibid. 1751, in 12mo; and Observations on the Cure of Gout and Rheumatism. A complete edition of his works has been published, with a life of the author, under the title of *Hoffmanni Opera omnia Medico-physica cum Supplementis*, Geneva, 1740, 1755, eleven parts, in folio. The writings of Hoffmann contain a great mass of practical matter of considerable value, partly compiled from preceding writers, and partly the result of his own observation; but they are also deformed by trifling remarks, hypothetical conjectures, and frequent prolixity and repetition in the details. As a theorist, his suggestions proved of great importance, and contributed to introduce that revolution in the science of medicine which subsequent observation has extended and confirmed. His doctrine of atony and spasm in the living solid, according to which all internal disorders were referred to some preternatural affection of the nervous system, rather than to the morbid derangements of the fluids, first turned the attention of physicians from the mere mechanical and chemical operations of the body, to those of the primary moving powers of the living system. Hoffmann pursued with considerable ardour the study of practical chemistry, and improved the department of pharmacy by the addition of some mineral preparations. But, upon the whole, his practice was cautious, especially in his latter years; and he trusted much to vegetable simples. "I affirm solemnly," said he, "that though in my youth I ran much after chemical remedies, yet, in my age, I became convinced that very few remedies, well selected, and derived from substances in appearance the most worthless, afford more prompt and efficacious relief to the sick than the rarest and most elaborate chemical preparations." (A.)

HOFFMANNISTS, in *Ecclesiastical History*, are those sectaries who espoused the sentiments of Daniel Hoffmann, professor in the university of Helmstadt, who maintained that philosophy was a mortal enemy to religion, and that what was true in philosophy was false in theology. These absurd and pernicious tenets occasioned a warm controversy; but Hoffmann was at length compelled by Julius duke of Brunswick to retract his invectives against philosophy, and to acknowledge, in the most open manner, the harmony and union of sound philosophy with true and genuine theology.

HOFGEISMAR, a city of the principality of Hesse Cassel, in the province of the Lower Hesse. It is on the river Esse, is walled, and has two churches, an hospital, and stadthouse, with 420 dwellings, and 2586 inhabitants.

HOG. See MAMMALIA.

HOG ISLE. There are two small islands of this name in the Eastern Seas, one about twenty miles in circumference, lying off the north-eastern extremity of Java. Long. 114. 55. E. Lat. 7. 5. S. This is also the name of another island, sixty miles off the west coast of Sumatra, about forty miles in length, and three in average breadth.

HOGARTH, WILLIAM, an artist, a truly great and original genius, was born in 1697 or 1698, in the parish of St Martin, Ludgate. The outset of his life, however, was unpromising. "He was bound," says Lord Orford, "to a mean engraver of arms on plate." Hogarth probably chose this occupation as it required some skill in drawing, to which his genius was particularly turned, and which he contrived assiduously to cultivate. His master was Mr Ellis Gamble, a silversmith of eminence, who resided in Cranburn Street, Leicester Fields. In this profession it is not unusual to bind apprentices to the single branch of engraving arms and ciphers on every species of metal; and in that particular department of the business young Hogarth was placed; but, before his time had expired, he felt the impulse of genius, and it directed him to painting. During his apprenticeship, he set out one Sunday, with two or three companions, on an excursion to Highgate. The weather being hot, they went into a public house, where they had not been long before a quarrel arose between some persons in the same room, and one of the disputants having struck the other on the head with a quart pot, cut him very much. The blood running down the man's face, together with the agony of the wound, which distorted his features into a most hideous grin, presented Hogarth, who showed himself thus early sensible of the course which Nature had intended he should pursue, with too laughable a subject to be overlooked. He drew out his pencil, and produced on the spot one of the most ludicrous figures that ever was seen. What rendered this piece the more valuable was, that it exhibited an exact likeness of the man, with the portrait of his antagonist, and the figures in caricature of the principal persons collected around him.

How long he continued in obscurity has not been ascertained; but the first piece in which he distinguished himself as a painter is supposed to have been a representation of Wanstead Assembly. The figures contained in it were, it seems, drawn from the life, and without any circumstances of burlesque. The faces were said to be extremely like, and the colouring rather better than in some of his later and more highly finished performances. From the date of the earliest plate that can be ascertained as his work, it may be presumed that he began business on his own account at least as early as 1720.

His first employment seems to have been the engraving of arms and shop-bills; his next, to design and furnish plates for booksellers. Mr Bowles, at the Black Horse in Cornhill, was one of his earliest patrons, but the prices paid by that person were very low. His next friend in this line was Mr Philip Overton, who paid him somewhat better for his labour and ingenuity.

There are still existing many family pictures by Hogarth, in the style of serious conversation-pieces. What the prices of his portraits were, Mr Nichols tried in vain to discover; but he suspects that they were originally very low, as the people who are best acquainted with them choose to be silent on that subject.

Lord Orford has remarked, that if our artist indulged his spirit of ridicule in personalities, it seldom proceeded beyond sketches and drawings; and wonders that he never, without intention, delivered the very features of any identical person. But Mr Nichols assures us, from unquestionable authority, that almost all the personages who attended the levee of the Rake were undoubted portraits; and that in Southwark Fair, and the Modern Midnight Conversation, as many more were discoverable. Whilst Hogarth was painting the Rake's Progress, he had a summer residence at Isleworth; and he never failed to question the company who came to see these pictures, if they knew for whom one or another figure was designed. When they guessed wrong, he set them right.

The Duke of Leeds possessed an original scene in the Beggar's Opera, painted by Hogarth. It is that in which Lucy and Polly are on their knees before their respective fathers, to intercede for the life of the hero of the piece. All the figures are either known or supposed to be portraits. Lord Orford had a picture of a scene in the same piece, where Macheath is going to execution. In this also the likenesses of Walker, and Miss Fenton, afterwards Duchess of Bolton, the first and original Macheath and Polly, were preserved.

In 1730 Mr Hogarth married the only daughter of Sir James Thornhill, by whom, however, he had no children. This union, indeed, was a stolen one, and consequently without the approbation of Sir James, who, considering the youth of his daughter, then scarcely eighteen, and the slender finances of her husband, as yet an obscure artist, was not easily reconciled to the match. Soon after this period, however, he began his Harlot's Progress; and was advised by Lady Thornhill to have some of the scenes of it placed in the way of his father-in-law. Accordingly, one morning early, Mrs Hogarth undertook to convey several of them into her father's dining-room. When he arose, he inquired whence they had come; and being told by whom they were introduced, he cried out, "Very well; the man who can furnish representations like these can also maintain a wife without a portion." He designed this remark as an excuse for keeping his purse-strings close; but soon afterwards he became both reconciled and generous to the young people.

In 1732 Hogarth ventured to attack Mr Pope, in a plate called the Man of Taste, containing a view of the Gate of Burlington House, with Pope whitewashing it, and bespattering the Duke of Chandos's coach. This plate was intended as a satire on the translator of Homer, Mr Kent the architect, and the Earl of Burlington. It was fortunate for Hogarth that he escaped the sting of the "wasp of Twickenham." Either Hogarth's obscurity at that time was his protection, or the poet was too prudent to exasperate a painter who had already given such proof of his abilities for satire.

In 1733 his genius became conspicuously known. The third scene of his Harlot's Progress introduced him to the notice of the great. At a meeting of the treasury board, which was held a day or two after the appearance of that print, a copy of it was shown by one of the lords, as containing, amongst other excellencies, a striking likeness of Sir John Gonson. It gave universal satisfaction. From the treasury each lord repaired to the print-shop for a copy of it, and Hogarth immediately rose into fame.

The Abbé Dubos has complained that no historical painter of his time went through a series of actions, and thus, like an historian, painted the successive fortunes of a hero from the cradle to the grave. What Dubos wished to see done, Hogarth performed. He launched out his young adventurer a simple girl upon the town, and conducted her through all the vicissitudes of wretchedness to a premature death. This was painting to the understanding and to the heart; none had ever before made the pencil subservient to the purposes of morality and instruction. A book like this is fitted to every soil and to every observer; he that runs may read it. Nor was the success of Hogarth confined to his persons. One of his excellencies consisted in what may be termed the furniture of his pieces. As, in sublime and historical representations, the fewer trivial circumstances are permitted to divide the spectator's attention from the principal figures, the greater is their force, so, in scenes copied from familiar life, a proper variety of little domestic images contributes to throw an air of verisimilitude over the whole. "The Rake's levee-room," says Lord Orford, "the nobleman's dining-room, the apartments of the husband and wife in Marriage-à-la-Mode, the alderman's parlour, the bedchamber, and many others, are the history of the manners of the age."

In 1745 Hogarth sold about twenty of his capital pictures by auction; and in the same year he acquired additional reputation by the six prints of Marriage-à-la-Mode, which may be regarded as the groundwork of a novel called the Marriage Act, by Dr Shebbeare, and also of the Clandestine Marriage. The prints, however, possess far more of the true spirit of comedy than either the novel or the play; they are amongst the most masterly productions of this great dramatic painter of life and manners.

Soon after the peace of Aix-la-Chapelle he went over to France, and was taken into custody at Calais whilst he was drawing the gate of that town; a circumstance which he has recorded in his picture entitled O the Roast Beef of Old England, published in 1749.

In 1753 he appeared to the world in the character of an author, and published a quarto volume, entitled Analysis of Beauty, written with a view of fixing the fluctuating ideas of taste. In this performance he shows, by a variety of examples, that a curve is the line of beauty, and that round swelling figures are most pleasing to the eye; and the truth of his opinion has been countenanced by subsequent writers on the subject. In this work he acknowledges himself indebted for assistance to his friends, particularly to one gentleman for his corrections and amendments of at least a third part of the *wording*. This friend was Dr Benjamin Hoadly, the physician, who carried on the work to about the third part, and then, through indisposition, declined with regret the friendly office. The kind office of finishing the work, and superintending the publication, was assumed by Dr Morell, who superintended the remainder of the book. The preface was in like manner corrected by the Reverend Mr Townley. The family of Hogarth rejoiced when the last sheet of the Analysis was printed off, as the frequent disputes he had with his coadjutors, in the progress of the work, did not much harmonize his disposition. This work was translated into German by Mr Mylius, under the author's inspection; and the translation was printed in London. A new and correct edition was in 1754 proposed for publication at Berlin by Vok, with an explanation of Mr Hogarth's satirical prints, translated from the French; and an Italian translation was published at Leghorn in the year 1761.

This work may be considered as in many respects remarkable, emanating as it did from one who was totally illiterate, and who, in all probability, had never before attempted to throw together his ideas upon any subject of importance. But although his general principle is right, considered merely as expressing a *fact*, and although the feeling or sentiment which we call beauty is generally excited in the mind by objects bounded by curve lines, yet neither Hogarth himself, nor any of those persons who assisted him in the composition of his work, ever perceived that external objects are beautiful or the reverse, not because they possess this or that form, but in proportion as they are associated with, or regarded as the natural signs and emblems of, ideas or emotions which we denominate beautiful or otherwise; that the curve, considered *per se*, is not more beautiful than the angular line; that, in applying this epithet to the former, we do so, not because it is a curve, but because it suggests to the percipient mind the idea of easy, gentle, flowing motion, or some other that is calculated to excite in it the feeling which we denominate beauty; that the sentiment of beauty is a reflected image of some pleasing emotion, softened and subdued by the awakened reminiscence; that the whole, therefore, resolves into the great law of association, by means of which one thing becomes the occasion of resuscitating another in the mind; and that external objects or external forms are not of themselves beautiful or deformed, but are so called only in proportion as they are the natural signs of, and serve to recall, emotions of a pleasing character, or the contrary. But this was a discovery reserved for other and more philosophical inquirers.

Hogarth affected to despise every kind of knowledge which he did not possess. Having established his fame with little or no obligation to literature, he either conceived it to be useless, or decried it because it lay altogether out of his reach. Till he commenced author, and was obliged to employ the friends already mentioned to correct his Analysis of Beauty, he did not seem to have discovered that even spelling was a necessary qualification in a writer. Previously to the time of which we are now speaking, one of his common topics of declamation was the uselessness of books to a man of his profession. In Beer Street, amongst other volumes consigned by him to the pastry-cook, we find Turnbull on Ancient Painting; a treatise which Hogarth should have been able to understand before he ventured to condemn it.

About 1757, his brother-in-law, Mr Thornhill, resigned the place of king's serjeant-painter in his favour.

The last remarkable circumstance of his life was his contest with Churchill. It is said that both met at Westminster Hall; Hogarth to take by his eye a ridiculous likeness of the poet, and Churchill to furnish a description of the painter. But Hogarth's print of the poet was not much esteemed, and the poet's letter to him was but little admired. When genius is forced to minister to the gratification of the baser passions, its efforts are seldom successful.

It may be truly observed of Hogarth, that all his powers of delighting were limited to his pencil. Having rarely been admitted into polite circles, none of his sharp corners had been rubbed off, and he continued to the last a rough, uncultivated man. The slightest contradiction transported him into rage. To some confidence in himself he was certainly entitled, for, as a comic painter, he could have claimed no honour that would not most readily have been allowed him; but he was at once unprincipled and variable in his political conduct and private attachments. He is also said to have beheld the rising eminence and popularity of Sir Joshua Reynolds with envy, and he frequently spoke with asperity both of the painter and his performances. Justice, however, obliges us to add, that he was liberal and hospitable; and that, in spite of the emoluments which his works had procured to him, he left but an inconsiderable fortune.

Of Hogarth's lesser plates many were destroyed. When he wanted, on a sudden, a piece of copper, he would take any from which he had already worked off such a number of impressions as he supposed he would sell. He then sent it to be effaced, beaten out, or otherwise altered to his present purpose. The plates which remained in his possession were secured to his widow by his will, dated the 12th of August 1764, chargeable with an annuity of eighty pounds to his sister. He died in the month of October of that year.

The character of Hogarth as an artist is delineated by Mr Gilpin in his *Essay on Prints.* "The works of this master," says Mr Gilpin, "abound in true humour, and satire which is generally well directed; they are admirable moral lessons, and a fund of entertainment suited to every taste; a circumstance which shows them to be just copies of nature. We may consider them too as valuable repositories of the manners, customs, and dresses of his age.

"In design Hogarth was seldom at a loss. His invention was fertile, and his judgment accurate. An improper accident is rarely introduced, a proper one rarely omitted. No one could tell a story better, or make it, in all its circumstances, more intelligible. His genius, however, it must be owned, was suited only to low or familiar subjects; it never soared above common life; to subjects naturally sublime, or which from antiquity or other accidents borrowed dignity, he could not rise. In composition we see little in him to admire. In many of his prints the deficiency is so great as plainly to imply a want of all principle, which makes us ready to believe, that when we do meet with a beautiful group, it is the effect of chance. In one of his minor works, the Idle Prentice, we seldom see a crowd more beautifully managed than in the last print. If the sheriff-officers had not been placed in a line, and had been brought a little lower in the picture, so as to have formed a pyramid with the cart, the composition had been unexceptionable; and yet the first print of this work is such a striking instance of disagreeable composition, that it is amazing how an artist who had any idea of beautiful forms could suffer so unmasterly a performance to leave his hands. Of the distribution of light Hogarth had as little knowledge as of composition. In some of his pieces we see a good effect, as in the Execution just mentioned; in which, if the figures at the right and left corners had been kept down a little, the light would have been beautifully distributed on the fore-ground, and a fine secondary light spread over part of the crowd. But at the same time there is so obvious a deficiency in point of effect in most of his prints, that it is very evident he had no principles. Neither was Hogarth a master in drawing. Of the muscles and anatomy of the head and hands he had perfect knowledge, but his trunks are often badly moulded, and his limbs ill set on; yet his figures, upon the whole, are inspired with so much life and meaning, that the eye is kept in good humour in spite of its inclination to find fault. The author of the Analysis of Beauty, it might be supposed, would have given us more instances of grace than we find in the works of Hogarth; which shows strongly that theory and practice are not always united. Many opportunities his subjects naturally afford of introducing graceful attitudes, and yet we have very few examples of them. With instances of picturesque grace his works abound. Of this expression, in which the force of his genius lay, we cannot speak in terms too high. In every mode of it he was truly excellent. The passions he thoroughly understood, and all the effects which they produce in every part of the human frame. He had the happy art also of conveying his ideas with the same precision with which he conceived them. He was excellent too in expressing any humorous oddity which we often see stamped upon the human face. All his heads are cast in the very mould of nature. Hence that endless variety which is displayed throughout his works; and hence it is that the difference arises between *his* heads and the affected caricatures of those masters who have sometimes amused themselves with patching together an assemblage of features from their own ideas. Such are Spaniolet's, which, though admirably executed, appear plainly to have no archetypes in nature. Hogarth's, on the other hand, are collections of natural curiosities. The Oxford Heads, the Physicians' Arms, and some of his other pieces, are expressly of this humorous kind. They are truly comic, though ill-natured effusions of mirth; more entertaining than Spaniolet's, as they are pure nature, but less innocent, as they contain ill-directed ridicule. But the species of expression in which this master perhaps most excels, is that happy art of catching those peculiarities of art and gesture which the ridiculous part of every profession contract, and which for that reason become characteristic of the whole. His counsellors, his undertakers, his lawyers, his usurers, are all conspicuous at sight. In a word, almost every profession may see in his works that particular species of affectation which they should most endeavour to avoid. The execution of this master is well suited to his subjects and manner of treating them. He etches with great spirit, and never gives one unnecessary stroke."

In Mr Ireland's *Hogarth Illustrated*, there is an account of all his prints; but the best and fullest description of them is to be found in Mr Nichols's *Memoirs of his Life and Works*, in which there are copies of all his prints, accurately reduced.

HOGGRY, a river of Hindustan, which has its rise in the Mysore territory, near the fortress of Seva, whence it flows in a northerly direction, and joins the Krishna or Kistnah.

HOGSHEAD, in *Commerce*, a measure of capacity containing sixty-three gallons, equal to sixteen gallons in Scotland.

HOGYESK, a market-town of the circle of Toln, in the province of the Farther Danube, in the kingdom of Hungary. Near to it is the castle, with a fine park of Count Apony. It contains 3100 inhabitants, employed in the cultivation of tobacco and wine.

HOHENELBE, a town of the circle of Bidschow, in the Austrian kingdom of Bohemia. It is situated in a mountainous district, on the river Elbe, near the frontier of Saxony. It contains two churches, 357 houses, and 3307 inhabitants, who carry on a flourishing trade in manufacturing muslins, linen goods, and writing paper.

HOHENGEROLDSECK, a small territory denominated a grafschaft or county, belonging to the empire of Austria. It is the only part of the dominion detached from the rest, and is surrounded by the territory of the Prince of Baden. It extends over fifty square miles, and contains about 5000 inhabitants. It is composed chiefly of hills, which form part of the Black Forest, the highest of which, called the Schimburg, has an extensive prospect over the Rhine. There are in it some mines of lead and silver. The soil is fruitful in corn, and the valleys afford good pasturage.

HOHENSTEIN, a city of the kingdom of Saxony, in the circle of Freyburg, formerly the capital of the mediatized principality of the same name. It stands on the side of a remarkable mountain, in which are veins of gold, silver, and arsenic. It contains 450 houses, and 3400 inhabitants, some employed in the mines, but more in spinning and weaving cotton goods.

HOHENZOLLERN-HECHINGEN, a sovereign principality in the ancient division of Suabia, in Germany. It is surrounded by the kingdom of Wurtemberg, except towards the south, where it is bounded by the principality of Hohenzollern-Sigmaringen. It extends over 120 square miles, and comprehends one town and fourteen parishes, with 14,900 inhabitants. It is generally a hilly country, some of the most lofty points being 2600 feet above the sea. It is moderately fertile, but a part is covered with woods. It is watered by only small brooks, some of which run to the Danube, and others to the Neckar. The revenue amounts to about L.12,000 annually, and the debt is heavy, which the prince is lessening by contracting the expenditure. The chief products of the land are wood, potatoes, flax, hemp, and more especially gentian. The people find some employment in making wooden toys and articles of household furniture. The military contingent to the German confederation is 145 men.

HOHENZOLLERN-SIGMARINGEN, a sovereign principality in the south of Germany. Except on the north side, where it is bounded by Hohenzollern-Hechingen, it is surrounded by the kingdom of Wurtemberg and the duchy of Baden. It is 400 square miles in extent, and contains four cities, seven market-towns, and seventy villages and hamlets, formed into forty parishes. It contains 7100 houses, and 38,000 inhabitants. The land is mountainous and woody, and the soil mixed with many stones; but the valleys afford good pasture and dairy land, especially on the banks of the rivers. The Danube, here a small stream, receives the waters of all the brooks and rivulets, excepting two, which run to the Neckar. The produce of corn, aided by potatoes, is greater than the consumption; but the excess consists more of winter barley than of wheat. Some portions of the land yield excellent flax. The chief articles to be exchanged for foreign articles are wood, corn, flax, yarn, potashes, and some glass and iron goods. The latter are fabricated from some mines of that metal within the territory. Excepting a few Jews, the inhabitants are all Catholics; and in no part of Germany is education in so backward a state. The revenues of the principality amount to about L.30,000 annually, one third of which arises from the patrimonial estates of the sovereign. There are no military except a small body guard. The contingent to be furnished to the German confederation is 370 men. The capital is Sigmaringen, a fortified town, with 1340 inhabitants.

HOHNSTEIN, a small province of the kingdom of Hanover, formerly belonging to the Counts of Stolberg; but being sequestrated, it was, in 1777, transferred to Hanover, which assumed the debts upon it, amounting to about L.30,000 sterling. It lies between the Prussian province of Saxony and the duchy of Brunswick. It extends over 132 square miles, comprehends two towns, twenty-one villages, and 1220 houses, with 7360 inhabitants. A great part of the province consists of mountain and wood. Its agriculture is insignificant, but it contains mines of copper, iron, cobalt, manganese, and coal, though but slightly worked. The chief town is Ilefeld.

HOIST, in sea-language, denotes the perpendicular height of a flag or ensign, as opposed to the fly, which signifies its breadth from the staff to the outer edge.

HOISTING signifies the operation of drawing up any body by the assistance of one or more tackles. Hoisting is never applied to the act of pulling up any body by the help of a single block, except in extending the sails by drawing them upwards along the masts or stays, to which it is invariably applied.

HOKE-DAY, *Hock-Day*, or *Hock-Tuesday*, in our ancient customs, the second Tuesday after Easter week; a solemn festival celebrated for many ages in England, in memory of the great slaughter of the Danes in the time of King Ethelred, when they were almost all destroyed in one day in different parts of the kingdom, and principally by women. This is still observed in some counties; and the women bear the principal part in the observance, stopping all passengers with ropes and chains, and exacting some small matter from them to make merry withal. This day was very remarkable in former times, inasmuch as to be, like Michaelmas, a general term or time of account. We find leases without date reserving so much rent payable *ad duos anni terminos, silicet, ad le* hoke-day, *et ad festum sancti Michaelis*. In the account of Magdalen College, Oxford, there is yearly an allowance *pro mulieribus hoc-*

hantibus of some manors in Hampshire, where the men hock the women on Mondays, and the women hock the men on Tuesdays. The meaning of this is, that on that day the women in merriment stopped the way with ropes, and pulled passengers to them, desiring something to be laid out for pious uses.

Hoke-*Day Money*, or *Hoke-Tuesday Money*, a tribute anciently paid to the landlord for giving his tenants and bondsmen leave to celebrate hock-day, or hoke-day, in memory of the explusion of the Danes.

HOLBEACH, a town of the county of Lincoln, in the hundred of Elloe, in the parish of Holland, 106 miles from London. It is situated in a marshy district, surrounded with excellent fen pasture. It is a place of great antiquity, but not well built. There is a market, which is held on Thursday. The inhabitants amounted in 1801 to 2683, in 1811 to 2962, in 1821 to 3621, and in 1831 to 3890.

HOLBEIN, Hans, a celebrated painter, born at Basil in Switzerland in 1498. He learned the rudiments of his art under his father, who was a painter; but soon showed superior genius. In the town-house of Basil he painted Christ's Passion, and in the fish-market of the same city Death's Dance, and a Dance of Peasants, which were extremely admired, and with which Erasmus was so pleased that he desired the artist to draw his picture, and was ever afterwards his friend. He staid some years longer at Basil, till his necessities, occasioned by his own extravagance and an increasing family, induced him to comply with the persuasions of Erasmus, and repair to England. In his journey he staid some days at Strasburg, where it is said he applied for work to a great painter, who took him in, and ordered him to give a specimen of his skill. Holbein then finished a piece with great care, and painted a fly on the most eminent part of it; after which he privately withdrew in the absence of his master, and pursued his journey, without saying any thing to any body. When the painter returned home, he was astonished at the beauty and elegance of the drawing; and especially at the fly, which he at first took for a real one, and endeavoured to remove with his hand. He now sent all over the city in quest of his journeyman; and after many inquiries, discovered that he had been thus deceived by Holbein. The painter having in a manner begged his way to England, presented a letter of recommendation from Erasmus to Sir Thomas More, and also showed him Erasmus's picture. Sir Thomas, then lord chancellor, received him with all imaginable kindness, and kept him in his house between two and three years, during which time he painted Sir Thomas's own picture, and those of many of his relations and friends. Holbein one day happening to mention a nobleman who had some years before invited him to England, Sir Thomas was very solicitous to know who it was. Holbein said that he had forgotten his title, but remembered his face so well that he believed he could draw his likeness, and this he did so perfectly, that the nobleman is said to have been immediately recognised by it. The chancellor having now adorned his apartments with the productions of this great painter, resolved to introduce him to Henry VIII. For this purpose he invited the king to an entertainment; and, before he arrived, placed all Holbein's pieces in the great hall, where they were disposed in the best order, and in the best light. The king, on his first entrance into this room, was so charmed with the sight, that he asked whether the artist was still alive, and to be had for money? Upon this, Sir Thomas presented Holbein to his majesty, who immediately took him into his service, and brought him into notice among the nobility and gentry, for whom he painted a great number of portraits. But whilst he was thus occupied, there happened an incident which might have proved fatal to him, had he not been protected by the king. On the report of this painter's character, a lord of the first quality came to see him when he was drawing a figure after the life. Holbein sent to desire his lordship to defer the honour of his visit till another day; but the nobleman taking this as an affront, broke open the door, and pushed rudely up stairs. Holbein hearing a noise, came out of his chamber, met the lord at his door, and falling into a violent passion, pushed him backwards from the top of the stairs to the bottom. But immediately reflecting on what he had done, he escaped from the tumult he had raised, and made the best of his way to the king's presence. The nobleman, much hurt, though probably not so severely as he pretended, was there soon after him; and upon stating his grievance, the king ordered Holbein to ask his pardon. But this only increased the irritation of the nobleman, who declared that he would not be satisfied with less than the painter's life. Upon this the king sternly replied, "My lord, you have not now to do with Holbein, but with me: whatever punishment you may contrive by way of revenge against him, shall certainly be inflicted on yourself. Remember, pray, my lord, that I can whenever I please make seven lords of seven ploughmen, but I cannot make one Holbein of even seven lords." Holbein died of the plague at his lodgings at Whitehall in 1554. "It is amazing," says De Piles, "that a man born in Switzerland, and who had never been in Italy, should have so good a *gusto*, and so fine a genius for painting." We, however, see nothing at all amazing in this. Nature has not, as far as we know, given to Italy an exclusive monopoly of the genius for art, though the treasures contained in the galleries and cabinets of that glorious country are, no doubt, eminently calculated to facilitate its cultivation and advancement; nor is there any reason why a great artist, with a soul alive to the finest perceptions of grace and beauty, should not be born in Switzerland, or in Sweden, as well as in Italy or in Greece. The production of genius is not circumscribed by geographical boundaries; and though several countries may afford better opportunities than others for forming the taste and purifying the perceptions of an artist, none is altogether destitute of the native element, and in some it may be generated in such inherent vigour as, in a great measure, to dispense with the ordinary advantages of instruction. Holbein painted alike in every manner; in fresco, in water-colours, in oil, and in miniature. His genius was sufficiently shown in the historical style, by two celebrated compositions which he painted in the hall of the Steelyard Company. He was also eminent for a rich vein of invention, which he showed in a multitude of designs drawn for engravers, statuaries, jewellers, and other artisans; and he had this singularity, that he painted with his left hand.

HOLD, the interior cavity of a ship, or all that part of her inside which is comprehended between the floor and the lower deck throughout her whole length. This capacious apartment usually contains the ballast, provisions, and stores of a ship of war, and the principal part of the cargo in a merchantman.

HOLDER, William, an English divine, was born in Nottinghamshire, educated in Pembroke Hall, Cambridge, and appointed rector of Blechingdon of Oxford in 1642. In 1660 he received the degree of doctor in divinity, and afterwards became canon of Ely, fellow of the Royal Society, canon of St Paul's, sub-dean of the chapel royal, and sub-almoner to his majesty. Dr Holder was an accomplished scholar, and distinguished himself by teaching a young gentleman of rank who was born deaf and dumb, to speak. This gentleman's name was Alexander Popham, son of Colonel Edward Popham, who was for some time an admiral in the service of the Long Parliament. The cure was performed by him at Blechingdon in 1659; but Popham losing what he had been taught by Holder after he returned home to his friends, was sent to Dr Wallis, under

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whom he recovered the use of speech. Holder published a book entitled the Elements of Speech, being an inquiry into the natural production of letters, with an appendix concerning persons who are deaf and dumb, 1669, 8vo. In the appendix he relates how soon, and by what methods, he brought Popham to speak. In 1678, he published a Supplement to the Philosophical Transactions of July 1670, with some reflections on Dr Wallis's letter there inserted, in 4to. This was written to vindicate the merit of having taught Popham to speak, which Wallis in the letter referred to had claimed to himself; but Dr Wallis soon afterwards published a Defence of the Royal Society, and the Philosophical Transactions, particularly those of July 1670, in answer to the Cavils of Dr William Holder, 1678, in 4to. Holder was skilled in the theory and practice of music, and wrote a treatise on the Natural Grounds and Principles of Harmony, 1694, 8vo. He also wrote a Discourse concerning Time, with application of the natural day, lunar month, and solar year, &c. 1694, in 8vo. He died at Amen Corner in London, on the 24th of January 1696, and was buried in St Paul's.

HOLDSWORTH, Edward, a polite and elegant scholar, was born about the year 1688, and educated at Winchester school. He was thence elected demy of Magdalen College, Oxford, in July 1705; took the degree of master of arts in April 1711; and then became a college-tutor, and had many pupils. In 1715, when about to be chosen to a fellowship, he resigned his demyship and left the college, because he felt unwilling to take the oath of allegiance to the new government. The remainder of his life was spent in travelling as tutor with young noblemen and gentlemen, in which capacity he visited Rome in 1741 and 1744. He died of a fever at Lord Digby's house at Coleshill in Warwickshire, on the 30th of December 1747. He was the author of the *Muscipula*, a poem, esteemed a masterpiece of its kind, and of which there is a good English translation by Dr John Hoadly, in Dodsley's Miscellanies (vol. v.). He was also the author of a dissertation entitled Pharsalia and Philippi, or the two Philippi in Virgil's Georgics attempted to be explained and reconciled to History, 1741, in 4to; and of Remarks and Dissertations on Virgil; besides some other classical observations, published with several notes and additional remarks by Mr Spence, 1768, in 4to. Mr Spence speaks of him in his *Polymetis*, as one who more thoroughly understood Virgil than any person he ever knew.

HOLDSWORTHY, a town of the county of Devon, in the hundred of Black-Torrington, 214 miles from London. It is in a pleasant situation between two branches of the river Tamar, which unite and run to Plymouth. There is a small market, which is held on Saturday. The inhabitants amounted in 1801 to 1045, in 1811 to 1206, in 1821 to 1440, and in 1831 to 1628.

HOLESCHAU, a city of the circle of Hradesch, in the Austrian province of Moravia, on the river Nussawa. It contains 305 houses and 3733 inhabitants, of whom one third are Jews. It has considerable manufactures of woollens, and much internal trade.

HOLINESS, or Sanctity, a quality which constitutes or denominates a person or thing *holy*, that is, pure, or exempt from sin. The word is also used in respect of persons and things that are sacred, or, in other words, set apart to the service of God, and the uses of religion.

Holiness is also a title of quality attributed to the pope, as that of *majesty* is to kings. Even kings, when writing to the pope, address him under the venerable appellation of Your Holiness, or Holy Father; in Latin, *Sanctissime* or *Beatissime Pater*. Anciently the same title was given to all bishops. The Greek emperors also were addressed under the title of Holiness, on account of their being anointed with holy oil at their coronation. Du Cange adds, that some of the kings of England have had the same attribute; and that the orientals have frequently refused it to the pope.

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HOLINSHED, Raphael, one of that humble but useful class of historians called chroniclers, was descended of a family which lived at Bosely in Cheshire; but neither the time nor place of his birth is known, nor indeed any other circumstance of his life. According to Bishop Tanner, he was educated at Cambridge, and became master of arts in the year 1544. But the nature and extent of his education, as well as his profession, are involved in uncertainty. It seems probable, however, that he was steward to Thomas Burdett, of Bomcote in Warwickshire, where he died about the year 1580. He has given his name to a compilation of Chronicles of English History from the earliest times, the first edition of which was published at London in 1577, in two volumes folio; and the second edition, in three volumes, was printed about seven years after his death, being brought down to 1586. This work, according to the testimony of Holinshed himself, was begun by the advice of Reginald Wolfe, printer to Queen Elizabeth. Part of it was compiled by himself, but he received considerable assistance from William Harrison, John Hooker, Abraham Fleming, Francis Thynne, and some others. After the death of Holinshed, it was continued by John Stowe. Some parts of the first edition were altered in the second and third, because they gave offence to Queen Elizabeth and the ministry, who laid many restrictions on the liberty of the press; but the castrated sheets were reprinted apart in 1723. The first volume of the Chronicles opens with an Historical Description of the Island of Britain by William Harrison; and this is followed by the History of England, from the time when it was first inhabited until that when it was last conquered, by Holinshed himself. The second volume contains the Description, Conquest, Inhabitation, and troublesome Estate of Ireland, by Richard Stanihurst; the conquest of Ireland, translated from the Latin of Giraldus Cambrensis by John Hooker, or Vowell; the Chronicles of Ireland, beginning where Giraldus ended, by Holinshed; the Description of Scotland, translated from the Latin of Hector Boethius, by Holinshed and Harrison; and the History of Scotland, containing the beginning, increase, proceedings, continuance, acts and government of the Scottish nation, from the original thereof unto the year 1571, compiled by Holinshed, and continued from 1571 to 1586 by Francis Boteville and others. The third volume commences with Duke William the Norman, commonly called the Conqueror, "and descends by degrees of yeeres to all the kings and queenes of England." As already mentioned, the time of Holinshed's death, like the date of his birth, is unknown; but from his will, which Hearne has prefixed to his edition of Camden's *Annals*, it would appear that it must have happened between 1578 and 1582.

HOLLAND, Dr Philemon, a noted translator, was descended of an ancient family in Lancashire, and educated in the university of Cambridge. He was for many years a schoolmaster at Coventry, where he also practised physic. He translated into English, Livy, Pliny's *Natural History*, Plutarch's *Morals*, Suetonius, Ammianus Marcellinus, Xenophon's *Cyropædia*, and Camden's *Britannia*; and into Latin the geographical part of Speed's *Theatre of Great Britain*, and the French Pharmacopœia of Brice Bauderon. But the *Britannia*, to which he made many useful additions, was the most valuable of his works. It is surprising that a man of two professions could find time to translate so much; but it appears, from the date of the *Cyropædia*, that he continued to translate till he was eighty years of age. He died on the 9th of February 1636, at the advanced age of eighty-five.

HOLLAND.

HOLLAND is an European kingdom, formed in part of islands, but chiefly of that part of the Continent where the mouths of the Rhine are divided into several branches before it enters the German Ocean. This district is said to have owed the ancient name of Batavia, by which it was known to the Romans, to one Bato; but at what period he flourished is unknown; and the name is now scarcely used excepting amongst the poets of the district. By accounts collected from the works of Cæsar and Tacitus, we learn that the ancient tribes who inhabited this portion of Europe had been able to maintain their independence in spite of the attempts made to subdue them by the Teutones, the Cimbri, and other nations, who had conquered the rest of what was then called Gaul. The Batavians, says the last of these historians, excelled all the other people on the Rhine in military spirit. When subdued by the Romans they paid their tribute in soldiers; and from them was formed a cavalry, which composed the most efficient part of the Roman armies. They astonished the Dacians by the dexterity and bravery with which, completely armed, they swam their horses across the Danube to attack those people; and for a long period they formed the guard of the Roman emperors. A body of Batavians accompanied Agricola on his expedition into Britain, and were of great assistance in securing his conquests in the island.

Although the Romans at length overcame the Batavians, it was after a strenuous resistance. The last that submitted was the tribe of the Frisons, who inhabited the marshes. Drusus, the Roman commander, constructed a canal between the Rhine and the Zuyder Zee. and thus opened a way into the German Ocean to the Ems and the Weser, by which he was enabled to penetrate into the heart of Germany, and to subdue that country. During four centuries the Batavians formed part of the Roman legions; but amongst these, after the reign of the Emperor Honorius, their name is no longer to be found.

After that period the islands were overrun by the Franks; and the transactions relating to them have been mixed up with those of the adjoining Belgians. The Frieslanders, however, opposed and broke through the armies of the Franks, and made their appearance as a free, and in some measure a victorious people, on the left bank of the Rhine; and there, adhering to their ancient customs, upon which had been engrafted many of the principles introduced by the Romans, they long maintained their independence. These people had suffered the least from the invasion of foreigners, and retained through several centuries distinct traces of their ancient constitution, their national spirit, and their national manners.

In the fifth and sixth centuries the kingdom of the Franks, which had arisen out of the ruins of the Roman power, gradually extended itself, and in the seventh had subdued the last of the Batavian people, the long resisting Frisons. Under Charles Martel the last conquest was achieved, and a way opened by his sword for the introduction of the Christian religion.

When Charlemagne had obtained his extensive dominion, and the feudal system was introduced, and continued under his successors, the powerful vassals of the crown, to whom the lands were granted, by degrees acquired a sort of mitigated sovereignty; but being unable to maintain themselves without the assistance of their under feudatories, they were compelled, in order to secure their fidelity, to grant them advantageous conditions of tenure. The clergy, too, by pious usurpations or pious donations, became a powerful and independent corporate body. Thus, during the tenth, eleventh, twelfth, and thirteenth centuries, the whole of Belgium and of Batavia was split into several small dominions, the princes of which acknowledged a limited allegiance, some of them to the German empire, and others to the kings of the Franks. During this period Brabant, and afterwards Luxembourg, Limburg, and Gueldres, obtained the name of dukedoms; Flanders, Holland, Zealand, Hennegau, Artois, Namur, and Zutphen, were ranked as Graffschalftr, or countships. Utrecht was a bishopric, the prelate of which exercised civil authority also in Overyssel and Groningen. Amongst all these chiefs the Count of Flanders was the most powerful; and as, in 1383, that countship fell to the then more powerful house of Burgundy, the prince of that family, partly by intermarriages, partly by force, and partly by voluntary or purchased submission, obtained supreme authority over the whole of what became the seventeen provinces of the Netherlands.

This appears to have been the most flourishing period of these provinces. Agriculture was carried on with spirit, skill, and abundant results. Manufactures of linen, and especially of woollen goods, gave occupation to an increasing population; and foreign commerce was extensive and profitable. The commodities of India brought to the Italian cities were transmitted to Antwerp, Bruges, and some other places, where extensive depôts were established for foreign and domestic goods, and where, at the periodical fairs, the merchants of the northern kingdoms of Europe resorted, and transacted their commercial affairs.

The government of the Dukes of Burgundy was tempered by the privileges enjoyed by the cities, and by the nobility who possessed the land; and, though contests frequently arose between the sovereign and the states, they rarely came to open hostilities. When disturbances occurred, they were not of such duration, or so extensive, as to interrupt in any great degree the rapid growth of general wealth and progressive improvement.

Charles the Bold, the last of the Dukes of Burgundy, lost his life in a battle with the cantons of Switzerland in 1477. His eldest daughter Maria married Maximilian, duke of Austria, and received the Netherlands as her portion; and her grandson, born at Ghent, afterwards Charles V., emperor of Germany, thus became sovereign of those countries and of the kingdom of Spain from the moment of his birth. Before the marriage of Maria, and also under Maximilian, when he had become emperor and guardian of his son, attempts were made to lessen the influence of the states. But these were powerfully resisted by some of the cities, and especially by Bruges, in 1487, and by Sluys about the same time. Bruges was sufficiently strong to resist the encroachments; but Maximilian, in despite of its privileges, blocked up the port of Sluys for ten years, which caused the foreign ships that before crowded to that place to repair to Antwerp and Amsterdam; and these cities from that period became the two principal seats of foreign commerce.

The Netherlands, at the end of the fifteenth century, became the great school for the fine arts. These had been introduced from Italy; and the artists of the Low Countries were soon successful rivals of their masters of Florence, Bologna, and Venice, in painting, in statuary, in architecture, and in engraving. The art of printing, if not invented, was first made known at Haerlem, and was soon practised in other cities of the Netherland provinces.

At the accession of Charles V. the situation of the Netherlands became widely changed. Instead of a paternal government, the chief of which in a great measure depended on the prosperity of these provinces, they were converted into a dependent, and, though rich and populous, an insignificant part of a large empire, to the promotion of whose greatness, whether for good or for evil to themselves, they must in future be almost wholly subservient.

Between the Flemings and the Spaniards an excessive distaste was mutually felt, which soon attained to the most inveterate hatred. This originated in the difference of genius, of manners, customs, and mode of government, and was quickly increased by the regret natural to a powerful people, such as those of the Netherlands deemed themselves, at being incorporated, and thereby almost swallowed up, by another nation. Steps were early taken by Charles, under the pretence of introducing unity in his territories, that had a tendency to undermine the privileges which the Netherland states had zealously defended and long maintained. Before his accession a legal tribunal had been established at Mechlin, to which appeals might be made from all the legal tribunals of the confederate states; and as none but natives were judges, and their decisions were guided by the ancient laws, it was looked up to with confidence, and considered as a security to their constitutions. This tribunal was, however, nullified by being placed under an imperial court, established at Brussels, several of the members of which were foreigners, and all of whom were dependent on the royal favour alone. This imperial court was naturally viewed with a jealous eye, and was ill adapted for the protection of those rights to which the people were attached.

The growing expenses of the hostile operations of Charles in other parts of his extended dominions, made his demands on his Netherland subjects much heavier. In spite of their ancient right of levying taxes, he imposed some that were new, and increased others. The history of this reign contains constant repetitions of subsidies required, which were at first rejected or deferred, but at length yielded, though with reluctance and discontent.

Another subject of murmuring was the introduction of foreign troops, that is, forces belonging to the other dominions of the emperor, as well as recruiting his armies in the Netherlands without the consent of the states; circumstances which, besides being contrary to the constitution, involved them in wars to which they were indifferent or repugnant, and which were injurious to their interest as a commercial people.

Charles felt that the commerce of his subjects could alone enable him to extract from them those pecuniary supplies which his general government needed; and so far he protected their manufactures and mercantile affairs, and in some cases even recalled edicts, at the requisition of his Flemish subjects, which he would have without hesitation enforced at Madrid. The most influential of all the causes which arose in the reign of Charles V. was the religious reformation which had commenced in Germany, had spread in France, and from both these countries had been introduced into the Netherlands, chiefly in the trading cities, and in them had gained numerous adherents. The full effect of this, and of the other causes which have been here noticed, did not appear until the abdication of the emperor had elevated his son Philip II. to the extensive dominions of his father.

The religious excitement gave some uneasiness to Charles, and measures were feebly applied to check the progress of the new opinions, to which, when not actuated by political views, he at one time seemed not to be strenuously inimical. Had the emperor been disposed to severity towards the professors of the Protestant tenets, any measure of that nature would have affected the interests of commerce, and have tended to diminish the revenues he drew from that source. The foreign merchants who had establishments, or frequented the fairs, in the Netherlands, brought with them from Germany, England, France, and other countries, the doctrines and the writings of the Protestants. These were diffused amongst the natives, and made a great impression; and any attempts to destroy their intercourse, or to punish them for their opinions, would have driven commerce, as it did a few years later under Philip II., to the other markets of Europe, where greater religious freedom was enjoyed.

Towards the close of his reign, Charles issued indeed some most severe laws against those who professed the new religion. These were in some cases applied with unfeeling cruelty, though they tended but little to diminish the progress of the dissident principles. He had resolved, after the successful issue of his wars in Germany, to reduce his Netherland subjects to uniform obedience to the Roman Catholic religion, and for that purpose he designed to have introduced the Inquisition. The fear alone of that dreaded tribunal in Antwerp suspended immediately all commerce, and the most eminent foreigners made instant preparations to remove. There were neither buyers nor sellers to be seen, the value of the buildings was destroyed, and all the operative labourers were discharged. Money totally disappeared, and no taxes could be collected. At the earnest recommendation of the Duchess of Parma, as vice-regent, this edict was suspended. The common tribunals were directed to practise no molestation on the foreign merchants; and, instead of the Inquisition, a milder court, at least in name, was framed, and called the ecclesiastical tribunal. In the other provinces, however, much severity was beginning to be practised, not long before the abdication of Charles; but, severe as these were, the remembrance of them was speedily obliterated by the more savage cruelties practised under the reign of his son.

The reign of Charles was, upon the whole, beneficial to the United Netherland Provinces, and he left that division of his dominions in a most flourishing condition; so that for its extent it was by far the most considerable state in Europe. Their taxes were by no means heavy, though their trade was most extensive; and the mechanical genius and persevering industry of the inhabitants had rendered the Low Countries the workshop of Europe. When the emperor, at his solemn abdication, delivered over these provinces to the rule of his son, they are reported to have contained three hundred and fifty cities, and six thousand three hundred towns and large villages, besides numerous hamlets, farm-houses, and castles. These comprehended the four dukedoms of Brabant, Limburg, Luxembourg, and Guelderland; the seven countships of Artois, Hennegau, Flanders, Namur, Zutphen, Holland, and Zealand; the margravate of Antwerp; and the baronies of Friesland, Mechlin, Utrecht, Overyssel, and Groningen. Statistical researches were not much practised at that period, and no accurate views can be obtained of the extent of the population; but there is good reason to conclude, that, though at present the Netherlands are the most densely peopled of any part of Europe, the numbers then were more than equal to what they are now. The seven provinces which afterwards formed the republic were probably less populous; but the other divisions, where manufactures were more generally carried on, were, from all accounts, proportionally more crowded. Philip II. ascended the throne on the abdication of his father in October 1555. He had been educated in Spain, and had imbibed the retired and stately manners of that country. He spoke no other language but Spanish, and, except the short time he had passed in England after his marriage with Queen Mary, he had scarcely ever left the peninsula. He was most zealously attached to the Roman Catholic religion, and not less so to the unrestricted exercise of arbitrary power. He was distrustful of those who administered public affairs, was nearly invisible to his subjects, and the few who had access to his presence were commonly disgusted both with his manners and with the punctilious formalities with which their introduction was attended. He was deemed insensible to human sufferings, and was equivocating, if not insincere, in the replies he made to the petitions of his subjects.

He remained in the Netherlands from his accession in 1555 till August 1559, when he embarked for Spain, and never afterwards returned. The measures he introduced during his stay, his repulsive manners, and the humours he displayed at his departure, all tended to strengthen that aversion, mingled with suspicion, which had begun to manifest itself during the reign of his imperial predecessor.

The most obnoxious measures to the people were, first, a design to abolish several of the monastic establishments, in order that their estates might be converted into revenues for new bishoprics, the incumbents of which were to be the instruments of introducing the Inquisition into the provinces. That institution was held in such abhorrence, that it encountered every obstruction which could be opposed to it, both by the Catholics and the Protestants. It had met also, at the court of Rome, some obstacles which caused delay, so that the arrangement was not completed when the king departed for Spain. The second cause of complaint was the retention of foreign forces within the states. When the king came to the throne, a war was carried on with France; but the French having been signally defeated at the battle of St Quentin in 1557, a peace was, after long negotiations, completed at Chateau-Cambresis. The withdrawing of the troops, consisting both of the Spanish infantry and of some German auxiliaries, was eagerly looked for by all the inhabitants. The latter were disbanded and sent home, but the former were retained, and proved dreadfully oppressive to the country. Vander Vynckt, the faithful historian of Flanders, says, "the Spaniards were so elevated with their late successes against the French, that they thought the ransom or the pillage of the whole of the Netherlands would be an insufficient recompense for the actions they had performed. They lived at free quarters on the country, and trampled upon the people without pity." In fact, receiving little or no pay, or that pay being much in arrears, they were of necessity instigated to all kinds of disorders, and led to practise the most abominable oppressions. The remonstrances of the states were coldly received, and though assurances were given that the grievance should be removed, and the period for it was fixed, it was delayed from time to time, and ultimately consented to in appearance only, as they remained on the frontiers, ready to re-enter when the ulterior measures which were in preparation should require their assistance. As one means of delaying the departure of these troops, two legions were proposed to be placed under the command of the Prince of Orange and Count Egmont, two of the most patriotic and popular of the nobility. But their integrity resisted the temptation; they declined the command, and this rendered the continuance of the troops the more obnoxious.

A third cause of complaint was, a violation of the ancient constitution of the states, by introducing into the higher executive and judicial offices persons of foreign birth. When Philip left the Netherlands, the government was conferred on the Duchess of Parma, a natural daughter of the Emperor Charles V. She was to be assisted by a council of state, composed of the Prince of Orange, the Counts Egmont and Horn, Granvelt bishop of Arras, Count Barlaimont, and Vigilius de Quichem. But by secret orders, but which soon transpired, a committee of this council, consisting of the three last named, was empowered in most cases to communicate alone with the duchess, and in all cases to decide on the advice which was to be given to her. Thus the Prince of Orange and the two counts were mere ciphers, and rarely attended the council. Barlaimont was a mere creature of Granvelt, who attended only to the finances, of which he was chief, and was commonly absent when other affairs were under consideration; Vigilius was a man of profound scholastic learning, very politic, and very yielding; so that, in fact, the whole power was conceded to Granvelt. He was a native of France, and had distinguished himself by his learning, but more by his subservience to the rigour and the caprices of Philip. By these means, from the low condition of a parish priest, he was raised to the episcopal rank, and finally to the dignity of a cardinal. His being a foreigner was the pretext, but his arbitrary disposition and intolerant rigour the causes, of general aversion; and the firmest and most pointed representations of the assemblies of the several states were solely but unavailingly directed towards him. He alone conducted all affairs, and to him the secret orders of the king were conveyed.

The three members of the council who had been named on account of the estimation in which they were held among the natives of the Netherlands, though they were utterly inefficient as members of the board, should not be passed over without short notices of their rank and character, on account of the vast interest which has been excited by the events they directed, and the fates they experienced.

William of Nassau, prince of Orange, was one of the greatest men of his own or any other age. He had in his youth been brought up in Germany, his native country, amongst Protestants, whose creed his father had adopted. Being of an illustrious house, he was early introduced to the Emperor Charles, whose favour and confidence he obtained, and he was employed by him in some most honourable commissions and embassies. He came to the possession of the family inheritance on the death of an uncle and a cousin, consisting of extensive estates in Burgundy and the Netherlands, and thus was by far the richest of all the nobles of the country. By his wealth he was enabled to live magnificently when ambassador in France and in England, and afterwards at home when governor of the provinces of Holland and Zealand. He was as highly estimated in foreign countries as in the Netherlands, and had formed numerous alliances and friendships in England and France, and others still more considerable in Germany. He was a man of penetration, courage, and resolution, with enlarged and accurate political views. His measures were maturely considered, but when once determined upon, nothing could shake them. In the greatest adversity he was firm and tranquil, and he possessed in his mind inexhaustible resources. He was remarkable for his taciturnity, from which circumstance he was sometimes distinguished by the name of William the Silent. An Italian proverb has appropriately described him, *Tacendo parla, parlando incanta.*

Lamoral count Egmont was also a nobleman of the first rank, of a family originating in Holland, some members of which had in former times been the sovereign Dukes of Guelderland. His mother, the heiress of the house of Luxembourg-Fiennes, had brought to the family of Egmont estates in Flanders of vast extent and riches. He was adored by the inhabitants of Flanders and Artois, of which provinces he was the governor, and was generally considered as the fittest person to have filled the dignity held by the Duchess of Parma. He was generous, frank, disinterested, and open hearted. He was besides a good general, possessing intrepid courage, and had distinguished himself in the war with France. He was less adroit than the Prince of Orange, and had less of foresight, but he was as eminent in the field as the other was in the cabinet. These men were at one time rivals for power, but a common interest closely united them. Philip de Montmorenci, count Horn, was an admiral, and in his command of the naval forces had displayed the most intrepid courage, and had rendered great service to the Spanish government. He had been governor of the provinces of Zutphen and Gueldres, and by the management of Granvelt had been suspended and sent into Spain, where he is said to have acquired a thorough knowledge of the operations intended against the liberties of his country, and communicated them to the Prince of Orange. He was reported also to have then had some intercourse with Don Carlos, the heir to the throne of Spain, who himself was supposed to feel differently on the affairs of the Netherlands from his father King Philip.

With these three leaders were connected others of rank nearly equal, the whole of the inferior nobility, and a very large majority of the burghers, merchants, and manufacturers of the cities and towns; and in particular almost the whole of those people who were connected with maritime transactions, either as owners or navigators of vessels.

We return now to the causes of complaint which were made in the Netherlands. The fourth of them was, the omitting to call together the general assembly of the states. Though under the reign of the Emperor Charles the power of that body had been much curtailed, they were yet the organ of the opinions and feelings of the more respectable part of the nation. Their views and complaints were freely communicated to the government, and exercised influence on its decisions. One of the last and most decisive instructions given by Philip to the Duchess of Parma, before his departure for Spain, forbade the assembling of this body.

The chief points upon which the subjects felt aggrieved are only here noticed, though there were many others, some of a minor and some of a local nature, all which, combined with the general disgust felt towards Spain and the Spanish monarch, tended to shake the authority of the king, by indisposing the civil tribunals from following up with zeal the ordonnances which from time to time were issued by the sovereign.

These complaints had at a very early period excited secret associations amongst the nobility and gentry which were in opposition to the extension of the severe penal laws. One of these associations was formed as early as 1556, by Martiner baron of St Aldegonde in Breda, a confidential friend of the Prince of Orange. He, with ten or twelve others of equal rank, drew up a declaration, then known by the name of the *Compromise.* It contained execrations against the Inquisition, which it painted in the most horrible colours. It accused foreigners of having seduced the king to refuse the abolition of his rigid ordonnances, that they might be enabled to gratify their ambition and their avarice; and it concluded with declaring, that they were united to assist the oppressed, to resist violence, and, above all things, never to submit to the establishment of the Inquisition. When this compromise had been signed at Breda, numerous copies of it were made and circulated throughout all the provinces, from Artois to Friesland. It was signed with avidity by all classes, from the highest nobility to the lowest artisans. This association at length became so extensive and bold as to determine on an application to the regent, for which purpose the leaders requested an audience, that they might lay their complaints before her. This request, after much hesitation and with some symptoms of alarm on the part of the government, was at length granted. The nobles assembled at Brussels, attended, according to the custom of the age, by their numerous followers, and, marching to the palace in a long train in regular order, were admitted to an audience. The address was read by Brederode count of Utrecht. It contained strong professions of obedience and loyalty, and asserted that the associates were innocent of the charge of which they had been calumniated, of having entered into engagements with foreign powers. In conclusion, a convocation of the states-general was requested, and in the mean time a provisional suspension of all inquisitorial measures and proclamations, until a reply could be received from the king, who was then in Spain. An equivocal reply was given, the substance of which was merely that more temperate measures would be pursued till the orders of the king were received.

This assembling of the nobles gave to the associates a name which was assumed and long continued as a mark of distinction. During the audience at the palace, the duchess appeared somewhat alarmed at the great number of persons which composed the deputation. Count Barlaimont, one of her suite, in order to calm her disquietude, whispered, but sufficiently loud to be heard by those who were nearest, that they were nothing more than *un ramas de gueux*, a crowd of beggars. On this being reported at a convivial meeting of the nobles, one of them, as a toast, gave *vivent les gueux*, which was received with acclamation, and the name afterwards adopted; and their clothing and ornaments were so worn as to exhibit emblems like those in use amongst conventual mendicants and other beggars, one of the most distinguishing of which was a sack thrown over the shoulders, on which was frequently painted the motto of the association, *Fidèle au roi jusqu'à la besace.*

The exhibition of strength on the part of the associates led to a series of negotiations between the vice-regent and the party, which at length was terminated on the 23d of August 1566, by the duchess provisionally, till orders could be received from Spain, agreeing to suspend the introduction of the Inquisition, and in the mean time to submit her other measures to the revision of the states-general.

Even this kind of truce was only conceded in consequence of some tumultuous and outrageous assemblages, partly excited by the Protestant preachers, but of which they soon ceased to have any power of direction or control. The assemblies first collected by field preachers were composed of those who had imbibed the Protestant opinions, and were held on the frontiers of Liège, about St Trond. They were soon joined, out of curiosity, by numbers anxious to hear the new doctrines, but speedily afterwards by all the wandering tribes of outlaws, vagabonds, and plunderers; and at length they became so numerous that no resistance could be made to them in the open country, or even in the cities which were not fortified and well garrisoned. The Catholic writers of the period represent these assemblages as being composed principally of the sectarians of Germany and the Calvinists of France, joined to the Anabaptists of Leyden and other parts of Holland. It seems evident, however, that these were very early outnumbered by others whose chief objects were plunder and destruction. Their first operations were to attack and rob the monasteries in the open country; they then seized on the churches, and destroyed all the images and other appendages of the Catholic worship, carrying away with them whatever was portable and valuable. The peaceable inhabitants appeared everywhere panic-struck, and the desolating power thus let loose was opposed by no obstacles; so that at length all the cities except Brussels were more or less subject to the depredators. Ypres, Tournay, Valenciennes, and Oudenarde suffered the most. At Antwerp the Prince of Orange suspended the destruction as long as he remained there, but after his removal the insurgents gained the superiority, and were enabled to destroy the images and ornaments of the cathedral, as well as those of the other churches and monasteries, in that city. This devastation was like a hurricane, and though the storm passed over in a short space of time, its effects were frightful, and its destructive operations extensive.

The duchess, though about to leave Brussels, and seek safety in Mons, was persuaded by her council to remain in the capital, where intimidations on one side, and proposals to treat with the insurgents on the other, were urged with vehemence. To the latter she at length yielded, and authorized the Prince of Orange, with the Counts Egmont and Horn, to treat with the chiefs of the insurgents, who still continued in St Trond. This measure was so far successful for the time, that, after the provisional agreement already noticed, a treaty was concluded with the leaders at St Trond, and signed on the 25th of August. It was agreed that the preachers might continue their religious practices in the places where they actually did exercise them, that the people might attend them, but unarmed, and cause no trouble to the Catholics. The nobles were to renounce the confederation, and all were to lay down their arms, and assist in restoring and re-establishing the estates, the churches, the monasteries, and the hospitals that had been plundered, and indemnify those who had suffered.

A temporary lull was thus procured, though frequently interrupted by local explosions. All were waiting with impatience for intelligence from Madrid, whither couriers were immediately forwarded after the pacification, with despatches from the duchess to King Philip. The letters to Spain were expressed in the most melancholy strain. The duchess confessed that she had granted to the insurgents terms that were degrading to herself, and which she could not relate without shame and grief. She affirmed that she had long resisted, but, weakened by fever and sleepless nights, had at length yielded; that with anguish of mind and bodily pain, and the fear of greater evils, she had granted pardon to the rebels, and had acceded to their demands, but that she had done nothing in the name of the king, but only in her own; and that he might disavow and undo what she had done, as his majesty was no party to the acts. The despatch concluded with an earnest solicitation that his majesty would not delay his journey to the Low Countries till the spring, but come immediately to Brussels.

Philip received the despatches at Segovia, where he was confined by sickness; and though he read and remarked upon them, no answer was returned till he was enabled to remove to Madrid and assemble his council. In that council it was seen that the vice-regent had in no way committed his majesty, and the answers were dictated under that assumption. Two despatches were drawn, one of them ostensible and the other secret. They are to be found at length in Strada, and the substance of them may be thus abridged. The first or public letter announced the birth of an infanta, and that the king had removed to Madrid to make the necessary preparations for his journey to Flanders; that a convocation of the states would be no remedy for the existing evils, but an injury to the honour and the conscience of the king; and that the best measure, in case of necessity, would be to repel force by force, in which circumstances she might securely count on the aid of the well disposed people. The secret despatch was more laconic. It enjoined attention to former orders, and to the public letter, on what related to the convocation of the states-general; and if any force was exercised towards the government, to trust to God and his providence, but to do nothing that should appear, either directly or indirectly, to have proceeded from the opinion of the king.

It was the policy of the court of Spain at this period to keep every thing in the Netherlands in a state of total suspense. For this purpose rumours were spread of the king's intended journey. The time was fixed, the preparations were made, the route was determined, and the attendants were named. It was however only a kind of grimace, though, to give it more the appearance of reality, application was made to the king of France for permission to pass, and also the Duke of Savoy was consulted respecting the fittest passage over the Alps, in case the king should proceed to Italy by sea. These measures satisfied almost the whole of the inhabitants that their sovereign would speedily appear amongst them. The Prince of Orange alone was not deceived. He had emissaries of talent in Madrid, in Rome, and in Vienna, and indeed wherever important intelligence could be obtained. In 1565 Catherine de' Medicis, with her son Charles IX., had a meeting at Bayonne, to which King Philip and his queen, a daughter of Medicis, were to have repaired. The king, however, did not join them, but the queen did. It was represented as a mere family party, at which the ambassadors of other states were not expected to attend. At the meeting the females concocted a treaty between the two kings, which was to be kept secret from all but themselves. It engaged to extirpate all heresy and heretics, not only from their own dominions, but from all the other parts of Europe in which Protestantism had already been embraced. The secret was well kept, and the meeting was attributed to some projected family marriages, which Philip represented to his ministers as a matter which would be best arranged by the females. Walsingham, the ambassador at Paris of Queen Elizabeth, within little more than a year gained the particulars of the treaty, and communicated them to his court, and thence the knowledge of it was conveyed to the Prince of Orange, who maintained the most profound secrecy till the most useful moment for its being made known had arrived.

It was generally believed that the prince had the most complete knowledge of what passed in the cabinet of King Philip, though it is now unknown if, as some suspected, he had the intelligence from his son Don Carlos, or, as others imagined, from one of his secretaries. It is said, that from his perfect knowledge of the transactions and opinions of the French court, and of what had passed at Bayonne, he had predicted the massacre of Saint Bartholomew, and had informed the Admiral de Coligny of the plot, putting him on his guard against the caresses and the treachery of the court, but which, unfortunately for the illustrious victim, did not save him from the miserable fate which he at length suffered. The Prince of Orange was possessed of large estates in Germany, and, by blood as well as by marriage, was closely connected with many of the smaller sovereigns of that country, who had embraced and introduced into their dominions the doctrine and the worship of the Protestants. Even the emperor, though a firm adherent of the Roman Catholic church, was in some measure influenced by him. He was induced to write to King Philip, expressing his good will, but pointed out to him that he was engaged in a war with the Turks, that a great part of Germany interested itself in the fate of the Netherlands, and that those who had adopted the confession of Augsburg would never allow the inhabitants of these provinces to be oppressed. He therefore recommended a negotiation with Orange, Egmont, and Horn, and offered his mediation to accommodate the differences. The court of Spain rejected this interference between the king and his Flemish subjects; but the knowledge of this correspondence served to strengthen the purpose of the Prince of Orange, who soon became acquainted with it, to adopt the precautionary measures which his situation required.

The Prince of Orange having learned, by his emissaries at the court of Madrid, that the preparations for the king's journey to the Netherlands were merely adopted to quiet and mislead the public, and that, on the contrary, it had been determined to pursue the most rigid measures, and intrust them to the Duke of Alba, determined on his course of action. He immediately resigned all the offices he held in the Netherlands, and withdrew himself and his family to his territories in the duchy of Nassau in Germany.

The Duke of Alba was reputed in that age to be cruel, crafty, proud, and avaricious; and his name was held in abhorrence throughout the Netherlands. Although it was resolved that he should have the sole power, yet the purpose was concealed even from the regent herself. Philip continued to assure her that he was resolved to come as soon as possible, and that the Duke of Alba only preceded him, to smooth the way, and so arrange affairs that he might on his arrival the more easily restore tranquillity; that in the mean time the duke would command the army, and attend to the fortifications, and the security of the country, but still in subordination to the authority of her highness. The knowledge of this appointment could not be long kept secret, and its disclosure produced universal consternation. The great nobles, such as the Prince of Orange, the Counts Calembourg, de Bergh, Bredcrode, and others, had early sold parts of their estates, and raised money by mortgages on the other portions of them. All that could, prepared for their removal. The inferior nobility, the rich merchants of Antwerp, the wealthy burghers of all the cities, resolved to expatriate themselves and their families. Soon after the mission of Alba was publicly made known, the duchess wrote to the king to say, that already more than one hundred thousand persons had abandoned their domicils and their country. The Low Countries were at that period at the height of prosperity. The cities were opulent and contiguous, the towns, villages, and hamlets, resembled the cities of other countries, and almost touched each other. It was most densely peopled, and so cultivated that no waste land was to be seen. The commerce was active, and the inhabitants, from industry, were easy in their circumstances, well fed and well clothed. They were the objects of envy to strangers, and viewed with peculiar jealousy by the Spaniards, who saw their condition, and compared it with that of their own country.

The emigrations caused by the first intelligence of the approach of Alba alarmed the duchess, who issued edicts designed to tranquillise the people, and these had some effect; but they were disavowed by orders of the king, and some who had been induced to return were subsequently the victims of their confidence. Afterwards, when the severities of Alba began to be exercised, the emigrations were increased; and though orders were issued to prevent it, and intrusted to the Spanish troops to execute, they came too late. A great number of families had expatriated themselves, and taken with them whatever of their property they could save. Those who were left were chiefly artisans, who could find no employment when their masters had forsaken them, and were thus compelled to seek the means of subsistence elsewhere. A great part of such as were capable of bearing arms joined the Prince of Orange, or enlisted in the armies which the princes of Germany created. Others of them sought an asylum in the imperial cities, and there exercised their trades. Some threw themselves into the Walloon country and into Picardy, for the interior of France was then in greater commotion than even Flanders itself.

The greatest removals however were to England, where, by the orders of Elizabeth, all the ports were open to them, where their property was protected, and where they introduced new fabrics of various kinds, and established those manufactures which have become in process of time the foundation of the commerce and the wealth of our country.

The Duke of Alba, in 1567, embarked with his army at Barcelona, and landed at Genoa. After some stay at Milan, he passed the Alps by Mount Cenis, and proceeded to Franche Comté by the frontiers of Burgundy and Lorraine, and arrived in the beginning of August at Luxembourg, whence he proceeded to Brussels, and entered that city on the 22d of the same month. At his first appearance his conduct convinced the duchess that he was come to exercise supreme power, and in a short time she withdrew from the government. He conducted himself in a most caressing manner to Horn and Egmont, consulted them on military subjects, and especially in constructing fortresses at Valenciennes, Antwerp, and Groningen; but suddenly at the council arrested them, consigned them to separate prisons, seized all their papers, and obtained possession of their money, jewels, and other valuable effects.

When the duchess had quitted Flanders, Alba proceeded with his more violent measures. In January 1568 he erected a judicial tribunal, well known in the annals of the country by the Flemish name of *Bloet-Raet*, or sanguinary council. Alba was himself president, and Vargas, a Spaniard, vice-president. The other members were neither of the privy council nor of the council of Brabant, but, with the exception of two persons who never took their seats, consisted of individuals on whose concurrence Alba could securely rely.

This tribunal commenced by citing before it all the nobles and the citizens, whether absent or present, whether living or dead, who had signed the compromise, such as the Prince of Orange, the Counts of Nassau his brothers, the Counts Hooghstraete, Calembourg, and Brederode, and even the Marquis of Berghes, who was deceased. The Prince of Orange, who had decided on his part, replied in terms of defiance. He asserted that he was a member of the German empire, and as such answerable before none other than the emperor himself; and that, as one of the Spanish order of the golden fleece, he could only be judged by the king when holding a chapter of that order. The others made replies rejecting the authority of the new tribunal, and avowed their junction with the forces which the Prince of Orange was collecting.

The citations were numerous, but the most detailed account is that preserved at Ghent. One hundred and fifty persons, consisting of nobles, patricians, and burghers, were summoned on fixed days to appear at Brussels. Of that number only eighteen presented themselves, the others having emigrated or being concealed. These, conscious of their innocence, were allowed to defend themselves before the tribunal, and were then bound two and two together, and thus marched to prison. The process was not long deferred; they were condemned to death, and perished on the scaffold, some by the sword, others by the halter, according to their respective ranks. Numerous other prosecutions, which terminated in death and confiscations, were carried on towards persons in Ghent; and if the number executed in the whole of the country were in the same proportion to those in that city, it may be true which Alba is said to have boasted on his return to Spain, that more than eight thousand persons had perished on the scaffold during his government of the Netherlands.

The executions of the Counts Egmont and Horn were deferred till June, when, by a process not to be justified by any law, they were condemned to suffer death. They were brought from their confinement in the prison of Ghent, surrounded by two thousand Spanish troops, and decapitated in the Place de Sablons, at Brussels, on the 5th of June 1568. The illegality of these executions was loudly complained of, and produced a great effect over the whole of Europe. Even the emperor and the other Catholic princes loudly condemned the proceeding, whilst many of the Protestant princes were induced by it to lend their aid to the confederation which the Prince of Orange was forming to avenge his friends, and to rescue the country from the miseries it endured.

The army which Alba brought with him from Spain, with some additions on the way, amounted to 20,000 men, one half of which consisted of Spanish infantry, who were in that day considered as the best troops in Europe. They were well disciplined and well commanded, but were much disposed to mutiny, especially when, as was often the case, their pay was in arrear; and this disposition was afterwards often displayed in the most critical circumstances, to the great injury of the service in which they were employed. The desolation of the provinces, and the horrid cruelties which had been perpetrated, at length gave birth to that ruinous and obstinate civil war, which continued so long that none of those who commenced it lived to see its termination.

When the Prince of Orange retired into Germany, he had wished to have collected a force which might have harassed the army of Alba during the march from Italy to the Netherlands; but the princes of Germany were not so alarmed at the prospect of the danger which threatened them, as to assist him to such an extent as he deemed necessary for his purpose, and Alba with his army entered without molestation. The prince had time in his retirement to form his plans deliberately, to calculate on future probabilities, and to be ready to act when the moment for action should arrive. The first cruelties of Alba made a deep impression on all the Protestant princes of Germany, and this impression Orange was skilful enough to turn to his advantage. By the deaths of Horn and Egmont such indignation and resolution were excited in them, that they offered to Orange their wishes, their councils, their troops, and, what is almost incredible, their treasures. Amongst the most prominent of these was the Prince Palatine, with whom the Prince of Orange held a secret meeting at Strasburg, at which some of the leaders of the Huguenots in France were present. Even the Catholic princes were so inflamed at the treatment of Horn and Egmont, that, if they did not assist, they did nothing to impede Orange in his negotiations. The assistance thus obtained, with the aid of a pecuniary nature from Queen Elizabeth of England, and recruits from the Protestants of France, enabled Orange to take the field.

The prince was straitened for money; and his army, though numerous, was badly composed. The Germans and the French were new levies, hastily raised, eager for booty, and in general ill disciplined. Though they were not subject to his sole command, he could not safely disgust them, nor could he allow them to plunder. He knew, too, that at the end of the campaign these succours would quit him, because he was not in a situation to maintain so numerous a body. The greater part of the fugitives from Flanders were destitute, and the prince foresaw that these must soon become a charge which he would be unable to bear.

With forces of such motley composition, Orange determined on a bold and sudden attempt to enter the country on one side or the other, and to sound the tocsin over the whole of the Netherlands. On this plan he formed four bodies, to enter the country at different points. The first of them was to penetrate on the side of Liège, and to enter Gueldres. It was commanded by Count Hooghstraete, the only nobleman of distinguished rank who had been so fortunate as to escape from the fangs of the Duke of Alba. The second corps consisted of the French Huguenots, commanded by De Cocqueville, and they entered into Artois. Neither of these corps were strong, nor do they appear during the whole campaign to have effected any other object than, by skirmishing, to have distracted the attention of the enemy, and thus kept him from strengthening the more important points. The third corps was better composed and more numerous. It was commanded by Prince Louis of Nassau, brother of the Prince of Orange. It commenced the war by entering Friesland, where he was opposed by the king's army under the Count Arenburg, whose force was augmented by Spanish infantry and cavalry. When in presence of the enemy, he was forced to give battle, by the taunts of the Spaniards, who accused him, from his being a Fleming, of favouring the party of Orange. He led his troops to the combat, and fell in the attack. His army was completely defeated and dispersed, with the loss of its cannon, baggage, and a large sum of money which was destined to pay his troops, as well as others then in Groningen. The Frisian peasantry put to death the fugitive Spaniards; but the Germans and Flemings, who were mixed with them, were either liberated or joined the victorious troops.

The Duke of Alba was at Brussels when this disastrous event happened; and instantly, after venting his rage by numerous judicial assassinations, he repaired, with what troops he could collect, to Groningen, where he was joined by the garrison of that city. The troops of Prince Louis amounted to 12,000 or 14,000 men, and that of Alba was nearly of equal number; but the army of the latter was well trained and well disciplined, whereas that of the former was a mass of strangers, difficult to restrain, with little experience and less discipline, disposed to mutiny for want of their pay, and ready to desert their colours after any reverse. Prince Louis found it necessary to retreat from Winschotten, where he had gained his victory, and remove into the German province of East Friesland. He took up a position defended on one side by the river Ems, and on the other by that bay of the Zuyder Zee called the Dollart, and having at his back the city of Embden. He threw up intrenchments mounted with cannon in his front, and with better disciplined troops might have maintained himself till his brother the prince, who was advancing with a numerous force, could arrive to his relief. Alba pressed eagerly forward, and, at his approach, the troops of Nassau broke out into mutiny; and though it was partially quelled, a body of auxiliary troops who had joined it from Oldenburg, instead of waiting the attack within the lines, rushed out without orders, and threw themselves upon the Spaniards, by whom they were cut to pieces, and the opening thus made was entered by the enemy. The route became complete, and the Spaniards were amply revenged for the late disaster at Winschotten. Many of Nassau's troops were killed, more were drowned in the Ems, the cannon, colours, and baggage were captured, and the prince with a few of his followers threw themselves into the city of Embden, whence, from their knowledge of the country, they succeeded in making good their retreat.

Whilst these transactions were passing on the eastern side, the Prince of Orange had been collecting his fourth and principal army on the western side, and mustered, about Aix-la-Chapelle and Liège, a body of nearly 28,000 men, which in that age was a large army. Being much superior in number to the army under Alba, the Prince of Orange was desirous of a battle, and made all possible attempts to bring it on. But the Duke of Alba, knowing the nature of his enemy's forces, and that it was beyond his power to keep together so large a body from one season to another, acted purely on the defensive. This course he adhered to with firmness, though often urged by his officers and troops to lead them to battle. The campaign was thus passed with no other operations than occasional skirmishes or advances and retreats. The prince was compelled to dismiss the greater part of his forces, and to retire, with the few left to him, into winter quarters, when Alba did the same, and both were actively employed during the winter in the necessary preparations for the following spring.

The events which caused and accompanied the commencement of the troubles in the Netherlands have been related in a more circumstantial and detailed manner than our limits will allow to the subsequent proceedings. After the first indecisive campaign, there was a kind of suspension of hostilities, from the exhaustion of the opposing parties. Alba was employed in extorting money from the public bodies, and from individuals, to an unheard-of extent, and with intolerable severity. One demand was called the tenth denier, by which one tenth of the amount of all sales were to be paid; a tax which served to impoverish the country, to suspend all industry in trade, and which ultimately tended to exasperate the inhabitants, and throw them into the arms of the insurgent party. The Prince of Orange, on the other hand, was occupied in negotiating treaties with the German princes, who assured him of succours both of troops and treasures. He also visited France, where Admiral Coligny, the chief of the Protestant party, after promising his aid, suggested to him the idea of creating a naval force. This was instantly adopted, and a party of sailors, of those called Gueux-marins, seized upon Briel, a town on the island of Hoorn, by which they secured an asylum for the shipping, and whence they gradually extended their conquests to the other towns and cities which command the entrance to the ocean, and secure those places from naval attack. This was the first step in the formation of that naval power by which the Hollanders became ultimately enabled to secure their independence. Seamen from all parts flocked to the maritime towns as rapidly as they declared for the Prince of Orange; and in Dort, Flushing, Rotterdam, and, indeed, all the places where there were no Spanish garrisons, they joined the prince. Fleets were equipped, which seized on all the Spanish vessels they met with, even in the British Channel, and kept open a communication with the ports of England, whence, by the proceeds of the captures, they could procure stores, arms, and ammunition, to carry on their warlike operations. The growth of the naval power was so rapid, that within three months after the capture of Flushing, no less than one hundred and fifty sail of armed vessels, well manned and equipped, were despatched from that place alone. The canals and rivers which intersect the country were filled with barges and gun-boats, which landed at the Spanish posts, and carried away arms and other effects from the very gates of Ghent and Bruges.

Alba, who was busied in extorting the tenth penny, looked with contempt on the seizure of Briel; but soon awoke to the consequences, and began to draw together his troops to punish the Gueux-marins. His attention was, however, too powerfully drawn to another quarter, and they were left without molestation. The Prince of Orange, the moment he knew himself secure of the naval asylum, began his land operations. At the head of 20,000 men he entered Gueldres, seized Ruremond, Tongres, St Trond, and Tirlemont, and entered Louvain by treaty, where he rested. His brother Louis, aided by 7000 French Protestants, chiefly cavalry, entered Hainault, and surprised the important city of Mons. Another corps under Count de Bergh entered the province of Overyssel, and seized Zutphen, Gorcum, and some smaller places. Alba was alarmed at these events, but more at the apprehension that it was not merely the French Protestants, but the French king, who had become the ally of Orange. He turned his attention, first of all, to the recapture of Mons, and after a siege of three months took it on capitulation, a division of the main army which was proceeding to raise the siege having been defeated. After the capture of Mons, Alba collected his forces, and led them to attack the city of Haerlem, in the province of Holland, as preparatory to the conquest of the other maritime positions. That place, defended chiefly by its citizens, made a noble resistance; but after a siege of seven months, in which the exertions and the sufferings of the inhabitants appear almost incredible, it surrendered, and was delivered over to the vengeance of the irritated and unfeeling Spaniards. In this siege, carried on in an aquatic district, and in the winter months, the besiegers suffered severely, especially as they were ill supplied with provisions. Their sufferings and their want of pay caused a mutiny after the capture, which paralyzed for a time the operations of Alba, whilst the Prince of Orange was carrying on the siege of Middleburg in Zealand, which was ably defended, and only surrendered after a siege of two years duration. The states of Holland and of Zealand had been assembled at Dort, where, notwithstanding the republican jealousy which prevailed, powers almost unlimited were conferred on the Prince of Orange, and a kind of government constructed to manage the affairs of these two provinces.

We have thus sketched the outline of events from the end of the year 1568 till the end of 1573, at which time the court of Spain had recalled Alba, who departed with enormous wealth, and the curses of all classes of the people, in January 1574. He was succeeded in the government by Don Louis de Zuniga of Requesens, but generally called by the latter name. When Requesens assumed the government, he found the affairs of it, in those parts still under the Spanish power, in a dreadful state of derangement. The people were universally disgusted, the army in a state of mutiny, and the finances absolutely exhausted. Though intrusted to adopt a milder system of government, and actually issuing an amnesty, he could not overcome the deep hatred to his country which the Flemings had conceived. He naturally followed the military plan which had been traced out by his predecessor. The Prince of Orange had carried on the siege of Middleburg nearly two years, and Requesens resolved to attempt its relief. His naval forces were collected, and a battle ensued, in which the Spanish fleet was defeated, and most of the ships taken, burned, or sunk. This occurred on the 19th of January 1574, and was followed by the capitulation of the city on the 19th of February. The garrison, the ecclesiastics, and such of the burghers as wished it, were allowed to proceed to Flanders. This treaty was the commencement of a milder treatment of prisoners on both sides, and henceforward the contest assumed a more humane form. The capture of Middleburg was important, as it decided the fate of the province of Zealand, which was soon rendered unassailable by the Spaniards, whose naval force was far inferior to that of the Prince of Orange. Requesens sent a corps of his army to attack a force under the command of Prince Henry of Nassau, over whom a victory was gained, on the 14th of April, near Nimeguen; but a mutiny immediately broke out amongst the Spaniards, and rendered the success of no value. When the mutinous spirit was somewhat allayed, the Spaniards besieged Alckmaer, but were received by the inhabitants with such resolution that they gave up the attack and concentrated their forces to besiege the city of Leyden. It was carried on with great vigour, and defended with skill and bravery; and after the besieged had for nearly six months endured all the horrors of famine and disease, by cutting some dikes the Spanish camp was covered with water, more than a thousand of the assailants were drowned, and on the 3d of October the siege was abandoned. This secured to the party of Orange the freedom of the province of Holland, as the capture of Middleburg had done that of Zealand. The Spaniards were thus expelled from every part of those states except the city of Amsterdam, of which they did not quit possession till four years afterwards.

After defeat or after victory the Spanish troops were equally accustomed to mutiny. The repulse before Leyden begot this spirit, which displayed itself by deposing their commander Don Sancho de Avila. They chose one of their own number as a leader, and carrying with them Don Sancho, bound hand and foot, proceeded towards Utrecht, where by plunder they boasted they would pay themselves the arrears owing to them, and they committed the greatest excesses on the small towns which they were able to seize upon. At length some money was paid to them, the mutiny was appeased, and Requesens led them to make attacks on some of those islands which compose the state of Zealand. These were all repulsed by Prince Louis; and Requesens, who had superintended the operations in person, at length abandoned all attempts. He was called to Brussels by a mutiny of the Spanish cavalry in that city; but on the day of his arrival he was attacked by a fever, which in a short time terminated in his death.

This brings the events down to the end of the year 1575, at which period an attempt at conciliation was made by the emperor of Germany. A congress was held at Breda, where an ambassador from his imperial majesty, the two brothers of the Prince of Orange, the pensioner of Holland, deputies from Zealand and Gueldres, and two ministers of the king of Spain, met; but nothing was agreed on, after three months spent in negotiation, as the preliminary question of religion could not be settled. The king would only admit of the Catholic faith, and the opposing parties as resolutely maintained that of the reformed church.

In 1576 the Prince of Orange succeeded in the plan he had long formed, of forming such a union between the two states of Holland and Zealand as should concentrate their efforts for the common defence, by placing in his hands, under the name of regent for the king, the whole executive power. This arrangement, concluded in April, was announced to all the cities, and accepted by them; and the prince having taken the oath of fidelity to the privileges of the states, assumed the government, and arranged the administration with judgment, despatch, and economy.

At the same time, within the provinces still belonging to Spain, the death of the governor created the greatest confusion and disturbance. The council of state, consisting chiefly of Flemings, assumed the administration, and, as soon as an answer to their communications could be received from Madrid, were confirmed in that power, but only *ad interim*, until Don Juan of Austria, who was named governor, should arrive. Though composed of only nine or ten members, this council soon became divided into factions, which thwarted each other; they were without pecuniary resources, and could take no measures to remove the difficulty. The consequence of this was, that the Spanish troops, being unpaid, broke into furious mutinies, and, with the pride of their nation, rejected the authority of the council, deposed their officers, chose one of their own number, who was called *Eletto*, indulged everywhere in the most unlimited plunder, and committed the most atrocious barbarities. The movements made by these troops alarmed all the inhabitants of the cities, so that even in Brussels itself the council could scarcely have been in safety without yielding to the impulse of indignation which was displayed by all orders of the citizens. The mutinous troops had taken by storm the fortified city of Alost, between Ghent and Brussels, when the council, on the 29th of July, issued a placard denouncing the Spaniards as rebels to their king and the country. They were depicted as mutinous traitors, and the people of the Netherlands were called upon to exterminate them wherever they were to be found; they were also forbidden to supply them with provisions, and commanded to remove out of their way all money and other valuable effects.

The insurgent army at Alost alarmed the city of Ghent, where the inhabitants had armed themselves; but the castle which commanded the town was held by some Spanish troops, who were in connection with the mutinous army. It was of importance to take the castle; and a party in that place, where the Prince of Orange had numerous secret friends, made application to him for assistance. He, who had foreseen the event and was prepared to meet it, despatched from Zealand eight bodies of infantry, amounting to about 3000 men, with seventeen pieces of artillery, under the command of Colonel Temple, an English officer in the service of the states, who entered the city on the 26th of September, and having formed the siege of the castle, caused it to surrender on the 11th of November.

The possession of Ghent was the signal for a general movement amongst the Flemings. In spite of the orders of the king positively forbidding it, the states assembled in each province, and the feeble and divided council gave way before them; and thus the power was vested in a body, who confined some, displaced others, of the council, and changed the government into that republican form which the seven provinces that ultimately obtained their independence afterwards adopted. The king's name was used, but his power was for the time abolished. The new government sent its envoys to the several courts to implore assistance. The emperor and some other princes answered with cordiality, and offered their mediation to effect a general pacification. The king of France (Henry III.) spoke plainly, and showed good will, but said that his opponents, the Leaguists, supported by the pope and the king of Spain, had so embarrassed his affairs as to deprive him of the power of rendering them any assistance. Queen Elizabeth of England received the envoy, Baron Sweveghau, with much distinction. She granted to the states a loan of one hundred thousand pounds sterling, of which forty thousand were immediately paid in uncoined silver, and the remainder was made payable at Brussels by her ambassador. The cities of Ghent, Bruges, and Nieuport were securities for the money; and the states agreed neither to make truce nor peace with Spain without England being comprehended in it. The other conditions were, that the English merchants should be restored to the privileges which they had enjoyed before the troubles, and that the subjects of England who had been banished should not be protected within the territories of the states.

A treaty was soon concluded at Ghent, and ratified at Brussels, between the states on one part, and the Prince of Orange in the name of the states of Holland and Zealand on the other. The chief stipulations were, that the contracting parties should unite to drive all Spaniards from their countries, and then assemble as in states-general before 1555, to regulate the affairs of religion, of the fortresses, and the ships of war; that no attempts should be made against the Catholic religion; that all the ordonnances issued by the Duke of Alba should be suspended till they were confirmed by the states; and that in the mean time the Prince of Orange should retain his power as stadtholder of Holland and Zealand. This treaty was signed in the name of the king, and in a short time was acceded to by those other provinces not represented in the states assembled at Brussels.

Whilst these transactions were in progress, the Spanish troops, though diminished in number by their own excesses and the vengeance of the country people, continued in the same mutinous condition. One division of them took Maestricht by storm, and there perpetrated the most abominable injuries to persons and property. Two other divisions, one from Alost and the other from Zealand, united to seize on the rich city of Antwerp; and with them joined the portion of the garrison of the citadel of Antwerp which had cut its way through the besieging army. The citadel was in possession of the Spaniards; and as soon as the rest of the mutineers had been received into it, they stormed the city, which, though bravely defended, was ultimately overcome, a great part of it being burned in the conflict, and what remained, as well as the persons of the inhabitants, became a prey to the infuriated and merciless mutineers. Destruction was thus inflicted on the most flourishing commercial city of Europe, from the effects of which it has never since recovered. The destruction of that city was, however, one of the causes, and not an inconsiderable one, of the rapid progress in foreign commerce which was made in Holland during the subsequent prosecution of the long protracted war, and supplied much of the pecuniary means by which that war was maintained.

Don Juan of Austria, who had been appointed to the government of the Netherlands on the death of Requesens, was a natural son of the Emperor Charles V. who had ordered him to be educated in secrecy, but suitably, according to a respectable station in life. The history of his birth had been concealed from him until he had arrived at maturity, when King Philip himself unexpectedly revealed it, and acknowledged him as his brother. At an early age he had been employed against the Moors of Granada, and had by his successful exertions gained great applause; but the chief ground of his high reputation arose from the naval victory of Lepanto gained over the Turks, when he commanded the united fleets of the Christian world.

When nominated to the command he was residing at Milan, but instantly departed from thence to Spain, where he received his instructions from the king. He was directed to treat the Netherlands with great mildness at first, but to commit himself to nothing definitive, and on no account to give up any of that unlimited power which the king was firmly resolved to exercise. It was commonly believed that the king gave him an assurance, if he succeeded in restoring the Netherlands to submission, that he should be supplied with forces to land in England, where he should release Mary Stuart from her prison, place her on the throne of Elizabeth, and by a marriage with her become monarch of the British islands. Don Juan rode post through France, at that time in a state of confusion, in the disguise of a servant to one of the nobles who accompanied him, and at length reached Luxembourg on the day on which the mutinous army of the Spaniards had stormed the city of Antwerp. On his arrival there, the disastrous state of the affairs of Spain, which has already been described, seems to have left him no other alternative, after announcing his arrival to the states, than that of acquiescence in the decisions of that body, conjointly with the Prince of Orange. He accordingly gave his assent to the pacification of Ghent, and to that article of it which stipulated the removal of all foreign troops from the country of the Netherlands. Some confidence was thus gained with the states-general, but none with the Prince of Orange, with whom Don Juan had opened a correspondence of an apparently amicable and confidential nature. The troops were in appearance disbanded, or marched away. The Spaniards moved slowly towards Italy, from whence they could be recruited. Some of the auxiliaries were said to have been lent to the Leaguists in France, so as to be within call when needed. In a few months, which were passed in conciliatory measures, Don Juan, rather by fraud than by force, obtained possession of the strong castle of Namur, in the month of July, and established his court in that city, where he soon began to collect troops. This caused an alarm in the states, and they also began to collect their forces. The Prince of Orange was invited to repair to Brussels, in order to concert with the states the measures requisite for the defence of their freedom. Negotiations were begun with insincerity on all sides, for neither could trust to the assurances and engagements of the other. The Prince of Orange, who had entered Brussels on the 23d of September, was consulted on these negotiations, and was in some sense a party to them; though he foresaw, from the very moment of Don Juan's arrival, that no secure treaty could be formed, and that the sword must decide the issue. The states, at the suggestion of the Prince of Orange, had decreed the demolition of those fortresses which commanded the cities, especially those of Antwerp, Ghent, Utrecht, Groningen, and Lisle. This was the signal for hostilities. Don Juan had recalled the troops on the march for Italy, and those lent to the party of the League in France. The Prince of Parma brought other reinforcements; and thus Don Juan found himself at the head of an army of nearly 20,000 at the end of the year. The army of the states consisted of nearly equal numbers. They were, however, inferior in discipline and in good officers to the forces opposed to them. The two armies were in presence of each other in December. The army of the Spaniards had been so secretly collected, that the states believed that their own troops much outnumbered them, and from this impression gave orders for the attack. On the 31st of January a bloody conflict took place at Gembloux, near to Namur, in which the Spanish force was victorious. The army of the states suffered very severely; their general, Goignics, with many of his men, were made prisoners, and the remnant retreated towards Brussels. The Prince of Orange and states removed from thence to Antwerp. Don Juan, instead of pursuing them, followed up his success by capturing the smaller fortified towns. In the course of the year 1778, he had taken Louvain, Tirlemont, Bovines, Diest, Nivelles, and some smaller places. These conquests were effected by detachments, whilst his main body was encamped near Namur. But he was taken ill in September, and died on the 1st of October 1578. The cause was probably a pestilential fever, but, according to the custom of that age, was most commonly attributed to poison. On his death-bed Don Juan nominated as his successor his nephew the Duke of Parma, who had recently joined him. He was a young man of highly-estimated talent, the son of that duchess who had long been the regent of the Netherlands, and under whom the troubles had commenced.

When the Prince of Orange had retired to Antwerp, he clearly perceived that, from the nature of the country, and the confidence placed in him by the people, he could preserve a secure asylum for liberty in Holland. His means did not extend to the other provinces of the Netherlands with the same commanding effect. He therefore turned his chief attention to that which, with a concentration of his means and exertions, could with most probability of success be attained.

As the ten provinces were at length all brought under subjection to Spain, and finally were transferred to the house of Austria, the transactions relating to them do not appropriately belong to the history of Holland, and will therefore be only so far noticed here as regards their connection with that country.

It was the policy of the Prince of Orange to keep alive the spirit of opposition which still existed in Flanders, because it gave employment to the troops of the Duke of Parma, and time to the inhabitants of the United Independent Provinces to prepare for that firm defence which must be the only means of securing their ultimate independence. Those states also gained much in another view. Holland was a secure asylum, and the inhabitants of the other ten provinces found refuge there, when neither tranquillity nor security could be enjoyed at home. At this period, many of the richest of the traders once more removed their families and their property to the cities and towns of Holland and Zealand. The ruins of the commerce of Antwerp were collected in Holland and Amsterdam, though the last place, from which the Spaniards had been driven out in 1578, received the greater share of it.

Whilst Flanders was torn to pieces by the contest between the troops of the Duke of Parma and those raised by the states, the United Provinces assumed in their temporary tranquillity a more imposing aspect. The important province of Utrecht joined the party of Holland, Zealand, and Friesland. The war had been carried on against the king of Spain without explicitly renouncing allegiance to him. But after the accession of Utrecht, the declaration of their independence of the authority of that monarch was promulgated. This gave confidence to the inhabitants, and admitted them to treat as sovereign states with any of the other governments of Europe. To these four provinces the three small ones of Zutphen, Overyssel, and Groningen were added, and thus formed a compact and easily defended district. They assumed for their arms a bundle of seven arrows, with the motto, *Concordia res parvæ crescunt, discordia maximæ dilabuntur.*

We pass over the endeavours made to establish the Duke of Anjou, brother of the king of France, as the governor, the wars subsequent upon it, and the attempts made to assassinate the Prince of Orange, because they belong rather to the history of Flanders than to that of Holland. It may, however, be proper to remark, that in the intercourse between that duke and the prince, the latter favoured the pretensions of the former; but he seems to have done it without any prospect, perhaps without any hope, that it would do more than operate as a diversion in favour of the seven United Provinces, to whom his chief regards were always directed.

From the death of Don Juan of Austria, at the end of the year 1578, to July 1584, the state of Flanders arrested all the efforts which Spain could make to attack Holland; and the inhabitants availed themselves of it to extend their commerce, to increase their ships, to economize their resources, to accumulate warlike stores, and to organize and discipline the whole of the male population. Spain was too much engaged with other objects to direct any strenuous operations against Holland, calculating that if she could subdue the ten larger and more populous provinces, the submission of the other seven would either necessarily follow, or might be easily enforced. Besides, she was at that time making preparations for the enormous naval force called the Armada, with which she calculated on conquering England, and thought that by that achievement Holland would fall under her power.

The intense personal hatred which existed between Philip of Spain and the Prince of Orange gave birth to the most virulent and threatening manifestoes, which were printed, diffused, and read throughout Europe; and the king even made it generally known, that whoever should succeed in assassinating the prince, should receive a reward of 80,000 ducats, be made a commander of the order of St Jago, and obtain patents of nobility. These offers, stimulated also by religious fanaticism, induced many individuals to arm themselves for the horrid deed. One of them, Geerardt, a Burgundian, gained access to the prince by means of letters from Count Mansfeldt, and, as he was passing from his dinner table to another apartment, shot him with a pistol concealed under his cloak, which discharged three balls into the breast of his victim. The prince fell, exclaiming, "I am wounded. Lord, have mercy on me, and on this poor people!" He then immediately expired. The assassin was taken and executed. The recompense for the detestable deed was subsequently made to his family; for, in the register of the court of Madrid of the 4th March 1589, patents of nobility are entered as conferred on his brothers and sisters, who are described as bearing that relation to Geerardt, a tyrannicide.

This tragical event occurred on the 10th of July 1584, at Delft, where the states of the seven provinces were then assembled. It inspired courage rather than despair among the patriots of Holland. The eldest son of the prince was a prisoner in Madrid, where he had been detained from the commencement of the troubles. His son Prince Maurice was instantly invested with all the power of his parent, though only eighteen years of age; and Count Hohenlohe was appointed with the character of his lieutenant.

The Dutch attempted to enter into negotiations with those powerful princes who were hostile to Spain. The application to France was made at a time when the power of the confederation of the League was so formidable as to preclude the prospect of any aid. Henry III. received the deputies with respect, but recommended them to make application to Elizabeth of England. Offers were made to her of the sovereignty of the Netherlands, which she declined; but she made a treaty stipulating to furnish six thousand troops to be maintained by her, and was to have Flushing, the Brill, and the castle of Rammekins, as pledges. Leicester, her favourite, was appointed to the command, and was to have concurrent power with two members chosen by the states in all military affairs, but was not to intermeddle in the civil transactions.

The imprudence or ambition of Leicester gave much umbrage to the states, and his presence became rather injurious than beneficial to them. The threatening danger from the Spanish Armada, and some degree of disapproval of the conduct of Leicester, induced the queen to recall him and the greater part of the force. The conduct of Leicester had produced the loss of Zutphen and Deventer; but, after the defeat of the Armada, fresh troops were sent from England, and these having drawn the Spaniards towards Ostend, in which was an English garrison, Prince Maurice was enabled to recapture those places. The celebrated siege of Antwerp, though scarcely an operation in which the Dutch were engaged, may be here noticed. It was a long and heavy labour of seven months, carried on by the Duke of Parma in person. During its progress the most extraordinary bravery and skill was displayed by the assailants and the defenders; but the place finally surrendered, and the remains of its commerce were transferred to Amsterdam. After the recapture of Zutphen and Deventer, Prince Maurice, whose forces had been recruited, threatened Dunkirk and Nieuport, and, after a short but vigorous bombardment, captured the important city of Nimeguen, and other towns in that quarter; and these operations closed the campaign of 1592. The Duke of Parma had advanced with an army into France, and left the management of the war in the Netherlands to Count Mansfeldt.

In the beginning of 1593, Mansfeldt issued edicts forbidding all communication with the revolted and now *de facto* independent provinces, and declaring that no quarter would be given to any who did not join him. Such threats were however of no avail, for Prince Maurice having collected his forces, attacked the strong city of Gertruydenburg; and though Mansfeldt, at the head of 12,000 foot and 3000 horse, attempted to raise the siege, he was foiled. The place surrendered on the 23d of June, after suffering the extreme of famine.

The Spaniards were still in possession of the city of Groningen, where Verdugo, an Italian, commanded. The chief operations of the year 1594 were in that quarter. Much time was passed in able manœuvres between Prince Maurice and that general. But the prince having succeeded in cutting off the communication between Groningen and Germany, that city was compelled to surrender in July. The many repulses which the Spaniards had received, and the want of pay, produced a mutiny, and the soldiers threatened to indemnify themselves by the plunder of Brussels, and other towns in the ten provinces under the crown of Spain. The mutineers were in communication with Prince Maurice, but he declined taking them into his service, though the mutiny was turned by him to the benefit of his country.

In the year 1595 a general discontent against their Spanish masters spread itself in the ancient provinces. It was fomented by the Flemish nobility, who, in an assembly convened at Brussels, demanded peace. This affair turned out advantageous to the seven provinces, where Prince Maurice and the states-general were occupied in negotiations both with England and with France, with both of which countries treaties were concluded, in which the Hollanders engaged to supply them with naval forces, some of which assisted Sir Walter Raleigh in his successful attack upon Cadiz.

Philip of Spain, now advanced in years, having become disgusted with the cares of government, his Flemish provinces were placed under the management of the Archduke Albert of Austria. He had under his command an army of 30,000 men, with which he took Calais, and then rather turned his forces towards France than towards the new republicans. The Dutch had by this time grown up into a great naval power. They are said to have had on board of their shipping more than 70,000 seamen. The bloody wars in which they had been engaged seemed to have increased their wealth and their spirit of commercial enterprise. Even their enemy Philip connived at their carrying on a very beneficial trade with his subjects in Spain and Portugal, whilst their cruisers covered the seas, and made numerous captures of the trading ships of those very subjects.

The earnest desire to attain naval superiority which animated the Dutch, was accompanied with a correspondent neglect of their land forces. The arms of France, however, acted as a diversion in their favour, and enabled Prince Maurice in 1597 to defeat one of Albert's generals, and, in consequence thereof, to capture Turnhout, near Antwerp; and in the end of the year, several other towns in that quarter submitted to the states-general. In the same year, negotiations for peace were attempted, under the mediation of the emperor of Germany and the king of Denmark; but the states refused to treat till the king of Spain should acknowledge their independence. The peace of Vervins was concluded between Spain and Henry IV. of France, to the great disgust of Elizabeth and of the United States, who thereby were brought into more intimate alliance.

The commerce of the states was now much augmented. One of their citizens, Balthasar Monchuen, besides trading extensively to India, formed settlements upon the coast of Africa and upon the island of St Thomas. Other merchants sent their ships to the South Seas, through the Straits of Magellan, in the hope of discovering a passage to Japan and China. Companies were formed which sent large ships to the East and West Indies. The trade in the Mediterranean was extensive and lucrative; but, above all, their fisheries on the coasts of England became a mine of wealth.

Though with inadequate force, Prince Maurice, in the winter of 1599, surprised Emmerich on the Rhine, and projected the transference of the seat of war to Germany; whilst Mendoza, the Spanish general, was opposed to him, and invested Bommel; and, though an indecisive battle was fought, Maurice delivered that fortress from the besiegers, and secured his own conquest. After this, party-spirit appeared in Holland, with sufficient fervour to lead to the reduction of the army; but, fortunately for that country, the Spanish troops were so mutinously disposed, that they were unable to take advantage of this diminution.

About the end of 1600, the states were roused to make greater land preparations, and their army under Prince Maurice, in conjunction with an auxiliary English force under Sir Francis Vere, gained the decisive victory of Nieuport, in which the Spaniards lost 5000 men, whilst the loss of the allied army did not exceed 1500, of whom 800 were English. Though Nieuport was invested, Maurice was compelled to raise the siege, when the armies went into winter-quarters. About the end of 1601, some attempts at negotiations for peace were made, but, like those of the former years, they were soon suspended.

The chief military event of the three following years was the siege of Ostend, in which Vere had at first the command; but in the course of the long operations he was relieved, and joined the prince with his troops, who were replaced by the soldiers of the states. The whole attention of Europe was engrossed by the great display of military art in and before Ostend. Spinola the Spanish general was one of the first of the military geniuses of that age, and Vandernoot, who defended the place, was his equal. With an immense loss of life and expenditure of money, after a siege of more than three years' duration, the place was surrendered by capitulation on the 20th of September 1604.

The death of Queen Elizabeth in March 1603, and the accession of James to the throne of England, gave a new turn to affairs. The temper of that monarch was decidedly pacific, and though at first he in some degree adhered to the alliance with the states, his assistance was small, and in some of the transactions rather adverse. The war was continued between the armies commanded on one side by Prince Maurice and on the other by Spinola, but both were so cramped in their operations by the parsimony or the poverty of their respective governments, that no decisive event occurred. The naval war was more effective. The fleets of Spain from the East and West Indies were intercepted by the Dutch. Tremendous conflicts were carried on, by which some of the vessels loaded with treasure from the New World fell into the hands of the republicans; but a much larger portion of the vessels which contained it were either burned or sunk. The failure of remittances so impoverished the king of Spain that he became disposed to treat for peace. The negotiation began in the early part of the year 1607. At first the required acknowledgment of independence suspended it, but in the month of April 1607 Spain gave way, and a suspension of arms for eight months was agreed upon, without any communication of it having been made to the kings either of England or of France. When the eight months had expired, no treaty had been concluded; and, though no hostile movements were made by land, the captures of the Dutch at sea were continued during the prosecution of the treaty. At length a truce for twelve years was agreed to in April 1609. A general amnesty on both sides was stipulated, and a freedom of trade by sea and land, including both the Indies, was agreed to.

This treaty, though only concluded for a fixed period, was yet a termination of the war as between the king of Spain and the seven United Provinces. The states had no sooner attained peace and independence, than they intermeddled with the affairs of the other sovereign states of Europe, and became involved in hostilities with Germany, in which Prince Maurice, on a disputed succession to the duchies of Cleves and Juliers, took the latter city, and garrisoned it. But the Germans having soon afterwards taken Wesel, a termination was put to the contest by the mediation of England and France.

Almost as soon as the states had concluded a general peace, internal dissensions arose. These were maintained by the nature of their constitution, which conferred on each individual state an independent sovereign authority. The first occasion arose from a theological difference of opinion on a topic, of all others, the most inscrutable by the human faculties. The Protestants had imbibed their opinions from Calvin, and had generally adopted his doctrine of predestination. The professors of the universities had advocated that opinion, when Arminius, a native of Holland, was appointed to the divinity chair of Leyden, and taught the opposite opinion of the freedom of the human will. He thus became the head of one sect, whilst a Dr Gomarus, another professor, became the leader of the Calvinistic sect. Theological discussions soon created political parties. Prince Maurice had imbibed the opinions of Arminius, but finding the clergy and the great body of the common people attached to those of Gomarus, he, without regarding the private opinions he held, placed himself at the head of the Gomarists. Barneveldt, the chief civil man in the union, was in opinion a Calvinist; but seeing the nobility and the better educated part of the people supported the system of the Arminians, he became the chief of that party. The acrimony and bitterness with which the contest was carried on soon rendered it of a mixed character, combining religion and politics. Each city possessing within itself independent powers, punished or protected either the Arminians or the Gomarists. Those two eminent scholars Grotius and Vossius defended Arminianism, whilst the synod of Dort, assisted by King James of England and the Archbishop of Canterbury, for a short time maintained the opposite side in the controversy. Prince Maurice, by his influence with the common people, and from being at the head of the army, was enabled in many of the cities to change the magistrates; and when he could not effect that purpose, as at Utrecht, he called in the troops to their assistance. Barneveldt and his party proposed a general toleration of all opinions, and presented a remonstrance to that effect; a proceeding which changed the names, but not the characters, of the party. The Arminians were called Remonstrants, and the Calvinists Anti-Remonstrants, names which have been continued to this day. The party of Maurice, consisting chiefly of the populace of the cities, and their clergy, was ready to tolerate Jews, Mahommedans, and infidels, but would not consent to grant similar toleration to the Remonstrants.

It became evident that the prince was aiming at establishing for himself and his family an hereditary sovereignty over the states; whilst Barneveldt and the higher classes, on the other hand, eager to perpetuate the liberties of their country, formed connections with the court of France, and thence obtained the name of the Louvestein faction, which has been continued amongst the opposers of the absolute power of the house of Orange to the present time. But the Orange party acquired such superiority that Maurice was enabled to seize and imprison the venerable Barneveldt and the learned Grotius, the former of whom, after an infamous trial, when the judges were threatened with death if they did not pronounce the popular sentence, was condemned to death, and beheaded at the Hague on the 13th of May 1619. As the benefactor of his country, he died with the regret of the wise and good of his own time, and has been viewed by succeeding ages as one of the chief authors of the victories, the prosperity, and the liberties of his country. Grotius was still a prisoner, probably not a very strict one. He was allowed the use of books, which passed in a large chest unexamined, and in that chest he was concealed and carried away. He escaped to France, and passed the remainder of his days in an honourable, useful, and upright manner.

The truce was now drawing to a close. The interval which the Dutch had enjoyed had been employed by them, in spite of their internal dissensions, in the most profitable manner. They had prodigiously extended their maritime operations, having been much benefited by the languor of James I. of England, and the ruined state of the marine of Spain. Their ships gave laws from the Baltic to the Levant. They had forced a trade with the Spanish possessions in the western world and in the East Indies; and, besides some smaller acquisitions, they had founded Batavia in the island of Java, which soon became the emporium of the trade of the eastern world.

Philip of Spain died in 1621, just at the time when the truce between him and the Hollanders had expired. The greater progress the Dutch had made in prosperity and power, the more worthy objects of his ambition did he deem them, whom he still viewed as his rebellious subjects. He had instructed his ambassador to propose such terms of peace as were sure to be rejected, which in fact they were, in the most contemptuous manner. But Prince Maurice was not well supported by the states on land. The operations were not of great moment. The Spaniards under Spinola took Juliers, but were repulsed in an attack upon Haerlem. Maurice made an effort to seize upon Antwerp, which failed; and he returned to the Hague, where an attempt was made by a grandson of Barneveldt and some Arminians to assassinate him. This, though it failed, gave great strength and violence to the Gomarists, and they were most unrelenting in their cruel punishments. The rack and the axe were in constant employment, and to be known as an Arminian was deemed sufficient cause for their infliction. The war by land against the Dutch was continued by Spinola, on the side of Belgium; and though he could not prevent them from recapturing Juliers, and taking Cleves, he collected such a force as enabled him to besiege Breda, which was commanded by an English colonel, Morgan. It was an important place, strongly fortified, and of great interest to Prince Maurice, because it formed the centre of his patrimonial estates. It was ably defended, and during the ten months the siege lasted, the loss of the Spaniards was enormous. They however ultimately succeeded, and a capitulation was signed on the 6th of June 1625.

During these operations, Prince Maurice died in the eighty-eighth year of his age. Ambition alone, which had caused his severity towards the Arminians, prevented him from being the most amiable, as he was one of the ablest men of the age in which he lived. About the same period King James of England died, and was succeeded by the unfortunate Charles I. Prince Henry of Nassau was the successor of his brother, as governor of the states of Holland, Zealand, Guelderland, Utrecht, and Overyssel. He continued the military operations against Spinola, but, after the surrender of Breda neither party could boast of having gained much advnatage.

The naval operations in some degree compensated for the languor which prevailed on land. The Dutch sent an expedition to the South Sea, which attacked the Spanish settlements in Peru with much success; and at length they also conquered St Salvador and other parts of Brazil, but were soon afterwards obliged to abandon the acquisitions they had made. In the interior the religious dissensions began to revive. Henry prince of Orange was thought to be less rigid towards the Arminians, in other words, more favourable to them, than suited the principles of the Gomarists. This caused such a commotion as threatened a civil war, which was only prevented by the necessity of union against the common enemy. The Dutch fleet had joined that of France, with which power they were in alliance; and this united force was attacked by the ships of the French Protestants under Soubise. They were defeated, and the Dutch admiral's ship was blown up, with himself and his crew. This caused the greatest joy among the common people in Holland, who detested the conduct of their chiefs; and in the city of Amsterdam their houses were pillaged, and their persons grossly insulted.

The threatening appearance of the thirty years' war in Germany induced the states to increase their land forces in 1626; but during that and the following year only indecisive operations occurred, as the imperial general, Tilly, did not make the expected attack on their frontier towns. The Spaniards made Dunkirk the place for collecting a great number of privateers, by which the Dutch commerce was much annoyed, and many bankruptcies occasioned amongst the merchants of Amsterdam. This induced the Dutch to blockade that port so closely that the system was checked, and in 1628 their East and West India fleets all arrived in safety, loaded with valuable cargoes belonging to the two great commercial companies which had grown up in Holland.

During the same year the fleets of Holland were remarkably successful against Spain. Peter Adrien captured twelve of the largest West Indiamen in the Bay of Honduras. Admiral Heine had still greater success, having a larger force, and in the Bay of All Saints captured so many ships laden with sugar, that the quantity, when brought to Holland, lowered the price of that commodity in all parts of Europe. He then with thirty ships intercepted the Spanish plate fleet, and, after ravaging the coasts of Spain and Portugal, returned with prizes valued at more than fifteen millions of livres. But the state of Holland was far from being tranquil. Fresh umbrage was taken by the populace at the Prince of Orange, because he had appointed some of the Arminians as magistrates, and the people of Amsterdam refused to obey them. This, with tumults amongst the seamen on account of the inadequate distribution of the prize money, caused serious commotions, which were with difficulty and some sacrifices of life put down.

The successes of the Dutch at sea had a favourable influence on the land operations of the following year. Want of pay had produced mutiny in the Spanish army. The Dutch vigour was again awakened, and the Prince of Orange furnished with a powerful army. An active campaign, in which Turenne, Montecuculli, and some other of the most celebrated warriors of the age, bore a part, was closed, by the capture of Bois-le-Duc on one side, and of Wesel on the other frontier of Holland, in spite of all the efforts of the Spaniards to raise the sieges of these places. In the year 1630 the Spaniards renewed their efforts to defend the places they held on the German frontier, but were so unfortunate that, after fruitless attempts to organise a German Catholic confederacy against Holland, they were induced to enter into a negotiation for the conclusion of a truce during thirty-four years. But this negotiation was rendered ineffectual, principally by the intrigues and the influence of the French minister Richelieu, who had by this time formed a strong party in Holland, in opposition to that of the Prince of Orange; a party which continued up to the present age, and to the existence of which may be attributed the enmity displayed by the successive heads of that family to the French government. After the rupture of the negotiations, John of Nassau, with a force, aided by some of the German Catholic princes, of troops and water craft, made the attempt to separate Zealand from Holland. The expedition was met by the Dutch gun-boats; a terrible conflict ensued; the Spanish flotilla was either sunk or captured; and 5000 men were made prisoners, who entered immediately into the service of Holland. This blow was followed up by the Prince of Orange, with his whole force, augmented by the junction of 12,000 Swedes of the army of Gustavus Adolphus, with whom the states had made a treaty, by an attack upon Maestricht, which at length capitulated, as did also the fortified city of Rheneberg on the Rhine, by which Holland became secure from all invasion on the side of Germany. At this time attempts were again made towards negotiation; but the interference of the Austrian general Pappenheim, who had garrisoned some of the towns belonging to Spain, prevented, by his claims, any treaty from being brought to a pacific conclusion.

The Dutch army for the campaign of 1633 was more powerful than at any former period, and was thought sufficiently strong to have completed, with a general of such talents as the prince, the entire conquest of Spanish Brabant. He took the field for that purpose, but the excessive rains of that season, the great inundations, the sickness which prevailed in the army, the scarcity of provisions, and other inconveniences, compelled him to put his army into winter-quarters at a very early period, without having effected or scarcely attempted any object of importance. The year 1634 passed over with no memorable displays of hostile movements. The death of Gustavus Adolphus in the midst of the vast operations in Germany, of which he was the animating soul, caused so many and various negotiations, that the whole of Europe had its attention directed to diplomatic discussions. The war between the Spaniards and the Dutch languished in the Netherlands, though it was carried on at sea much to the benefit of the latter party. In this year, 1635, a partition treaty was entered into with France by the states, contrary to the will of the Prince of Orange, and their ally the king of England, by which the provinces of Luxembourg, Namur, Courtray, Hainault, Artois, and Flanders, were to be transferred to the king of France, and those of Brabant, Guelderland, and the districts of Waes, Mechlin, and the rest of Flanders, to the United States. In pursuance of the objects of this treaty, the fleets of France and Holland were united together; but preparations from England to place her marine in opposition induced them to return to their respective ports. The attempts by land were equally ineffectual. France marched an army of 20,000 foot and 7000 horse into Brabant, and the states had equipped one of nearly equal force. These united troops were to be commanded by the Prince of Orange; but whether that commander, from being averse to the service, neglected to accomplish its objects, or whether the arrogance and barbarities of the French disgusted their allies, such dissensions arose between the officers, that no movements proved beneficial, and the campaign was closed at an early period. The Dutch withdrew to their own country, and the French went into winter-quarters at Ruremond, where it is said more than 6000 of them died, from want and disease. Cardinal Richelieu and the Prince of Orange cherished a mutual animosity, which, though it neutralised their land operations, did not cause a rupture of the alliance that had been formed. The Dutch were successful by sea, where they defeated a Spanish squadron near Dunkirk; and having blockaded that port, secured a safe return to their numerous trading ships from the East and West Indies. In the same year they fitted out an expedition, with the design of extending their power in Brazil. This force, under the command of Prince Maurice of Nassau, consisted of thirty-two ships, with 2700 land forces, and arrived safely at its destination.

The year 1637 was distinguished by the efforts made to capture Breda, which was occupied by a Spanish force under Fourben, a brave and skilful officer. It was invested by the Prince of Orange, and several attempts to relieve it failed, so that after a long siege it capitulated, but not till the beginning of the year 1638. In that year a great project was formed by the Prince of Orange for the capture of Antwerp. It was well designed, but failed from unforeseen circumstances, such as often occur in operations combined of marine and of land forces.

The campaign of 1639 was planned by the Spaniards on a gigantic scheme, but was chiefly directed to naval objects. The Dutch admiral Van Tromp attacked a squadron of ten large men of war, near Gravelines, on the 18th of February. The fight was long and obstinate, but ended in the total defeat of the Spaniards. Their admiral, with three of the largest ships, was taken prisoner; the vice-admiral's ship was burned by the crew, and four of his division were captured; and their loss in men exceeded 2000. Notwithstanding this disaster, the Spaniards equipped a tremendous force under the command of D'Oquendo, consisting of eighty-seven large ships and numerous transports, with 20,000 land forces on board. A junction was formed of the two divisions, one from Cadiz and the other from Corunna. Van Tromp met and engaged this force, sunk the ship which bore the admiral's flag, and took four of the others, but was prevented by a fog from following up his success, whilst from the same cause the Spaniards took refuge in the Downs, where there was an English fleet to protect them. Van Tromp having received reinforcements under Evertzen, and, along with these, orders to renew the battle, desired the English fleet to withdraw; intimating, that if that request was not complied with, his orders were to fight both. Pennington, the English admiral, had doubts of the fidelity of his people, and no confidence in the Spaniards, who were ill disciplined and badly equipped. He therefore declared for a neutrality, but stated that he would join the fleet which should be attacked. D'Oquendo had been advised to withdraw, but it was no longer in his power to do so. Pennington, under pretence that the Spaniards had violated the neutrality, withdrew his protection. Van Tromp then began the attack, and the Spaniards were totally defeated. Fourteen Spanish ships of war were destroyed, amongst which was the Teresa of a hundred guns, with eight hundred men. The vice-admiral of Spain and the admiral of Galicia shared the same fate; sixteen large ships were taken, with 4500 prisoners; fourteen were wrecked between Boulogne and Calais, and the remainder were saved by the interposition of the English. Of the whole armament, only eight ships under D'Oquendo reached Dunkirk in safety. The Spanish loss in killed exceeded 8000 men. Whilst these naval triumphs were achieving in Europe, the Dutch were equally successful in the operations against the Spaniards in Brazil. Their admiral Count de la Torre had been dispatched from Spain with forty-six large ships and a numerous body of troops, many of whom died on the passage, and the others arrived in a sickly state. The Dutch fleet consisted only of forty-one ships, mostly inferior in size to those of their adversaries, but well disciplined, and commanded by two admirals of great bravery and skill, Loof and Huggins. The Spanish fleet previously in Brazil joined that under De la Torre, and they thus amounted to ninety-four ships. An action took place which lasted during several days. Loof was killed at the commencement, but Huggins at length gained a complete victory, in which the Spaniards lost twelve of their largest ships, and 4000 men, whilst the casualties in the Dutch fleet did not exceed one hundred. Disease still further reduced the Spanish force, and thus left Prince Maurice nearly master of that country. The prince then accomplished the conquest of Maranham, and despatched an expedition to the shores of Africa under Admiral Jol, who captured Congo, the island of St Thomas, and the other establishments which the Portuguese had formed on that coast.

At this period Portugal revolted from Spain, and, under the house of Braganza, declared itself an independent kingdom. The new king, John IV., concluded with the Dutch a treaty for a truce of ten years, in all the dominions of both countries, which, however, the latter are accused of having disregarded as far as related to Japan, whence they drove away the Portuguese, and secured for themselves the exclusive trade. The narrative of the transactions in Brazil is given in another part of this work, under that article; and, referring to it (vol. v. part i. page 191), we only add that it was finally abandoned by the Dutch in 1654.

The war between the states and their ally the king of France was continued, but with no great vigour. The jealousy of the Prince of Orange was increased by the discovery of the disinclination of Cardinal Mazarin, the successor of Richelieu, to his capture of Antwerp. He succeeded however in taking Hulst and Lillo, and thus secured a powerful barrier on the Flanders frontier. The negotiations for a general pacification were begun in 1642, and did not close till October 1648, when the celebrated treaty of Westphalia was signed at Munster and Osnaburg. In the first of these years, the treaty between France and Holland was renewed, but was scarcely in activity, as all the military operations of the several powers were in some measure, though not wholly, suspended, except that the Dutch availed themselves of the naval superiority they had acquired, by annoying the Spaniards in every quarter of the world.

Towards the close of the negotiations in Westphalia, the Prince of Orange died, in his sixty-seventh year, and was succeeded in his dignities by his son, William II. The states, regardless of their engagements with France, and in spite of the obstacles interposed by the French ambassador at Munster, entered into a separate treaty with Spain. This treaty was speedily ratified, and its terms formed a part of the general pacification of Europe. The king of Spain acknowledged the independence and sovereignty of the states, and a clause of *uti possidetis* in all parts of the world formed one of the articles. From the peace of Westphalia, the transactions of the United States, whose independence it had legalized, were so intermingled with those of the other European powers, that they form part of the general history of Europe. In continuing this narrative, many of the events which regarded the country here treated of, though important in themselves, must be slightly passed over, because they are to be found under the heads of ENGLAND, EUROPE, FRANCE, and GERMANY.

The conclusion of hostilities had found the nation in a condition of great poverty as related to the governments of the several states, but of great wealth as regarded numerous individuals. The states were deeply in debt, but their creditors were almost exclusively citizens, not to say subjects of the country. This produced what has been called the funding system, which has since been followed by other nations.

Disputes had arisen between the states of Holland on one hand, and the Prince of Orange and the smaller states on the other, respecting the diminution of the army and navy, and the conduct of the officers who had abandoned Brazil. These controversies were carried to such a height that the Prince of Orange would have besieged Amsterdam, towards which he had actually advanced, if he had not been prevented by the opening of the sluices, by which his army would have been drowned. This excited against the prince great unpopularity, when he was carried off by the small-pox, in the twenty-fourth year of his age, leaving no son, but his wife pregnant, who was delivered of a son, afterwards William III. king of England. The civil wars of England were favourable to the trade of the Dutch, though it involved them in war with the government which succeeded the death of Charles I. The several parties in Holland had carefully watched to maintain a neutrality between the monarchical and republican parties in England; but the intemperance of the royalist emigrants, displayed in the murder of Dorislaus, who had been accused of participation in the legal murder of Charles, and of some other rash proceedings, gave the republicans a pretext for commencing hostilities. This led to a naval battle in 1652, when Blake gained some advantage over Van Tromp, though his fleet was much inferior, at least in number of ships, if not in weight of metal. The Dutch instantly fitted out a still larger fleet under the command of De Ruyter, which was met by the English channel fleet under Sir George Ascough. They fought during three successive days, but parted, each claiming a victory. De Witt was then appointed commander in chief of the Dutch fleet, with De Ruyter as his second. Blake, who had sailed to the north after his former battle, collected his ships, and was reinforced by Admirals Penn and Bourn with their squadrons. The two fleets engaged on the 30th of October. The battle was most resolutely contested, but night terminated it before it was decided, and the next day the Dutch entered Goree, declining farther conflict. The fleet of Holland was quickly repaired and reinforced, and placed once more under the command of Van Tromp. Blake had not been furnished in as prompt a manner with reinforcements as his antagonist, and was thus inferior. A tremendous encounter took place on the 25th of November, in which the Dutch were victorious. In this action Blake's flag-ship was disabled, two others were taken, two burned, and one sunk, whilst Van Tromp lost but one of his ships, which was blown up by accident. The engagement lasted from eleven in the morning till six in the evening, when darkness favoured the escape of the shattered remains of the English armament.

In the early part of 1653, both the republics addressed their chief attention to the preparation of their fleets. Blake was enabled to muster sixty sail, with which he attempted to intercept a large convoy of merchant ships, protected by Van Tromp's more numerous, if not more weighty force. On the 18th of February the two contending fleets met, when there ensued an obstinate and bloody conflict, which lasted three days, at the end of which Van Tromp retreated with the loss of eleven ships. The English had lost but one, but the whole fleet was so shattered that they could not pursue. The loss in killed and wounded was nearly equal on both sides; and though the English gained the victory, Van Tromp, by his excellent seamanship, was enabled to convey in safety to the Dutch ports the numerous trading vessels which he had been sent to protect.

At this period Sweden discovered a disposition to join her fleets to those of England, but the diplomatic skill of the Dutch ambassador prevailed on her to agree to a neutrality; and the king of Denmark made a treaty, stipulating to furnish to the Dutch a fleet of twenty sail, to confiscate the English ships in the port of Copenhagen, and to exclude all English vessels from trading in the Baltic. The Danish ships never joined, but the treaty enabled the Dutch to obtain supplies of timber and other stores. Though secret negotiations for peace had been entertained between Cromwell, now master of England, and De Witt, recently appointed pensionary of Holland, yet, as they terminated in nothing, the most extraordinary preparations were made to continue the conflict. In the beginning of June, Van Tromp, seconded by De Witt and De Ruyter, appeared on the ocean with a fleet of ninety-eight men of war and seven fire-ships. They were speedily met by an English fleet of ninety-five sail and five fire-ships, commanded by Blake, Monk, and Dean. On the 2d of June an obstinate battle took place, which speedily terminated in favour of the English. The victory was complete. Three of the best Dutch ships were sunk, two blown up, eleven captured, with many merchantmen; and the whole of them would have been destroyed, but for their timely retreat to the shoals, where the larger English ships could not follow them. The English did not lose a single ship, but Admiral Dean, one captain, and some few inferior officers and seamen, were killed. Van Tromp attributed his defeat to the inferiority of his ships in size and in weight of metal, and to the want of sufficient ammunition, especially gunpowder.

In consequence of this disaster, the party opposed to the house of Orange raised a cry in favour of peace, and some secret negotiations were carried on with Cromwell; but the public voice was strongly in favour of the Orange party, and compelled the government to renew the naval war. Another fleet superior in numbers was hastily prepared, and ready to proceed to sea in the middle of July. This last fleet amounted to one hundred and twenty sail, and they proceeded as soon as collected to engage the fleet of England, commanded by Monk, Lawson, and Penn, between Scheveling and the mouth of the Meuse. But Tromp fell early in the action, and his death had a bad effect. A rout followed, and the Dutch lost twenty-six ships, with 4000 men killed, and near 2000 prisoners. The English lost some ships, had 600 men killed and 1000 wounded; but their ships had been so severely shattered that they were immediately obliged to seek repairs in their own ports.

The Dutch, though defeated, were not dispirited, and prepared to renew the contest, unless Cromwell would abandon his proposition for the annihilation of the power of the Orange family. He however had determined on a war with Spain, and on expeditions to Spanish America. He withdrew his propositions respecting the house of Orange, but obtained others excluding the royal family of England and their adherents from all refuge within the states, and thus a peace was concluded. The states of Holland bound themselves to exclude the house of Orange from the stadtholderate, but the other states did not agree to it; some of the members even of that province protested against the exclusion, and it was highly unpopular with the great body of the citizens everywhere but in Amsterdam.

The war with England, though short in its duration, had been very expensive as well as sanguinary. It was however no sooner at an end than the Dutch were engaged in hostilities with the Portuguese respecting their settlements in Brazil, which were terminated without any decisive naval combat. But many of the ships of Portugal were captured; and De Ruyter was sent with a fleet to make demonstrations before Lisbon, but having encountered severe storms, his ships were so much damaged that he was compelled to return to repair them, and soon afterwards peace was concluded.

The Dutch next interfered in a contest between the Danes and the Swedes. The latter power had besieged Copenhagen, when the Dutch admiral Opdam was despatched to the Baltic for its relief. He attacked and defeated the Swedish fleet under the walls of Cronenburg, and, by the supplies given to the Danes, saved their capital. A peace was soon afterwards concluded between the northern powers, through the mediation of Holland and England.

The death of Cromwell, in September 1658, had a favourable effect on the Orange party in the United Provinces, whilst the restoration of Charles to the throne of England strengthened it still more; and, though Holland opposed it, a settlement of a large sum was voted to support the household, and carry on the education of the prince. This became necessary from the French king having, upon some very frivolous pretences, seized on the principality of Orange. Charles and his adherents were full of animosity towards the Dutch; and they, elated with their independence, and their powerful naval forces, were not disposed to yield to the indignant superiority which the restored monarch had assumed. The Louvestein faction had again, under De Witt, reared its head in Holland, and some efforts were made to form a union with France, with the view of making a conquest of the ten Netherland provinces, and dividing them between France and Holland. By this proceeding, suspicions and jealousies were created towards the states, on the part of all the other governments of Europe. Towards England the Dutch had shown some animosity, and held language the more presumptuous because their party in England, the remains of the Cromwell faction, had assured them that, from the want of money, Charles would be unable to go to war. To the dismay of the Louvestein party in Holland, the king resolved on hostilities; and in April 1665, his parliament having voted abundant supplies, a fleet under the command of the Duke of York issued forth, and, after the capture of some merchant ships, finding no enemy, returned to Harwich. The states of Holland and Zealand with great activity prepared a naval force of 120 sail of vessels. The commander, Opdam, was met on the 1st of June by the Duke of York with 100 sail, and, after some manœuvring during two days, a battle was fought, in which the English were victorious, chiefly, as the Louvestein party affirmed, from the treachery of some of the captains of the Dutch ships. Their admiral was blown up in his flag-ship; the second in command, Cartemaer, was wounded, and died a prisoner; and eighteen ships, with 6000 men, were captured. The loss of the English was but one ship, and that of men on board the duke's ship was 200: the rest of the fleet had suffered very slightly; but Admiral Lawson, one of the most brave and skilful of the English commanders, fell in the conflict.

The remains of the Dutch fleet made a skilful retreat, and great vigour was exerted to reinforce it. The plague at that time raged in London, and prevented equal exertions from being made, so that the Dutch were enabled early in the following year to assemble a force of eighty-three large ships, furnished with much heavier metal than they had before employed. This force was greater than any that the English could oppose to it. A part too of the English fleet had been despatched to cruise in the mouth of the Channel, by which the grand fleet under the Duke of Albemarle was rendered still more inferior to that of the enemy. The Dutch were commanded by De Ruyter, and the opposing fleets met, and engaged on the 1st of June. The contest continued with great vigour throughout the day; but a reinforcement of sixteen ships having joined De Ruyter, Albemarle drew off, but being pursued, he turned on the enemy, and renewed the battle. During this fight the English Channel fleet made its appearance under Prince Rupert. The contest continued, on the whole, four days. The English then retreated in good order, with the loss of twenty-two ships. The Dutch had lost only seven ships, and were enabled to keep the sea, thus claiming the victory, and even threatening a descent on England.

The English fleet was so quickly reinforced, that on the 24th of July it again appeared at sea, and once more encountered the enemy with success. Three of the Dutch admirals and twelve captains were killed, with 2000 men; and seven ships were sunk, but none taken. After this last battle the English had the command of the sea, and inflicted a severe retaliation for the losses and mortifications they had endured. This produced great exhibitions of party-spirit in Holland, and also disposed them to peace. England, by the extravagance of its sovereign, by the sufferings of the plague and of the fire of London, and the intrigues of France, was much in need of peace.

Conferences were accordingly opened at Breda; but King Charles, with the negligence which characterised his government, had not stipulated for a cessation of hostilities during the negotiations. De Witt took advantage of this, and despatched a fleet to the Thames, which advanced to the Medway, and thus closed for a short time the port of London, at the same time threatening the naval arsenal of Chatham. This in its issue was little more than a bravado, though, after retreating from the Thames, the Dutch made some valuable captures. The negotiations at Breda were however carried on, and peace finally concluded on the 10th of July 1667.

This treaty was followed by one between England, Sweden, and Holland, designed to oppose the growing power of France. The king of England, at that time a pensioner, as well as some of his ministers, on the court of France, behaved with the greatest duplicity, and, upon the most frivolous pretences, resolved to aid France in her projects to conquer the whole of the Netherlands. Under pretence of supporting the triple alliance, Charles obtained money from his parliament, and then determined to attack the Dutch commercial fleets, which were navigating the ocean in full security in the state of peace which had been established. A rich fleet from the Mediterranean was expected to arrive in 1672, when Admiral Holmes was sent with a naval squadron to intercept it. Holmes assumed a pacific behaviour, but the Dutch distrusted him. He made an attack on the fleet, and took one of the ships of war and three small merchant vessels; but the rest, fighting as they retreated, reached the ports of Holland in safety. This naturally produced a declaration of war; and France, joined with England, was engaged in a contest, the object of which was to conquer the whole of the Low Countries, and subject them to the dominion of France.

The violent party-spirit in Holland was ground of alarm. The jealousy of the house of Orange had induced the party of De Witt to neglect the land forces, and the army was in a state of indiscipline, and especially in want of skilful officers, as nearly all the more experienced men of that profession were adherents of the house of Orange, and on that account were not employed. The naval force was in a far better state under the immediate control of the Louvestein faction, though many of its commanders were of the Orange party. De Ruyter was enabled speedily to fit out a fleet of ninety-one ships of war and forty-four fire-ships, and with them sailed to attack the fleet of England and France. This combined force, under the Duke of York and Marshal d'Etrées, was at anchor in Solebay on the coast of Suffolk, where the Dutch hoped by the help of their fire-ships to achieve their destruction. But the united fleets either cut or slipt their cables, and fought the Dutch on the open sea. The fight was tremendous, and was only ended by darkness, when the Dutch withdrew to their own ports. The loss on both sides was nearly equal, but heaviest on the English ships, as their new allies took but little share in the action. It was supposed they had secret orders to spare their own ships, whilst the Dutch and English should weaken each other, a supposition confirmed by subsequent events.

In the mean time the army of France had begun to act on the land side, under Louis XIV., who himself took the field. It was the most numerous and best appointed which Europe had ever seen. It amounted to 120,000 men, including the auxiliary troops of the elector of Cologne and of the bishop of Munster. The Dutch had not more than 25,000 to take the field, and the elector of Brandenburg had engaged to furnish an equal number, on the condition that the Dutch navy should assist him in taking Pomerania from the Swedes. The internal state of Holland was disturbed by party-spirit, but neither party were disposed to submit to a foreign dominion. The partisans of De Witt had projected a flight by sea, and made some preparations for the transport of 50,000 families to Batavia. The young Prince of Orange, though of a sickly frame, resolutely encouraged a spirit of defence, hopeless as it appeared; and when asked what he should do if the French should conquer the country, gallantly replied, "die in the last ditch." This inspirited others, and by the universal voice he was declared stadtholder with unlimited power, and the De Witts were prosecuted, stripped of their wealth, sentenced to perpetual banishment, and murdered by the populace.

In the mean time the French had made a rapid progress, and, proceeding by the Rhine, had subdued the provinces of Utrecht, Guelderland, and Overyssel. Amsterdam, Rotterdam, the Hague, with Middleburg, and the islands, were reduced to great straits, but were held by the Prince of Orange. As a last resource, the patriotic resolution was taken to drown the country, with its invaders. By this step, when the sluices were opened, the French were in part drowned, and such diseases broke out in their army that Amsterdam was saved. Louis had made more than 24,000 prisoners. These he could no longer keep, and on their release they joined their countrymen. The spirit shown by the Dutch had excited an interest in their favour with the emperor of Germany and other princes of the empire, and even the Spanish governor of the Netherlands sent to their aid a force of 10,000 men. A diversion too was operated in behalf of the Dutch by the elector of Brandenburg, and, though impeded by the French general Turenne, it proved of some benefit to the states.

Charles, though somewhat dissatisfied with the French, sent an English fleet to act in combination with that of France, and conquered the province of Zealand; but contrary winds rendered the attempt unsuccessful. In the beginning of 1673, an attempt was made by a French division under the Duke of Luxembourg, to march over the ice and seize Amsterdam and the Hague; but this attempt failed with great loss to the invaders, owing chiefly to a sudden thaw. In the same year a combined English and French fleet, the former commanded by Prince Rupert, and the latter by D'Etrées, engaged the Dutch fleet under De Ruyter and Van Tromp. After much cannonading, in which the French were accused of backwardness, the conflicting navies returned to their ports, each of them claiming a victory. This occurred on the 14th of June.

By this time Spain had declared war against France, the Imperialists had advanced, the invading army was compelled to abandon its conquests in Holland as rapidly as it had gained them, and the dominions of the elector of Cologne, the ally of France, including the city of that name, and Bonn, were occupied by the allies and the armies of Holland.

These events led to negotiations under the mediation of Sweden, and in 1674 a peace was concluded between all the belligerent powers. The transactions of the negotiators were so managed by the address of the Prince of Orange, as to enable him to lay the foundation of the grand alliance, by which, in subsequent periods, after his accession to the English throne, the power of Louis XIV. was reduced to the lowest point.

In 1677 the Prince of Orange was married to the Princess Mary, daughter of the Duke of York, and niece to Charles; an event hailed as favourable to their interests by the Dutch, and by those in England who were unfavourable to the mean dependence on the French court, to which Charles' pecuniary wants had subjected him.

The Dutch sent a fleet under De Ruyter to join that of Spain in the Mediterranean. In a contest with the French De Ruyter was mortally wounded, though his fleet was victorious; but in a subsequent battle the Dutch and Spaniards were defeated with great loss, by which the French became masters of the Mediterranean.

The Prince of Orange had attained to supreme, almost to absolute power in Holland. His ruling principle was hostility to France, arising from the manifest ambition of Louis XIV. With this impression he was induced to direct all his efforts to counteract the influence of France, especially amongst the German states. As his father-in-law James, who had ascended the English throne, was acting in an opposite direction, to the great disgust of the leading Protestants of his dominions, the prince opposed him by maintaining a correspondence with the discontented. They were received by him with some degree of privacy; but as James proceeded in his measures against the established religion, they became too numerous to escape the notice of France, though they engaged but little share of the attention of James, probably from the deceit of one of his ministers, who has been accused by history of having acted a false part towards him. A jealousy existed, though with no great force on the part of James, towards France, and this induced him to decline the acceptance of offers of succour from Louis XIV.

The Prince of Orange, under the pretext of a dispute with Bavaria and the elector of Cologne, collected an army of 14,000, with transports sufficient to convey them to England. After being once driven back by storms, the forces landed in Torbay on the 4th of November 1688; and thus was effected that change of succession usually called the Revolution, the details and consequences of which belong more to the history of England than to that of Holland.

The change of sovereigns brought England into the grand alliance against France; and the united navies, in 1692, fought the battle of La Hogue, in which, after a contest of three days' continuance, the French admiral Tourville was completely beaten, and suffered the loss of sixteen of his largest ships. The Dutch commerce suffered considerably by the privateers of France, especially by the operations of the celebrated Du Bart; but these and other hostilities were suspended by the peace of Ryswick, concluded in 1697.

The death of King William occurred in 1701, just at the commencement of that war respecting the Spanish succession, which continued till the peace of Utrecht, in the year 1712. The transactions connected with it belong more to the history of other countries than to that of Holland, though the Dutch states under the succession of William, who was created stadtholder, continued to bear a considerable share in the contests.

About the year 1742 the Louvestein party had gained the upper hand in Holland; and Cardinal Fleury, the French minister, engaged the states in some intrigues, and even hostilities, upon which a stadtholder was again appointed, and soon afterwards a general peace was concluded, that of Aix-la-Chapelle, in 1748.

The prince stadtholder died in 1751. He had seen but little service in the field, yet he had proved himself an active and skilful chief of the republic. He left a son and daughter, both minors; and his office was intrusted, as well as the education of his children, to their mother, a daughter of George II.

Whilst the Seven Years' War raged, from 1758 to 1763, Holland maintained its neutrality, or at least affected to do so. Great complaints and many discussions arose with England, on a question of neutral rights, which has continued till the present time; but they led to no events of any importance. When the war between England and her American colonies broke out, the question of neutral rights was again resumed; but, in the midst of the discussions on that subject, it was discovered that an attempt at a treaty with those called by us our rebel subjects had been favourably received in Amsterdam, and Mr Laurens, an American ambassador on his passage, was captured with the correspondence. This led to hostilities, in which St Eustatia in the West Indies was taken by the English. In the year 1782 a Dutch fleet was equipped, and met on the Dogger Bank by an English fleet of nearly equal force under Admiral Parker. A bloody fight ensued, which terminated in favour of the English. The peace which followed, in 1783, restored tranquillity to Holland, which had suffered severe losses by captures during the short hostilities that had been carried on. After the peace, the Anti-Orange party in Holland, which, from the hereditary dignity having been conferred on that family, had appeared extinct, gained fresh influence, and again raised its head. The Princess of Orange, the sister of the king of Prussia, had been grossly insulted, upon which that monarch demanded satisfaction, and this being refused, he marched an army into Holland, which was feebly defended by the clamorous boasters of their bravery. Amsterdam was occupied by the Prussians in September 1787; the stadtholder was reinstated in the power of which he had been deprived; and a strict alliance was formed with England and Prussia. Though tranquillity was thus restored, the party which had been suppressed were dissatisfied, and watched for the fittest opportunity to avenge their mortifications.

Nor was it long before an occasion presented itself. In 1794, when the French republican flag was displayed on the frontiers, the defeated party were active and clamorous, and when the country was invaded by the army of Pichegru, they gave it every assistance in their power. This state of affairs, with a frost of great intensity, which admitted the passage on the ice of the artillery and heavy baggage of the French army, rendered the conquest of Holland of easy accomplishment. In 1795 the Orange family fled and took refuge in England, whilst a republican constitution, framed by the French faction of the day, was established, with a directory of five persons as the executive power. The new republic, called the Batavian, was compelled to cede to France some parts of its territory, with the cities of Maestricht and Venlo, and the province of Limburg. An immediate demand was enforced for the payment of ten millions sterling, and the army of France was to be paid, fed, and clothed at the expense of the Batavian republic. Under this state of things, one part of their navy was given up to the British by the dissatisfied seamen, another part fought and were defeated; their colonies surrendered or were taken by the same power, their commerce was confined to mere coasting, and the bank of Amsterdam nearly shattered; but not a fraction of the pecuniary demands was abated by their new allies.

The constitution was new-modelled in 1801. The number of the directors was diminished, a kind of upper house was created in imitation of the council of ancients in France, and the country was divided into eight departments. The peace of Amiens gave back to Holland their colonies in South America and the Cape of Good Hope, but left Ceylon in the hands of England. When the war was renewed, the restored colonies were again captured, their ports were strictly blockaded, and every hope of prosperity was extinguished. In April 1805 a new constitution was introduced by France, and Schimmelpenninck was made sole director; but his integrity was unable to serve his country in the difficult circumstances in which both he and it were placed. It was therefore determined by Bonaparte to create Holland into a separate kingdom, and place his brother Louis on the throne. This was executed in June 1806. On his accession Louis availed himself of the talents and integrity of the late director, and acted, as far as he was able, for the benefit of the people over whom he had been placed as sovereign. But none of his efforts proved effectual in removing the general distress, and even in the few which were made, he was so controlled by his imperial brother, that, without communicating his intention, Louis withdrew himself from Holland, renounced all authority, and, with but scanty means of subsistence, took up his residence as a private individual in the dominions of the emperor of Austria. This step has been represented as having been hastened by his incapacity to relieve the distress which had been produced in his dominions by the landing of the English in Middleburg in their attempt upon Antwerp in 1809.

Louis retired in July 1810, and Holland was by a decree of the emperor incorporated as an integral part of his empire; Amsterdam was declared to be the third city of the imperial dominions; the French conscription law was extended to the whole of Holland, and those taken under it were equally divided between the land and the sea service; and the country was then, for military purposes, formed into two divisions.

Under this military yoke the Dutch suffered till after the battle of Leipsic in October 1813, when a part of the victorious army under General Bulow advanced toward Holland, and met there an English division under General Graham. On the 20th of November the two commanders called on the Dutch to join the cause of the allies. Two days before this, Count Hogendorp, a moderate Orangist, had privately collected in his house a number of the most distinguished persons, who, like himself, had formed part of the ministry from 1788 to 1795, and persuaded them to take upon themselves the provisional government, till the Prince of Orange, who was expected from England, should arrive.

A correspondence was opened with General Bulow, and with the allied monarchs, who had advanced to Frankfort; and invitations were addressed to the prince, who with little delay arrived at the Hague, and proceeded to Amsterdam amidst the rapturous acclamations of the assembled crowds. Proclamations had been circulated generally, headed, "The Netherlands are free, and William I. is the sovereign prince of this land of liberty." He however refused to assume any power till an assembly could be convened, which might properly be considered as a fair representation of the whole people. An assembly of notables, consisting of the most distinguished men of all parties and professions, was speedily called together. The number summoned was 600; of these, 125 declined attending, some on account of their age, others from ill health or personal reasons. With the dissent of only twenty-six voices, the prince was declared king, and a constitution decreed, which secured to him considerable power, limited, however, by two legislative assemblies.

When the French forces were compelled to abandon the ten ancient provinces of the house of Austria, these were considered as conquests made by the allied powers, who assumed the disposal of them. The congress of Vienna, of which Austria, the former sovereign of those provinces, was a member, resolved that they should be united with the seven provinces, and form together one independent kingdom, under a constitution, of which the princes of the house of Orange were to be hereditary monarchs. As an indemnification to the prince, now king, for the loss of his states in Germany, the duchy of Luxembourg, with the exception of the fortress, was given up to be added to this newly-constructed kingdom, and in it was included the ancient bishopric of Liège.

Before the complicated arrangements which the union of these parts required could be completed, the return of Bonaparte from Elba, and the revolt of the French army, created impediments to the settlement of internal affairs. But this newly-constructed kingdom, which was the first object of attack, entered with energy into the contest, and their troops, mustered as they had hastily been, took an honourable part, under the eldest son of the king, now Prince of Orange, in the grand events of that short but brilliant campaign of 1815, which ended in the decisive victory of Waterloo.

The consolidation of such heterogeneous bodies as the inhabitants of Belgium and those of Holland was a difficult task, owing to their differences of religion, of laws, of language, and of occupations. The Belgians were rigid Catholics, and their clergy strove to prevent the toleration of all other professions; their laws had all been founded on the system of the ancient Dukes of Burgundy, but altered to suit the Code Napoleon. The language spoken by the major part of the people, though it nearly resembled the Dutch, had considerably varied from it in the practice of two hundred years; and besides, a numerous portion of them spoke French almost exclusively, whilst another portion spoke the Walloon, and in Luxembourg the German language predominated. The Dutch were principally conversant in trade, in the fisheries, and in manufactures, whilst the Belgians were chiefly employed in agriculture.

The members of the legislative body contained nearly an equal division of the two countries; and as they acted rather with the feeling of delegates from the parts by which they were chosen, than as the representatives of the interests of the whole community, their decisions were subject to great fluctuations, according to the number of Dutch or of Belgian members who might happen, by sickness or by accident, to be prevented from being present when the votes on a particular proposition were taken. This inconvenience might have been removed by time, if other causes had not been in operation. The agriculturists wished to monopolise the whole supply of corn by means of a restrictive law; but the distillers, who used a great quantity of Baltic corn in making gin, and the speculative merchants in grain, who were a medium for supplying that commodity to a great extent from countries in which it was cheap, to countries in which it was dear, claimed a continuance of the free trade which they had long enjoyed. Though this point was finally settled in favour of the Dutch party, it caused a rankling feeling in the minds of the Belgians. The assemblies, besides their ordinary occupations, had their attention constantly directed to the composition of a system of law, applicable both to civil and to criminal cases, and had made great progress in the work. After much opposition to religious toleration, in which the king displayed both temper and firmness, a concordat was made with the pope, which, if not quite satisfactory, would, if left to itself, have probably removed all existing obstacles. The difference of language, though represented by those who availed themselves of every pretext to produce mischief, as of importance, was not in reality of very great moment. The Belgic and the Dutch are scarcely more dissimilar than the English and the Scotch, and one or the other was the language of a vast majority. All the books of any value were in the Dutch dialect, but they were neglected by the Belgians, of whom the few that could and did read drew their ideas from French publications. By directing all law proceedings to be carried on in the vernacular languages, a body of impetuous young men, imbued with French principles, were inflamed against the government, and gained more influence than they could have obtained if the exclusion of the French tongue from the courts had been gradually and not suddenly attempted.

In spite of these obstacles to a more perfect union, no country ever made so rapid a progress in prosperity as was exhibited in Belgium. The products of its soil, the iron and the coals of Liège and of Luxembourg, found most beneficial markets in Holland. The corn was, in spite of that imported from the north of Europe, sold at profitable rates. The trade with the Dutch colonies being opened to them, and the valuable port of Antwerp being no longer closed, Belgium made a great progress in foreign trade. The effect of this was to create new manufacturing establishments of cotton, woollen, and linen goods, and to extend those which had before existed. The advancement of the country was manifested to the most casual observer, and seen in the increase of private and public buildings, and in the improvement and embellishment of the old ones, in every city, town, and village.

The state of ease and improvement so striking in Belgium was, however, no security against the union of opposite factions, who agreed in nothing but in the work of inflaming the worst passions of the most ignorant part of the community, who, though highly bigoted to their religion, were made tools to overturn the government, by those who avowedly hated it.

The Parisian revolution of July 1830 quickly produced a similar one in Brussels. The events passed as rapidly as in the former city. There were few or no troops, a negligent and inefficient police force, and no spirit amongst those who possessed property, to protect it against the plunderers. They prayed the king to send troops to protect them; but when these arrived, the inflamed Belgians, who were from policy mixed up in the same ranks with the Dutch, would not act, and they abandoned the city. The mob, thus triumphant, compelled the feebler but richer citizens to submit to their demagogue leaders. This produced a declaration of independence against the house of Orange.

In the mean time, the Dutch, who were not without causes of complaint of the greater favour shown to the Belgians than to themselves, were firm in their allegiance to the monarch, and wished for a separation of the two countries. This measure was proposed and discussed in the legislative assembly at the Hague, and ultimately, by a majority, but not a large one, determined upon.

Application was made by the king of the Netherlands, to the several powers who had at Vienna sanctioned the union, and guaranteed to him the possession of his throne. This led to discussions and negotiations, during which a monarch was elected by the Belgians. They wished one from the family of Napoleon, or that of Orleans, but were not allowed a free choice, and at length Prince Leopold of Saxe-Coburg was placed on the throne.

The Dutch soon composed an army, which, though inferior in number to that of Belgium, invaded the country. The Belgians displayed neither courage nor discipline, but fled in all directions; and their new king would, but for an accident, have been made prisoner. A division of the French army advanced to the aid of the Belgians, upon which the Dutch retired.

The citadel which commanded the city of Antwerp was still garrisoned by a Dutch force. It appeared proper to England and France that this should be given up to Leopold; and as the Dutch refused to surrender it till all other subjects of contest between the two countries were arranged, it was resolved to compel its surrender by warlike measures. The ports of Holland were blockaded, and the fortress of Antwerp was attacked by a French army, and, after a gallant defence, compelled to capitulate. The embargo was then taken off, and all hostilities ceased in 1833.

The king still retains his former title of king of the Netherlands, but as that will probably be finally changed for some other of a more definite nature, we here confine our statistical description to the country actually under his authority, the divisions, extent, and population of which are as follow:

Provinces.	Extent in Acres.	Population.	Cities.	Market Towns.	Villages.
North Brabant	1,283,200	349,289	16	11	143
Guelderland...	1,310,700	312,897	22	3	381
North Holland	573,300	417,458	14	4	212
South Holland	713,300	484,608	18	4	281
Zealand.........	415,600	137,194	20	2	308
Utrecht.........	341,250	131,835	6	1	107
Friesland	682,500	207,425	11	1	336
Overyssel.......	827,000	180,495	16	3	198
Groningen	579,300	159,321	4	0	280
Drenthe.........	614,500	64,028	1	2	37
	7,340,600	2,444,550	128	31	2283

In this account the duchy of Luxembourg is omitted, as being at present the subject of negotiation between Belgium and Holland, in which are also intermingled the views of the powers who were parties to the treaty of Vienna, as well as those of the Germanic confederation.

That province extends over 2193 square miles, contains twenty-two cities and towns, and 809 villages, with 302,654 inhabitants. A part of it, however, comprehending the strong fortress of the same name, with a circle of four leagues around, will be continued in the hands of the German confederation, whether the remaining part should form a part of Holland or of Belgium.

The cities of Holland containing each more than 10,000 inhabitants, with their actual population, were in 1833 as in the statement subjoined.

Cities.	Population.	Cities.	Population.
Amsterdam	202,364	Hague	56,105
Rotterdam	72,294	Utrecht	43,407

Cities.	Population.	Cities.	Population.
Leyden	34,564	Middleburg	14,700
Groningen	30,260	Arnhem	14,509
Haarlem	21,667	Deventer	13,639
Leuwarden	20,938	Breda	13,114
Bois-le-Duc	20,489	Gouda	12,878
Dort	19,972	Amersfort	11,782
Nimeguen	17,734	Tilbourg	11,726
Zwolle	15,640	Scheidam	11,588
Delft	15,023	Zutphen	10,204

The proportion of the town population to that of the villages is far greater than is to be found in any other part of the world, as appears by the following table.

Comparison of the Town with the Rural Inhabitants of Holland.

Provinces.	Town Population.			Country Population.		
	Males.	Females.	Total.	Males.	Females.	Total.
North Brabant	35,399	35,550	70,946	137,791	140,151	277,942
Guelderland	39,807	42,668	82,475	115,502	111,816	227,318
North Holland	125,282	150,656	275,941	68,882	69,165	138,047
South Holland	116,211	137,101	253,312	112,956	113,466	226,425
Zealand	20,025	23,120	43,145	47,034	47,083	94,117
Utrecht	30,690	34,035	64,725	34,258	33,376	67,634
Friesland	25,084	28,229	53,383	75,867	75,659	151,526
Overyssel	18,552	19,609	38,161	71,921	68,813	140,734
Groningen	14,119	16,141	30,260	63,505	63,739	127,244
Drenthe	5,254	5,278	10,553	27,274	26,062	53,336
	430,423	492,387	922,901	754,990	749,330	1,504,323

It is worthy of remark, that whilst in the country inhabitants the males rather exceed the females, in the cities and towns the females exceed in number the males by nearly a fifteenth part.

Provinces.	Varieties of Religious Sects.				
	Protestants.	Catholics.	Jews.	Unknown Sects.	Total.
North Brabant	41,840	305,446	1,476	129	348,891
Guelderland	188,319	118,003	2,748	723	309,793
North Holland	274,211	114,705	24,117	955	413,988
South Holland	353,852	117,364	7,596	925	479,737
Zealand	100,747	36,060	454	1	137,262
Utrecht	77,490	53,340	1,484	45	132,359
Friesland	184,787	18,543	1,555	24	204,909
Overyssel	117,131	59,362	2,231	171	178,895
Groningen	143,198	11,646	2,660	......	157,504
Drenthe	60,173	2,451	1,172	72	63,868
	1,541,748	836,920	45,493	3,045	2,427,206

The several sects are maintained by the government, although some particular churches have endowments. The greater part of the Protestants are of the Calvinistic profession. The Lutherans are the next in number, the Menonites and the Remonstrants exceed 120,000, but the whole of the other Protestants taken together are not more than half the number of the Calvinists. By the budget of 1833 the sums voted for the support of the Protestant worship amounted to 1,330,000 florins (L.115,000), and for the Catholic worship 400,000 florins (L.33,400), besides the expense of the universities. There are now three universities, viz. Leyden with 684 students, Utrecht with 476, and Groningen with 284. These are indiscriminately resorted to by the different religious parties, whose separate theological studies are provided for by the state under professors of each faith.

The uncertain state of the external relations, and especially of those with their late fellow subjects, has caused an augmentation of the forces both by land and by sea, far beyond what can be needed or supported for a long period. The regular land army, which is well organized and disciplined, consists of forty-eight battalions of infantry, twenty-three squadrons of cavalry, nine corps of riflemen, and a proportional force of artillery. Besides these troops, a numerous body of volunteers, called the Schuttery, are in a state of preparation to act in the defence of the country. The navy consists of eight ships of the line, two of eighty-four guns and six of seventy-four. The frigates are three of sixty guns, thirteen of forty-four guns, and seven of thirty-two guns. There are fourteen corvettes mounting from twenty to twenty-eight guns, and sixteen brigs from eight to eighteen guns, and several armed steam-vessels have been recently constructed. For the defence of the internal water frontier, there are about eighty large gun-boats or barks armed, each of them having a twenty-four pound gun at their prow, two six pounders at the stern, and two carronades on the sides. This force is manned with 7000 good seamen, independently of officers, and is peculiarly appropriate for defence.

The finances of the kingdom are at present in a provisional state, owing to the indecisive negotiations which have been for several years under discussion, respecting the division of the national debt, which belonged to the two countries of Belgium and Holland when united as one kingdom. The plan decided on by the allied powers, and acquiesced in by both governments, was, that this debt should be divided into thirteen parts, of which seven should be assumed by Belgium and six by Holland. But as Belgium pays no part of the interest, the dividends have hitherto been regularly discharged by Holland. The credit of that government is good, and the wealth of its subjects abundant, and the king finds no difficulty whatever in availing himself of both during the uncertain period, which is still protracted. The expenses were thus estimated for the year 1833:

Civil list	1,425,000 florins.
Secretaries of state	572,840
Department of foreign affairs	596,200
…………… of the interior	3,103,309
Department of justice	1,150,000 florins.
…………… of worship	1,730,000
Naval force	6,500,000
Army	12,100,000
National industry and colonies	587,016
Interest on the debt	21,621,484
	49,385,849

As twelve florins are equal to a pound sterling, the whole ordinary expenditure consequently amounts to L.4,115,480; but to this must be added 44,000,000 florins for extraordinaries on account of warlike preparations. If tranquillity be restored, and Belgium should pay her proportion of the interest on the debt, the finances of this kingdom will be in a prosperous state. During the union, the Belgic portion paid taxes at the rate of ten florins per head on the whole population, whilst Holland paid rather more than fifteen florins per head. With only its due proportion of the debt, Holland would have a surplus revenue for its ordinary expenses, and might reduce annually a portion of its debt, especially as she has the whole of the colonial possessions, and the far greater proportion of the shipping, the fisheries, and the foreign trade.

The foreign possessions of Holland are the following:

		Whole Inhabitants.	Whites.	Free Coloured.	Slaves.
Asia	Batavia	4,800,700	50,000	4,758,300	12,400
	Amboyna	45,000	400	44,000	600
	Banda	44,000	400	43,000	600
	Ternate	170,000	300	169,500	200
	Macassar	360,000	500	358,500	1000
	Sumatra	1,040,000	500	1,038,500	1000
	Timor	85,700	600	84,000	400
Africa	Forts on the coast of Guinea, with only garrisons.				
America	Surinam	57,040	6,050	7,100	74,500
	St Eustatia	13,710			
	Curaçoa	12,350			
	St Martin's	4,100			
	Saba	450			

Besides these, the Dutch claim the islands of Oruba and Orubilla, that of Bonaire or Buenos Ayres, with the Bird Islands; all near the coast of the late Spanish settlements. They have few or no resident inhabitants, but a few persons occasionally repair to them to take turtles or to collect salt.

The government of Holland is a monarchy, hereditary in the house of Orange, and limited, by the constitution founded in August 1815, to the power of executing the laws. It was grounded on the ancient habits and usages, only making the executive power permanent, instead of occasional and temporary, as it was when a stadtholder was formerly appointed. The legislature is composed of two houses. The lower house has fifty-five members, none of whom can be less than forty years of age, and of these twenty-two are chosen by the provinces of North and South Holland, seven by North Brabant, six by Guelderland, five by Friesland, four each by Overyssel and Groningen, three each by Zealand and Utrecht, and one by Drenthe. The upper house consists of the nobles, appointed for life by the king.

As the greater part of the establishments of the country are permanent as well as ancient, and as the greater part of the revenue is voted every ten years in anticipation, the transactions of the chambers occupy but a short space of time, nor do they create so great an interest as in countries where more business is brought under the notice of the popular assemblies. In this kingdom the far greater part of their internal affairs are settled in the provincial assemblies of the several states, and in corporate bodies of the larger cities; all of whom have considerable funds under their control, and exercise extensive power within their respective limits.

From the economical habits of all classes, of which the monarch is an eminent example, the expenses of the several public functionaries are fixed upon a very moderate scale. This habit of prudence and foresight has descended from the higher to all other classes of society, and has been the main cause of that great accumulation of wealth, which, from the foundation of its independence, and in spite of the severe reverses it has sustained, has made this kingdom so remarkable.

No observant traveller can pass through Holland without feeling surprise at the abundant wealth, and the profitable application of it to the obtaining of additional wealth, which is everywhere to be seen. This is manifested in the public and the private buildings, in the farming erections, in the boundaries of the land, in the dykes, the canals, the roads, the mills for keeping the fields clear of water, in the wheel carriages, and in the cattle, as well in those applicable to labour, as in those kept for the dairy or for food. The same may be seen in what relates to their ships, boats, workshops, and the interior of the dwellings. All are distinguished by their cleanliness and order, which, the Dutch have by long experience known, are essential ingredients of economy.

During the twenty years from 1794 to 1814, when the country was subjected to France, when the foreign trade was annihilated, and the intercourse with the colonies was suspended, it has been estimated that more than one hundred millions sterling, beyond the expenses of government, were extorted from Holland by their acute masters. This is said to have been encountered by such rigid parsimony, practised by all individuals and families, that the actual capital of the country was little, if at all, impaired by the extortion it had endured. On the return of tranquillity, the capital thus reserved was in a great degree employed in loans to the several foreign states of Europe; which loans were made on terms so advantageous to the lenders, that, between 1814 and 1833, more gain has been made by the Dutch capitalists than had been taken from them in the preceding twenty years.

This traffic in money, of which Amsterdam may be considered as the central market for the whole of Europe, is not confined to the great capitalists, as in most other countries, but by various modes is so diffused over the community, that those who have but small reserve funds are enabled to partake of the advantages of it, and that whilst pursuing their regular and customary occupations.

With the return of peace the intercourse had been renewed with the colonies in the East Indies, and upon the coast of South America, which had been restored in an improved condition. This gave rise to a profitable commerce with the south-eastern part of Asia, and enabled the proprietors of estates in Surinam to realize their property. The transit trade, the fisheries, the commerce with the Baltic, and with the kingdoms of Spain and Portugal, and the ports of the Mediterranean, were all re-opened, and extended beyond their former limits. During the continuance of the union with Belgium that part of the kingdom shared these branches of profit, chiefly through the noble port of Antwerp. But the late revolutionary events have nearly thrown the whole of that commerce into the hands of the Dutch. As the most substantial of the merchants and the larger ship-owners have removed from Antwerp to Rotterdam or Amsterdam, it is probable that the trade of Holland, whatever may be the result of the pending negotiations, will be benefited by the separation of the two countries.

During the war, especially after the Berlin and Milan decrees, much of the inert capital of Holland was directed towards the improvement of the soil and cultivation, and its fruits in a few years vastly increased. Many of these now form an important portion of its export trade. Those here enumerated have been doubled in quantity in the ten years up to the time of the insurrection at Brussels; and the exports annually, on an average of three years ending with 1829, were as follow:—

Butter	7,924,778	pounds.
Cheese	16,383,217	...
Oilcakes	15,024,579	...
Oil from rape and linseed	019,260	hogsheads.
Salted meat	355,860	pounds.
Hams	136,312	...
Hemp, rape, and linseed	196,800	bushels.

Another product of the soil, the export of which is of vast extent, but not very accurately ascertained, is gin, distilled from corn in the large establishments in the city of Scheidam, and some other places. It is not, however, the sole product of their own soil, as much of the corn from which it is made is previously imported from the Baltic, and other northern ports of Europe. This corn trade was once a very extensive branch, but of late years, from causes too complicated to be explained here, it has been very much contracted, and the large storehouses of Amsterdam have been but slightly furnished with it.

The favourable situation for commerce in which Holland is placed, at the mouths of great rivers, besides the facilities for defence, has induced the construction of works which, though chiefly intended for protection, are beneficial as means of intercourse. The artificial canals are numerous and extensive, and have been constructed at an expense which only the general economy could have encountered. Without enumerating them, one of recent construction deserves especial notice. The ship canal from the Helder to Amsterdam, which was completed and opened in 1825, is about eighty miles in length, 120 feet broad, and twenty-five feet deep; thus capable of conveying into the capital the largest ship of war. It is an undertaking, both by its execution and its cost, worthy of the most flourishing period of the republic. The expense of the work has exceeded one million sterling.

During the union of Belgium with Holland, the former country had extended its manufacturing industry, and, from being more favourably situated, had prevented Holland from re-establishing those fabrics of woollen and linen goods which had flourished before the occupation of the country by the French. At present the manufactures of Holland are upon a narrow scale. Some linen, with a few woollen and cotton goods, are made, but chiefly for domestic consumption. A few articles of tapes and other small wares are made at Haarlem; and some linens are still bleached there, which are either made in the country, or imported in an unbleached state from Silesia. The business of refining sugar is carried on extensively in Amsterdam, and that of making snuff and tobacco gives occupation to numerous labourers. The making of gin has been already noticed, to which it may be added, that the breweries are large and numerous. The building of ships, barges, and boats, is now the chief branch of manufacturing industry; and in the beauty of their form, in their durability, and in their adaptation for stowage, the builders of Holland have of late years been making a rapid progress. The greatest deficiency in Holland is the want of occupation for common labourers; for although in the season of harvest there is not a sufficiency of hands for the work of the field, and thousands from Westphalia repair to it to gather in the crops, yet at other seasons the distress is very great, and in no country is there so much call for the practice of benevolence as in Holland, and nowhere such abundant exercise of that virtue.

The fisheries on their own coasts, as well as those on the shores of Great Britain, employ many seamen, as does the Greenland whale-fishery; but this is chiefly a summer labour, and that class of workmen feel much distress in the winter, especially whenever, as is a common occurrence, the canals are frozen, and cease to be navigable.

The agriculture of Holland is well conducted, with very productive results in the lower parts of the country. Wheat is but little cultivated, rye is more extensively so; but the most profitable grain is oats, of which alone more is exported than is imported. Barley is but little grown, and what is needed is chiefly supplied from Germany by the inland rivers. In the recently-cultivated poor lands in Groningen and Drenthe much buck-wheat is grown. Potatoes also are abundantly produced. The more beneficial products are those from the cattle, such as butter, cheese, bacon, and hams; and on the farms where they are maintained are raised the greater part of those seeds from which their oil is made.

The climate is moist, and the soil generally damp; and in winter, especially in Amsterdam and some other cities, the fogs are extremely dense. These circumstances, combined with a scarcity of good water to drink, are considered as the causes of the increase of population being slower in Holland than in any other country of the European continent. The mode of living may have some effect on longevity: though the people are warmly clothed, yet the use of stoves, in which turf is burned, must be injurious in the manner there practised. The great quantity of cured fish, bacon, and butter, used as food, and the abundant drinking of ardent spirits, stimulated by the smoking and chewing of tobacco, must contribute in some degree to shorten the lives of the inhabitants.

The language of Holland is a dialect of the high German, derived from it when less improved than it has been within the last century. It first assumed a decided character in the latter end of the fifteenth century, and has from that time to the present been receiving additional polish from the literary labours of the several distinguished men who have cultivated it, from Agricola and Erasmus, down to the time of the lately deceased Bilderdyk. It would probably have been much further improved if some of its most distinguished authors, such as Erasmus, Lipsius, Grotius, Wyttenbach, and others, had not, for the sake of greater circulation, written in the Latin language. Though the Dutch prose has but little pretension to elegance in its tones and its expressions, it is well calculated to convey clear ideas, and to explain useful truths with great simplicity and accuracy.

In no country of Europe has the proportion of highly learned men to the whole population been so great as in Holland. The earliest impulse to literature was communicated by William the first Prince of Orange, who founded the University of Leyden in 1575, as a reward to that city for its brave defence against the Spaniards in the preceding year. Men like Scaliger, Lipsius, Heinsius, Gronovius, and Spanheim, in ancient learning; Erpenius and Gollius in oriental literature; Arminius, Drusius, and Coccejus, in theology; and the two Snelliuses, in mathematics, extended their own fame, and that of their university, throughout the whole of Europe. Soon afterwards, the high schools of Franeker, of Groningen, and of Utrecht, produced a rivalry highly advantageous to the diffusion of knowledge.

Towards the end of the seventeenth century, Huygens Leeuwenhoeck, Zwammerdam, and Hartseeker, were highly distinguished as astronomers and as natural historians. After the peace of Utrecht in 1713, Albert Schultens, Hemsterhuis, and the celebrated Boerhaave, with a long list of others, began to extend the study of the Greek and of the oriental languages, to improve their own, and more especially to diffuse a more correct knowledge of the healing art. The science of the law of nations, as well as of law in general, owes much to eminent Dutch writers; and nowhere has the research into antiquities been more assiduously pursued, or with greater success. The celebrity of Dutch literature invited able men from other countries, and their works published in Holland still further extended the renown of the Dutch schools. Thus Scaliger and Luzac were of French origin; Albinus, Vossius, Gronovius, Ruhnken, and Vorstius, were Germans; and Wyttenbach was a native of Switzerland. In history, in criticism, and in poetry, the Dutch were behind no other people; and, considering the paucity of readers of their language, their progress and excellence is astonishing. It would be easy to give a list of dramatic and other poetical authors of high merit, but whose talent cannot be appreciated beyond the limits of their own confined territory.

Amidst their fierce contests, and their eager desire of gain, the fine arts, especially painting, had numerous patrons in Holland, and produced artists who powerfully, but in a peculiar manner, rivalled those of Flanders and of Italy. The Dutch school of painting has been praised for the truth of its representation of natural objects, for its perfect finishing, its appropriate shading, and the colouring and delicacy of pencil; but it has been censured for its selection of unworthy objects, and want of correctness in drawing. The founder of the school was Lucas of Leyden, born in the year 1494. His most eminent followers were, Van Been of Leyden, born in 1586, said to have been an instructor of Rubens; Bloemart of Gorcum, who painted historical pieces, landscapes, and cattle, and died in 1647; Cornelius Poelenburg of Utrecht, born in 1586, and died in 1663, who was peculiarly happy in his landscapes with figures, and his two distinguished pupils Bertange and Haensberge; also Rembrandt, who, by his exquisite skill in colouring, was enabled to hide all his other faults. Without enumerating their peculiarities, and without extending the list, we insert the following names, most of which are well known to those who have paid any attention to the history of painting and painters. Zachtleben, Gerhard Terburg, Swanvelt, Asselyn, Gerhard Dow, Peter Van Leer, Wouverman, Waterloo, Berghem, Paul Potter, Backhuysen, Mieris, Schalken, Jardin, Ruysdael, Van der Werf, and Van Hulst. To these, others of second-rate merit might be added. It is singular, that with their great skill in painting, the Dutch have made an indifferent figure in the sister art of statuary. In architectural taste also they have been deficient, but that has made some progress of late years, as may be observed in the buildings of more modern erection.

In the mechanical arts the Dutch have attained a high degree of perfection, as far as these are connected with their peculiar situation. In the conducting of water, and in the formation of dykes, bridges, sluices, and canals, their skill and contrivances to facilitate labour are obvious to all travellers who visit the country; and they excel all other nations in the construction of their mills, and in whatever pertains to the making of wheels, either for mills or for waggons and coaches. In such works, as indeed in all others, they exhibit the highest degree of neatness, strength, and economy.

The works chiefly referred to in this article are, *Histoire des Troubles des Pays-Bas*, par Vander Vynckt, 3 vols. edition 1822; *Analecta Belgica de Hoynck de Papendrecht*, 1743; *Histoire de la Guerre des Pays-Bas*, par Strada, 1604; *Geschichte des Abfalls der Niederlands von der Spanische Regeirung* von Schiller, edit. 1829; *Geographie Historique, Physique, et Statistique, du Royaume des Pays-Bas* (Amsterdam, 1827), par J. J. de Cloet; *Jaarbokje over* 1831, 1832, 1833, von Z. M. Koning in Gravenhage; *Almanach der* 1834, Weimar.

HOLLAND, New, the largest island in the world, reaching from 10° to 40° south latitude, and between 114° and 153° of east longitude from London. See the article Australasia for a general account of this immense island; and the article Wales, *New South*, for an account of the British Penal Colony established in it.

Holland, in commerce, a fine and close kind of linen, so called from its being first manufactured in Holland.

HOLLAR, Wenceslaus, a celebrated engraver, born at Prague in 1607. His parents were respectable, and he was at first designed for the study of the law. But the civil commotions which happened in his youth having ruined his family affairs, he was obliged to shift for himself; and discovering some genius for the arts, he was placed with Marian, an able designer and engraver of views. Being himself a man of great ingenuity, he profited largely from the instruction of his tutor. He principally excelled in drawing geometrical and perspective views, and plans of buildings ancient and modern, also landscapes, and every kind of natural and artificial curiosities, which he executed with a pen, in a style well adapted to the purpose. He travelled through part of Germany; but notwithstanding his merit, he met with so little encouragement that he found it difficult to support himself. The Earl of Arundel being in Germany, took him under his protection, brought him to England, and recommended him to the favour of Charles I. He engraved a variety of plates from the Arundel collection, and the portrait of the earl himself upon horseback. The civil wars which broke out soon afterwards in England ruined his fortune. He was taken prisoner with some of the royal party, and escaped with difficulty; upon which he returned to Antwerp, and joined his old patron the Earl of Arundel. He settled in that city for a time, and published a considerable number of plates; but his patron having soon afterwards proceeded to Italy for the benefit of his health, Hollar fell again into distress, and was obliged to work for the printsellers and booksellers of Antwerp at very low prices. At the Restoration he returned to England, where, though he had sufficient employment, the prices he received for his engravings were so inadequate to the labour necessarily required, that he could barely procure a subsistence; and the plague, with the succeeding fire of London, having for some time put an effectual stop to business, his affairs were so much embarrassed that he was never afterwards able to improve his fortune. It is said that he used to work for the booksellers at the rate of fourpence an hour, and always had an hour-glass before him. But all his industry, to which his numerous works bear ample testimony, failed to procure him a sufficient maintenance. On the verge of his seventieth year he was attached with an execution at his lodgings in Gardener's Lane, Westminster, when he desired only the liberty of dying in his bed, and that he might not be removed to any other prison than the grave, a favour which it is uncertain whether or not he obtained. He died in 1677. According to Vertue's Catalogue, his works amount to nearly twenty-four thousand prints, and the lovers of art are always zealous to collect them. Generally speaking, they are etchings performed almost entirely with the point. Their merits are thus characterized by Mr Strutt: "They possess great spirit, with astonishing freedom and lightness, especially when we consider how highly he has finished some of them. His views of abbeys, churches, ruins, &c. with his shells, muffs, and every species of still life, are admirable; his landscapes frequently have great merit; and his distant views of towns and cities are not only executed in a very accurate, but a very pleasing manner." But a somewhat colder character is given of them by Mr Gilpin in his essay on prints: "Hollar gives us views of particular places, which he copies with great truth, unornamented, as he found them. If we are satisfied with exact representations, we have them nowhere better than in Hollar's works; but if we expect pictures, we must seek them elsewhere. Hollar was an antiquarian and a draughtsman, but seems to have been but little acquainted with the principles of painting. Stiffness is his characteristic, and a painful exactness void of taste. His larger views are mere plans. In some of his smaller, at the expense of infinite pains, something of an effect is sometimes produced. But in general we consider him as a repository of curiosities, a record of antiquated dresses, abolished ceremonies, and edifices now in ruins."

HOLLOA, in nautical language, an exclamation of answer, to any person who calls to another to ask some question, or to give a particular order. It is also the answer in hailing a ship at a distance.

HOLM (Saxon, Hulmus, *insula amnica*), denotes an isle or fenny ground, according to Bede, or a river island. And where any place is called by that name, and this syllable is joined with any other in the names of places, it signifies a place surrounded with water, as the Flatholmes and Stepholmes in the Severn near Bristol; but if the situation of the place be not near the water, it may then signify a hilly place, *holm* in Saxon signifying also a hill or cliff.

HOLMS, two islands in the Bristol Channel, distinguished by the appellation of the flat and the steep, which form part of the Welsh county of Glamorgan. On the former is a light-house, and a dwelling for those who superintend the lights, and a few other houses, with about fifty acres of cultivated land. The latter is a rock about 400 feet in height, with a difficult and dangerous access. The soil is sandy, and the vegetation confined, and only fit for rabbits, of whom great numbers are found there.

HOLOCAUST (formed from ὁλος, *whole*, and καιω, *to consume with fire*), a kind of sacrifice, in which the whole offering is burned or consumed by fire, as an acknowledgment that God, the creator, preserver, and lord of all, was worthy of all honour and worship, and as a token of men's giving themselves entirely up to him. It is also called in Scripture a *burnt-offering*. Sacrifices of this sort are often mentioned by the heathens as well as Jews (Xenophon, *Cyropæd.* lib. viii. p. 446, 1738), and they appear to have been in use long before the institution of the other Jewish sacrifices by the law of Moses (Job, i. 5, xli. 8; and Gen. viii. 20, xxii. 13). On this account the Jews, who would not allow the Gentiles to offer on their altar any sacrifices peculiarly enjoined by the law of Moses, permitted them by means of the Jewish priests to offer holocausts, because these were a sort of sacrifices prior to the law, and common to all nations. During their subjection to the Romans it was no uncommon thing for the Gentiles to offer sacrifices to the God of Israel at Jerusalem. Holocausts were deemed by the Jews the most excellent of all their sacrifices. It is said that this kind of sacrifice was in common use amongst the heathens, till Prometheus introduced the custom of burning only a part, and reserving the remainder for his own use.

HOLOFERNES, lieutenant-general of the armies of Nebuchadonosor, king of Assyria, who having in a remarkable encounter overcome Arphaxad, king of the Medes, sent to all the neighbouring nations with an intention of obliging them to submit to his empire, pretending that there was no power capable of resisting him. At the same time Holofernes, at the head of a powerful army, passed the Euphrates, entered Cilicia and Syria, and subdued almost all the people of these provinces.

Being resolved to make a conquest of Egypt, he advanced towards Judæa, little expecting to meet with any resistance from the Jews. In the mean time, he was informed that they were preparing to oppose him; and

Achior, the commander of the Ammonites, who had already submitted to Holofernes, and joined his army with some auxiliary troops, represented to him that the Hebrews were a people protected in a particular manner by Almighty God, as long as they were obedient to him; and therefore that he should not flatter himself with expectations of overcoming them, unless they had committed some offence against God, and thereby become unworthy of his protection. Holofernes, disregarding this advice, commanded Achior to be conveyed within sight of the walls of Bethulia, tied to a tree, and left there; but the Jews came thither and unbound him.

In the mean time Holofernes formed the siege of Bethulia; and having cut off the water which supplied the city, and set guards at the only fountain which the besieged had near the walls, the inhabitants were soon reduced to extremity, and resolved to surrender if God did not send them succour in five days. Judith, informed of their resolution, conceived the design of killing Holofernes in his tent. She took her finest clothes, went out of Bethulia with her maid-servant, and being brought to the general, pretended that she could no longer endure the sins and excesses of the Jews, and that God had inspired her with the design of surrendering herself to him. As soon as Holofernes saw her, he was taken with her beauty, and some days afterwards invited her to a great feast which he had prepared for the principal officers of his army. But he drank so much wine, that drunkenness, and its immediate consequence, sleep, prevented him from satisfying his passion. Judith, who in the night was left alone in his tent, cut off his head with his own sword, and departing with her servant from the camp, returned to Bethulia with the head of Holofernes. As soon as it was day, the besieged made a sally upon their enemies, who going into their general's tent, found his headless carcass besmeared with its own blood. They then discerned that Judith had deceived them, and fled with precipitation, leaving the camp abounding with rich spoils. The Jews pursued them, killed a great number, and returned loaded with booty.

There is a considerable diversity of opinion as to the time when this war between Holofernes and the Jews happened. Some date it from the captivity of Babylon, in the reign of Manasseh, and pontificate of Eliakim the high priest; others place it some time after the captivity; and some doubt the truth of the whole transaction.

HOLOGRAPHUM (composed of ὁλος, *all*, and γραφω, *I write*), in the civil law, something written wholly in the hand-writing of the person who signs it. The word is chiefly used in speaking of a testament written wholly in the testator's own hand.

HOLSTEIN, a province of the kingdom of Denmark, one of those by which the king becomes a member of the Germanic confederacy. It was an ancient duchy, and the termination of the ancient German empire, from the year 811 till its dissolution. It is bounded on the north by Sleswick, from which it is separated by the river Eider and the Sleswick Canal; on the north-east and east by the Baltic Sea; on the south-east by the territory of Lubeck and the duchy of Lauenburg; on the south by the Elbe and the state of Hamburg; and on the west by the German Ocean. The province extends over 3260 square miles, and comprehends fourteen cities, twenty-two market-towns, 141 parishes, with 486 villages, and 374,750 inhabitants. The population are of the Saxon race, and speak the common platt Deutch, but the educated portion of the people speak the German language; their speech, as well as their manners and customs, seem to have borrowed little from the Danes, though they have for many centuries been a part of the same kingdom.

The soil is upon the whole fruitful; for though, in the centre of the province, there is a long strip of poor sand, scarcely worth cultivation, yet on both sides the land is highly productive. The western side, especially near the shore, consists of some of the best meadow-land in Europe, on which are fattened those fine oxen the meat of which is known by the name Hamburg beef, and much of it is exported from that city, as well as from Altona. When, in the course of husbandry, these lands are broken up, they produce abundant crops of oats, and some very tolerable wheat. On the eastern side, upon the Baltic, is much excellent arable land, and tolerably well managed, yielding the best of butter, with some wheat and barley; but the principal corn grown is rye. It may be said of Holstein, that it is the best agricultural district in the north of Germany. The climate is, however, cold, raw, and changeable, which is injurious to its rural husbandry.

The trade of the province is considerable. On every part of the coasts of both seas the fisheries afford much occupation. The number of ships belonging to the several ports of Altona, Kiel, Flensburg, and Gluckstadt, creates and employs many most valuable seamen. The chief trade consists of the export of corn, butter, cheese, bacon, cured fish, rape-seed, honey, and wax. The Greenland fishery is carried on from Altona. The import trade chiefly arises from the Danish colonies in the West Indies, the produce of which is brought to Altona or Flensburg.

The manufactures are of small amount, excepting that of building and equipping ships. There are some small establishments for making paper, cutlery, copper articles, and common ironmongery. The shores of the Baltic present very picturesque scenes, from the deep indentations of the sea (called *fiorde*) into the land, where they spread out and resemble lakes, and are bordered by woods rising gradually to the tops of the hills. From the eastern side of this country, in the district of Engeland, according to tradition, Hengist and Horsa, two of the princes, sailed on their expedition to our island.

HOLT, SIR JOHN, Lord Chief-Justice of the Court of King's Bench in the reign of King William, eldest son of Sir Thomas Holt, serjeant-at-law, was born at Thame, Oxfordshire, in 1642. He entered himself at Gray's Inn in 1658, and applied to the common law with so much industry that he soon became an eminent barrister. In the reign of James II. he was made recorder of London, an office which he discharged with much approbation for about a year and a half; but he lost his place by refusing to expound the law suitably to the king's designs. On the arrival of the Prince of Orange he was chosen a member of the Convention Parliament, which afforded an opportunity of displaying his abilities; and as soon as the government was settled, he was made Lord Chief Justice of the Court of King's Bench and a privy counsellor. In 1700, when Lord Somers resigned the great seal, King William pressed Chief-Justice Holt to accept of it; but he replied that he never had in his life but one chancery cause, which he lost, and that consequently he could not think himself qualified for so great a trust. He continued as chief justice for twenty-two years, during which time he obtained great reputation for steadiness, integrity, and thorough knowledge in his profession. Upon great occasions he asserted the law with intrepidity, though he thereby ventured to incur by turns the indignation of both houses of parliament. Holt was a perfect master of the common law, and as his judgment was sound, his capacity great, and his understanding clear, so he possessed a firmness of mind, and a vigour of resolution, which nothing could overcome when he found himself called upon to assert the authority of the law, and to vindicate the purity of justice. Several causes of the utmost importance, as affecting the lives, rights, liberties, and property of the people, came in judgment before him, and his decisions were all marked by the same high qualities. His definitions were remarkable for clearness and perspicuity; his arguments displayed equal powers of analysis and arrangement; and he possessed the invaluable faculty of rendering perceptible and obvious the natural differences of things, at the same time that he discriminated, with the nicest tact, between real and fanciful resemblances. His great secret consisted in the rigid and scrupulous adjustment of his premises; and hence he seldom erred in his conclusions. His arguments were instructive and convincing, whilst his integrity shrunk from any accommodation of judicial opinion to existing interests or prejudices. His decisions are, most of them, faithfully and judiciously reported by Chief-Justice Raymond, himself an eminent lawyer; and his integrity and uprightness as a judge are celebrated by the author of the *Tatler* (No. 14), under the character of Verus the magistrate. The following reports were published by him, in 1708, folio, with notes: "A Report of divers Cases in Pleas of the Crown, adjudged and determined in the reign of King Charles II. with directions for justices of the peace and others, collected by Sir John Keyling, knight, Lord Chief Justice of the Court of King's Bench, from the original manuscript under his hand; to which is added, the Report of three modern cases, viz. Armstrong and Lisle, the King and Plumer, the Queen and Mawgridge." A pretended second edition appeared in 1739, but the title only was new.

HOLT (Saxon), a wood, by which the names of towns beginning or ending with *holt*, as Buck-*holt*, denote that formerly there was plenty of wood in those places.

HOLT, lately a village, now a town, in Wiltshire, in the hundred of Bradford. It has grown up rapidly from opening a mineral spring of slightly sulphureous water, which, with the establishment of suitable accommodations, has attracted many scrofulous patients. It is a chapelry within the parish of Bradford. The inhabitants amounted in 1811 to 1812, in 1821 to 2415, and in 1831 to 2519.

HOLT, a pleasant market-town in the county of Norfolk, giving its name to the hundred in which it is situated. It is 121 miles from London, has a good market on Saturday, and an endowed grammar-school for thirty boys under the patronage of the fishmongers' company of London, who present from it to a fellowship and scholarship at Sydney College, Cambridge. The inhabitants amounted in 1801 to 1004, in 1811 to 1037, in 1821 to 1348, and in 1831 to 1622.

HOLY GHOST, one of the persons of the Holy Trinity. See TRINITY.

HOLYHEAD, a sea-port town in the island of Anglesey, in North Wales. It is situated on a peninsula at the western side of the island, and of late some great improvements have been made on the harbour, on one side of which is a light-house, on Salt Island, and another to the north-east, giving additional guidance to vessels in the night time. There is a good market on Saturday, and an ample supply of fish when the weather is favourable for taking them. The trade of the place depends chiefly on this being the greatest point of intercourse between England and Ireland, and it has been greatly advanced by the magnificent roads through North Wales, and the finishing of the suspension bridge over the Menai passage. The mails from the capital and from the northern counties arrive every morning at an early hour, and the letters and passengers are embarked immediately in steam-boats, which reach Dublin, in favourable weather, in eight hours. The inhabitants amounted in 1801 to 2132, in 1811 to 3005, in 1821 to 4071, and in 1831 to 4282.

HOLY ISLAND, a small island situated on the coast of England, ten miles south-east of Berwick, in Northumberland. Bede calls it a semi-island, being, as he observes, twice island and twice continent in one day; for at the flowing of the tide it is encompassed by water, and at the ebb there is a passage almost dry both for horses and carriages to and from the mainland, from which, if measured on a straight line, it is distant about two miles eastward, though, on account of some quicksands, passengers are obliged to make so many detours, that the length of the way is nearly doubled. The water over these flats is at spring-tides only seven feet deep. This island was called by the Britons *Inis Medicante*, and also *Landisfarne*, from the small rivulet of Lindi or Landia, which here runs into the sea, and the Celtic word *fahren*, or recess; but, on account of its being the habitation of some of the first monks in this country, it afterwards obtained its present name of *Holy Island*. It measures from east to west about two miles and a quarter, but its breadth from north to south is scarcely a mile and a half. Holy Island, though really part of Northumberland, belongs to Durham; and all civil disputes must be determined by the justices of that county.

HOLY-Rood Day, a festival observed by the Roman Catholics in memory of the exaltation of our Saviour's cross. See CROSS and EXALTATION.

HOLYWELL, a considerable town in the hundred of Mold, of the county of Flint, in North Wales, 207 miles from London. It derives its name from a spring to which numerous pilgrimages were formerly made, and which is still visited by some devout Catholics, who pay their devotions at the place once filled by the image of the patroness, St Winifred. The spring yields a regular and prodigious supply of water; according to one experiment, a hundred tons in a minute. Doubts are entertained of the accuracy of this experiment; but it certainly turns a mill close to the well. In the vicinity of this town are valuable mines of lead, calamine, and copper; and within it are appropriate establishments for rendering these minerals available to the purposes of subsequent manufactures. There are also cotton spinning-mills established upon the stream which issues from the well, between its source and its falling into the Dee. The cotton twist spun at Holywell has a great reputation from its singular evenness. The town is finely situated, the air pure, and the market on Friday well supplied. There is a modern-built parish-church, and four places of worship for Catholic and Protestant dissenters. The population amounted in 1801 to 5567, in 1811 to 6394, in 1821 to 8309, and in 1831 to 8969. Long. 3. 13. W. Lat. 53. 16. N.

HOLZMINDEN, a city of the duchy of Brunswick, in Germany, the capital of the circle of the same name. It stands on the river Weser, and has on its banks excellent quays for landing and shipping goods. It is a well-built town, with a spacious market-place, two churches, a public school moderately endowed, and a good library. It contains 420 houses, and 3600 inhabitants, who are employed in trading on the river, and in various manufactures, especially in iron and steel works, in distilleries, breweries, and tanneries. Long. 9. 9. 55. E. Lat. 51. 50. 6. N.

HOMBERG, WILLIAM, a celebrated chemist, born at Batavia on the 8th of January 1652, was the son of a Saxon gentleman employed in the service of the Dutch East India Company. His father intended him for the army, but having afterwards settled at Amsterdam, William prosecuted his studies at that place, whence he removed to Iena, and afterwards to Leipsig, where he studied the law. In 1674 he was received as advocate at Magdeburg, which had been indebted for a new species of celebrity to the physical experiments of Otto Guericke, and there applied himself to the study of experimental philosophy. Some time afterwards he travelled into Italy, and at Padua applied himself to the study of medicine, anatomy, and botany. He afterwards studied at Bologna; and at Rome he learned optics, painting, sculpture, and music. He then travelled into France, England, and Holland;

took the degree of doctor of physic at Wirtemberg; visited Germany and the North; explored the mines of Saxony, Bohemia, Hungary, and Sweden; and returned to France, where he acquired the esteem of the learned. He was on the point of returning into Germany, when Colbert being informed of his merit, made him advantageous offers, which induced him to fix his residence at Paris. But soon afterwards he lost his protector, and also incurred the odium of returning into the bosom of the Roman Catholic church; and this double misfortune was the more sensibly felt that he had never dreamed of securing for himself any independent means of subsistence. Homberg, already well known for his phosphorus, for a pneumatic machine of his own invention more perfect than that of Guericke, for his microscopes, for his discoveries in chemistry, and for the number and variety of his curious observations, was received into the Academy of Sciences in 1691, and had committed to him the laboratory of that body, of which he was one of the principal ornaments. The Duke of Orleans, afterwards regent of the kingdom, at length made him his chemist, settled upon him a pension, gave him a superb laboratory, and in 1704 made him his first physician. Homberg, having lived for thirty-three years in the Catholic faith, died in 1715. His principal works are, 1. Manière de faire le Phosphore brûlant de Kunckel, 1692; 2. Diverses Expériences du Phosphore; 3. Réflexions sur l'expérience des Larmes de Verre qui se brisent dans le Vide; 4. Expériences sur la Germination des Plantes, 1693; 5. Essais de Chimie, 1702, 1705, 1709; 6. Observations faites par le Miroir ardent, 1702; 7. Analyse du Soufre commun, 1703; 8. Découverte d'une liqueur qui dissout le Verre, 1703; 9. Observations sur les Araignées, 1707; 10. Mémoires touchant les Végétations artificielles, 1710; 11. Manière de copier sur le Verre coloré les Pierres gravées, 1712; 12. Observations sur une séparation de l'Or d'avec l'Argent, par la fonte, 1713; 13. Tracts on different metallic vegetations, on the generation of iron, and on the vitrification of gold. Homberg had occupied himself much with metals, and was not far from believing in the philosopher's stone.

Homberg, a city of Hesse-Cassel, in the province of Lower Hesse, the capital of a bailiwick of the same name. It is walled, and stands on the river Efze, containing 354 houses, and 3050 inhabitants, who have considerable trade in linen weaving, in tanning, and iron, both wrought and cast.

HOMBURG, a market-town of France, in the department of the Moselle, and arrondissement of Sarguemines. It contains 380 houses, and 1620 inhabitants.

HOME, Henry, Lord Kames, an eminent Scottish lawyer, and author of many celebrated works on various subjects, was descended of an ancient family, and born in Berwickshire in the year 1696. In his early youth he was lively, and eager in the acquisition of knowledge. He never attended a public school, but was instructed in the ancient and modern languages, as well as in several branches of mathematics, and the arts necessarily connected with that science, by Mr Wingate, a man of considerable parts and learning, who spent many years as preceptor or private tutor to young Home.

After studying at the university of Edinburgh, the civil law, and the municipal jurisprudence of his own country, Mr Home early perceived that a knowledge of these alone was not sufficient to form an accomplished lawyer. An acquaintance with the forms and practical business of courts, and especially of the supreme court, as a member of which he was to seek for fame and emolument, he considered as essentially necessary to qualify him to become a finished barrister. He accordingly attended for some time the chamber of a writer to the signet, where he had an opportunity of learning the styles of legal deeds, and the modes of conducting different species of business. This wise step, independently of his great genius and unwearied application, procured him, after his admission to the bar, peculiar respect from the court, and proportional employment in his profession of advocate. These qualifications, together with the strength and vivacity of his natural abilities, soon rendered him an ornament of the Scottish bar; and, on the 2d day of February 1752, he was advanced to the bench as one of the judges of the Court of Session, under the assumed title of Lord Kames.

Before this period, however, notwithstanding the unavoidable labours of his profession, Mr Home had favoured the world with several useful and ingenious works. In the year 1728 he published Remarkable Decisions of the Court of Session from 1716 to 1728, in one volume folio. In 1732 appeared Essays upon several subjects in law, viz. *Jus tertii*, *Beneficium cedendarum Actionum*, *Vinco Vincentem*, and *Prescription*, in one volume 8vo. The first produce of his genius excited not only the attention, but the admiration of the judges, and of all the other members of the College of Justice. This work was succeeded, in the year 1741, by Decisions of the Court of Session from its first institution to the year 1740, abridged and digested under proper heads, in the form of a Dictionary, in two volumes folio; a very laborious work, and of the greatest utility to every practical lawyer. In 1747 appeared Essays upon several subjects concerning British antiquities, viz. 1. Introduction of the Feudal Law into Scotland; 2. Constitution of Parliament; 3. Honour, Dignity; and, 4. Succession or Descent, with an appendix upon hereditary and indefeasible right, composed in 1745, and published 1747, one vol. 8vo. Though not in the order of time, we shall continue the list of all our author's writings on law, before we proceed to his productions on other subjects. In 1757, he published the Statute Law of Scotland Abridged, with historical notes, in one volume 8vo; a most useful and laborious work. In the year 1759, he presented to the public a new and very interesting work under the title of Historical Law Tracts, in two volumes 8vo. In 1760, he published, in one volume folio, the Principles of Equity; a work which shows both the fertility of the author's genius and his indefatigable application. In 1766, he gave to the public another volume in folio of Remarkable Decisions of the Court of Session from 1730 to 1752. In 1777, appeared his Elucidations respecting the Common and Statute Law of Scotland, in one volume 8vo. This book contains many curious and interesting remarks upon some intricate and dubious points which occur in the law of Scotland. In 1780, he published a volume in folio of Select Decisions of the Court of Session from 1752 to 1768.

But Lord Kames's mind was much inclined to metaphysical disquisitions. When a young man, he had corresponded with Berkeley bishop of Cloyne, Dr Butler bishop of Durham, Dr Samuel Clarke, and many other ingenious and learned men both in Britain and Ireland. The year 1751 gave birth to the first fruits of his lordship's metaphysical studies, in an octavo volume, published under the title of Essays on the Principles of Morality and Natural Religion. It contained, in more explicit terms than perhaps any other work of a religious theist then known in Scotland, a statement of the doctrine of philosophical necessity, than which it is scarcely possible to conceive any more irrational and unphilosophical, or more essentially adverse to the best interests of morality and religion. Lord Kames continued an advocate of this doctrine until the day of his death; but in a subsequent edition of the Essays, he exhibited a remarkable proof of his candour and liberality of sentiment, by altering some expressions, which, contrary to his intention, had given offence. In 1761, he published an Introduction to the Art of Thinking, in one volume 12mo. This small book was originally intended for the instruction of his own family. His Elements of Criticism appeared in 1762, in three volumes 8vo. This valuable work was intended to show that the art of criticism is founded on the principles of human nature. Before it was published, Rollin's book on the belles-lettres, a dull performance, from which a student could derive little advantage, was generally recommended; but after the Elements of Criticism appeared, the work of Rollin lost its hold of the public.

A further proof of the various pursuits of this active mind was given in the year 1772, when his lordship published a work in one volume 8vo, under the title of The Gentleman Farmer, being an attempt to improve Agriculture by subjecting it to the Test of Rational Principles. In the year 1773, he favoured the world with Sketches of the History of Man, in two vols. 4to. These sketches contain much useful information, and, like all his lordship's performances, are lively and entertaining. They were republished in four vols. 8vo.

We now come to Lord Kames's last work, to which he modestly gives the title of Loose Hints upon Education, chiefly concerning the cultivation of the heart. It was published in the year 1781, in one volume 8vo, when the venerable author was in the eighty-fifth year of his age. Though his lordship chose to call it Loose Hints, the intelligent reader will perceive in this composition an uncommon activity of mind, at an age so far advanced beyond the usual period of human life, and an earnest desire to form the minds of youth to honour, virtue, industry, and a veneration of the Deity.

Besides the books which we have enumerated, Lord Kames published many temporary and fugitive pieces in different periodical works. In the Essays Physical and Literary, published by a society of gentlemen in Edinburgh, we find compositions of his lordship on the Laws of Motion, on the Advantages of Shallow Ploughing, and on Evaporation, all exhibiting evident marks of original thinking.

Lord Kames was as remarkable for public spirit as for mental activity and great exertion. For a long tract of time he had the principal management of all the societies and boards for promoting the trade, fisheries, and manufactures in Scotland; and, as conducive to those ends, he was a strenuous advocate for making and repairing turnpike roads throughout every part of the country. He was in some measure the parent of what was called the Physical and Literary Society, which was afterwards incorporated into the Royal Society of Edinburgh. From what has been said concerning the various productions of his genius, it is obvious that there could be few idle moments in his protracted life. His mind, either teeming with new ideas, or pursuing active and laborious occupations, found incessant employment. In his temper he was naturally warm, though kind and affectionate. In the friendships he formed he was ardent, zealous, and sincere. So far from being inclined to irreligion, as some ignorant bigots insinuated, few men possessed a more devout habit of thought. A constant sense of the presence of the Deity, and a veneration for Providence, dwelt upon his mind. From this source arose that propensity which appears in all his writings, of investigating final causes, and tracing the wisdom of the Supreme Author of nature. Lord Kames died on the 27th of December 1782. As he had no marked disease, but the debility necessarily resulting from extreme old age, a few days before his death he went to the Court of Session, addressed all the judges separately, told them he was speedily to depart, and took a solemn and an affectionate farewell. A full account of his Life and Writings, including much of the Literary History of Scotland, was published by the late Lord Woodhouselee, in two vols. 4to, 1807.

HOME, John, a Scottish dramatic writer of great celebrity, was born at Leith, on the 13th of September 1722. His father, Mr Alexander Home, was town-clerk of that place, and his mother was a daughter of Mr John Hay, a writer, or solicitor, in Edinburgh. He acquired the elementary branches of his classical education under Mr Hugh Millar, master of the grammar-school of Leith, and entered the University of Edinburgh in 1735, where he soon contracted an intimacy with William Robertson, William Wilkie, Alexander Carlyle, Hugh Blair, John Blair, Sir Gilbert Elliot, Sir John Dalrymple, and several others, afterwards well known in the literary world. After having attended the humanity class taught by Mr Kerr, one of the best Latin scholars of the age; mathematics, taught by the celebrated Maclaurin; logic, taught by Dr Stevenson, who contributed more than any other man in Scotland to inspire the young men of that period with a taste for good writing and rational investigation; he proceeded to the study of moral and natural philosophy, under Sir John Pringle and Sir Robert Stewart, and then passed through the usual routine of theological instruction. He was licensed by the presbytery of Edinburgh as a preacher of the gospel, on the 4th of April 1745.

Before he had enjoyed many opportunities of exercising this peaceful function, Scotland became the scene of a civil war; and the ardour of his mind, imbued as it was with a love of enterprise, and a boundless admiration of military glory, prompted him, on the first news of the approach of the rebel army, to join an armed association, formed by the inhabitants of Edinburgh, for the defence of the city. On the 9th of September 1745, he was enrolled in the *College Company of Volunteers*, a corps which was dissolved within a week, when the city was taken possession of by the Pretender's troops. But Mr Home and a few other spirited young men again formed themselves into a more select and efficient company, in the month of November, and subsequently obtained permission from General Hawley to serve in the field. Of this company Dr William M'Ghie was chosen captain, and Mr Home lieutenant. He had the command of the company on the 17th of January 1746, at the battle of Falkirk, where, having received no orders to act, he was an indignant witness of the disgraceful rout of the royal forces, which had fought so well at Dettingen and Fontenoy; and having been one of the last to retreat, he was taken prisoner, with five of his company. They were sent to the Castle of Doun, in Perthshire, on the 25th of January; but Mr Home, with some of his fellow prisoners, escaped on the 31st, by twisting their blankets into ropes, and dropping from the battlements, a height of seventy feet. At this time Mr Home was not less remarkable for the elegance and symmetry of his person, than for his engaging and prepossessing address. His appearance bespoke great vivacity, activity, and energy; his conversation was not merely cheerful, but uncommonly sprightly and animated; and the unceasing kindness which beamed from his countenance, and marked every action of his life, was such as to render him an universal favourite.

In the course of the year 1746, after the death of Mr Robert Blair, minister of Athelstaneford, and author of the well-known poem entitled *The Grave*, Mr Home obtained the presentation to the living, by the interest of Alexander Home of Eccles, afterwards solicitor-general. He was ordained to the charge of the parish in February 1747, and proved very acceptable to the parishioners. During a considerable part of his incumbency, he gave the use of his manse to Mr Hepburn of Keith, a gentleman who had been engaged in both the rebellions in 1715 and 1745, and whose insinuating manners and enticing conversation in some measure reconciled Mr Home to the character of the Jacobites. He boarded himself in the house of a grazier or butcher in the village, at the moderate rate of L.12 a year; but as he passed a great part of his time amongst his numerous friends in the neighbourhood, it is believed that his host was not inadequately remunerated. Mr Home was frequently absent from his lodgings from Monday morning till Saturday night, and though he wrote a considerable number of discourses for the pulpit, he seldom left himself time to finish any one of them. After writing about two thirds of a sermon and committing it to memory, he generally trusted for the remainder to the moment of delivery. These unpremeditated perorations, occasionally eloquent, were delivered with more than his usual vehemence of action, and are said to have been not a little admired by his rustic audience.

Amongst the most intimate friends of Mr Home at this time were Lord Elibank, then residing at Ballancrieff, Dr Robertson, then minister of Gladsmuir, Dr Carlyle of Inveresk, and Mr George Logan of Ormiston, a young clergyman of great promise, who died soon after having been induced, by the solicitation of his ablest contemporaries, to undertake the refutation of David Hume's sceptical writings.

From his earliest years Mr Home had been a passionate admirer of the tragic muse, and about the time of his establishment in the church it was known to his familiar friends that he was engaged in the composition of a tragedy founded on the account of the death of Agis, as given in Plutarch's *Lives.* The play, when completed, was highly approved by his friends Blair, Carlyle, and George Logan.

In 1749, he went with this play to London, having obtained strong recommendations to the attention of several leaders of the republic of letters; but his reception was very discouraging, except amongst his own countrymen. Some objected to the bloodiness of the catastrophe, and to the irregular sequence of the scenes; others to the Scoticisms or vulgarisms of the style. Lord Lyttleton was then reputed the chief arbiter of taste; but no importunity could prevail upon him to read the play, because he did not like to express disapprobation, and if he happened to be pleased, he did not wish to have the trouble of supporting it, as he had lately found almost insuperable difficulty in carrying through one of Thomson's tragedies which he had warmly patronised. One Englishman of some note remarked, that the author had formed himself too much on Thomson's *Seasons* and Lee's *Plays.* "I could not have been more surprised," said Mr Home to a correspondent, "if he had told me that I had formed myself upon Euclid's *Elements* and Maclaurin's *Fluxions.*" He had not a very exalted opinion of the English intellect. "I sometimes hearken to the coffee-house conversations upon poetry and politics, where there are such fellows authors, whose wigs are worth L.3 sterling, that it is ready to make a man of moderate patience *curse his better angel from his side, and fall to reprobation.*" When Garrick refused to bring the play upon the stage, the author, after giving vent to his mortified feelings in an address to the shade of Shakspeare, composed in Westminster Abbey, returned to Scotland, and resumed the labours of his pastoral office, not without devoting a large share of his time to the society of his literary acquaintance, and to the pursuit of his favourite study.

He continued assiduously to cultivate the friendship of Mr Hepburn, from whose sister-in-law, Mrs Janet Denoon, he first heard the old song of *Gil Morrice.* This ballad furnished the hint on which he constructed the tragedy of *Douglas,* in the composition of which he amused himself occasionally the next five years, submitting the successive scenes to the revision of a few friends. His own handwriting was scarcely legible, and the play was repeatedly transcribed by Dr Carlyle. From this circumstance, and from the warm interest which that gentleman took in the success of the piece, he was commonly supposed to have had a principal share in the composition. Sir Gilbert Elliot's criticisms were acknowledged to be particularly valuable, and he also was not unfrequently reputed the author. In February 1755, Mr Home set out for London on horseback, with his tragedy in one pocket, and some clean linen in the other; and was accompanied into Northumberland by a cavalcade of clerical friends, two of whom, Carlyle and Cupples, proceeded with him a stage or two beyond Durham. This play, as well as *Agis,* was rejected by Garrick, not so much, perhaps, owing to any defect in his own taste, as because it did not contain much of that pomp and circumstance which seemed to be the chief attractions of the tragedies which were at this time favourites with the public.

Whilst Mr Home was engaged in the composition of this play, he had not been inattentive to other affairs more nearly connected with the clerical profession. In 1752 he took an active part in the deliberations of the General Assembly, when Mr Gillespie was deposed. The year before, he had made the motion to suspend Mr Adams of Falkirk, for disobeying an order of the General Assembly, and was seconded by Dr Robertson, the first time either had spoken in that house. They were not members next year, but both spoke at the bar with great effect. About this time Mr Home's support was strongly solicited by Dr Cuming, the leader of what was then called the moderate party; but he resolved to act an independent part. He had become a great favourite of Lord Milton, nephew of the famous Andrew Fletcher of Salton; and, as his lordship managed the political affairs of Scotland, under the direction of Archibald duke of Argyll, he took an opportunity of introducing Mr Home to his grace, who was much delighted with his cheerful and fascinating manners, and continued to befriend him ever afterwards. Mr Home paid a visit to the duke at Inverary, in October 1756, and was most kindly received. At this time he was closely connected in friendship with the members of the *Select Society,* established at Edinburgh in 1754.

It was resolved at last, by the friends of the author, in December 1756, to have *Douglas* represented on the Edinburgh stage; and the result far exceeded their most sanguine expectations. Digges performed *Young Norval,* and *Lady Randolph* was personated by Mrs Ward. The theatre was crowded night after night, and the applause of the audience was tumultuous. Not only all the literati attended, but most of the judges and other grave characters, whose presence in the theatre excited great surprise and not a little scandal. Before this time the inhabitants of Edinburgh had not been much accustomed to dramatic entertainments, as the leaders of the church had generally had sufficient influence to induce the civil power to suppress them. In the year 1727, the Presbytery of Edinburgh issued an *Admonition against the Stage;* and, in 1733, in consequence of a sermon on the *Use and Abuse of Diversions,* by Mr George Anderson, a minister of Edinburgh, various pamphlets were published, particularly one by Mr Anderson himself, in which he denounced the stage as an unchristian diversion, and repeated all the arguments against it produced by Prynne, Filmer, Baxter, and Collier. Following the example of their predecessors, this body issued a similar admonition and exhortation to all within their bounds, on the 5th of January 1757, and not only suspended Mr White, minister of Libberton, for having been present at the performance of *Douglas,* but wrote letters to the presbyteries of Haddington, Dalkeith, Ayr, Chirnside, and Dunse, informing against those of their members who had been guilty of the same indecorum. Some of the clergymen accused were allowed to escape with a gentle rebuke; but Dr Carlyle was libelled, as it is called, by his presbytery, at the instigation, as he believed, of an eminent lawyer, then lord advocate, whose conduct on that occasion was afterwards sufficiently avenged by the ridicule heaped upon him in an humorous political satire, by Dr Adam Ferguson, entitled *The History of Sister*

Peg. Several abusive pamphlets against the play and its supporters were known to proceed from the minions of this gentleman, who was then rising to a degree of consequence which soon supplanted the declining influence of Lord Milton.[1]

After the play had been so amazingly successful in Edinburgh, it was eagerly admitted on the stage of Covent-Garden early in 1757; but Garrick still excluded it from Drury-Lane. The triumph of the author was, however, in no small degree abated by the prosecution of his friends in the church courts, and by his own threatened deposition. The subject was brought before the General Assembly by Dr Carlyle in the form of an appeal from a sentence of the Synod of Lothian and Tweeddale; and a decision favourable to the appellant was carried by a great majority of 117 to 37. The result of this vote checked the introduction of a very severe *Overture*, which was intended to have been enacted into a law; and next day another motion was substituted, so lenient as to be seconded by Mr Dempster of Dunnichen, the friend of Home and Carlyle, in consequence of which the assembly passed a declaratory law, prohibiting the clergy from attending the theatre, but not discharging them from writing plays. Immediately afterwards, Mr Home thought it expedient to resign his charge; and having preached a most pathetic sermon, which deeply affected his congregation, he took leave of them in the beginning of June 1757, without having incurred any ecclesiastical censure. He then retired for three months to private lodgings at Braid, near Edinburgh, where he gave the finishing hand to the play of *Agis.*

From the moment when Mr Home resigned his living, the prospects of his worldly prosperity began to brighten. The people of England, ever alive to sentiments of compassion, regarded him as a victim to the rigour of Presbyterian bigotry; and though their critics decried the merits of *Douglas*, as being a faulty and languid composition, not sufficiently relieved by either pathos or elegance of expression, they admitted that it exhibited unquestionable indications of true poetical genius, and a power of awakening the most elevated as well as the most tender emotions. Men of the highest rank and influence expected to gain popularity by patronising the author, who, after being known to possess the good graces of the Dukes of Cumberland and Argyll, was warmly recommended by his friend, Sir Gilbert Elliot, to the Earl of Bute, who then superintended the education of the Prince of Wales, afterwards George III. The Princess Dowager of Wales granted him a pension of L.100 a year, an allowance equal to the value of the living which he had resigned; and assurances were given him of a more ample provision at no distant period.

In one respect, the partiality of his literary friends, and the favour of the great, had an injurious effect on his future fame, not only by producing an impression that he had gained by flattering assiduities what merit alone was seldom known to procure, but by exciting expectations in the minds of numbers that his more mature exertions would far surpass the earliest specimen of his powers as a dramatic writer. The warm encomiums of David Hume were naturally ascribed to the partiality of friendship; but the opinion expressed by Gray the poet, that the tragedy of *Douglas* had "retrieved the true language of the stage, lost for three hundred years," seemed to imply a preference of the muse of Home even to that of Shakspeare himself. The objections of Garrick to the tragedy of *Agis* were no longer urged; and though this was in fact the earliest effort of an unpractised writer, it appeared under the disadvantage of being considered as a work of higher pretensions than that which had already been so well received by the public. It is also to be presumed, that though in its finished state it retained many lofty sentiments of freedom and patriotism, yet, as the author began to breathe the atmosphere of a court, he was tempted to soften some of his boldest images, so that the piece may have lost in spirit more than it gained in polish. It was brought out at Drury-Lane in 1758, and, partly owing to the admirable acting of Garrick in the character of Lysander, had a successful run of nine nights. The author cleared several hundred pounds, but the anticipations of the public were not fulfilled. "I cry," said Gray, "to think it should have been by the author of *Douglas.* Why, it is all modern Greek. The story is an antique statue, painted white and red, frizzed and dressed in a negligee made by a Yorkshire mantua-maker."

In 1759, the *Siege of Aquileia* was first performed at Drury-Lane, but was by no means so successful as Garrick had expected. Garrick and Home were now on the most intimate footing; and as Home listened with much deference to the criticisms of this great actor, and generally followed his advice, the latter, on the other hand, courted the good graces of Home, by consulting him in his difficulties, and soliciting him to act as his friend, or second, in certain quarrels, which threatened to terminate in duels. Early in 1760, Mr Home's first three plays were published in one volume, which was dedicated to the Prince of Wales.

After the accession of the prince to the throne, the Earl of Bute became prime minister; and from this period Mr Home for many years lived constantly with his lordship, at least from October to May, and was well known to possess the first place in his confidence and favour. Mr Home was always most active in promoting the interest of those who called themselves his friends, and conferred the most valuable obligations upon many individuals, who were more forward to solicit his services than to testify their gratitude. But it is well known that he never teased his patron with applications in his own behalf; and it is believed that he might have been overlooked altogether, if Lord Bute had not been prompted by another friend to bestow upon him some honourable and lucrative appointment. A pension of L.300 a year was granted to him in July 1762, and another of equal amount was at the same time conferred on Dr Johnson. In the course of the following year, the place of *Conservator of Scots Privileges at Campvere* was bestowed upon him, the value of which appointment was also L.300 a year; and from this period his name appears annually in the list of members of the General Assembly, as elder for the church of Campvere, under the title of *Lord Conservator*. He regularly attended the meetings of the assembly, and took a lively interest in the proceedings. He had little turn for business, but he occasionally spoke with much energy and effect. He was ambitious to have a seat in the House of Commons, and repeatedly signified his wishes, which at one period might have been easily fulfilled, if he had not been dissuaded by Sir Gilbert Elliot and Sir William Pulteney, not only because they knew that he would be considered as disqualified, by having been in orders, but because they were convinced that, even if that objection were not started, he would make no great figure as a debater. When in London he lived on terms of great cordiality with Armstrong, Smollett, Dr Pitcairn, Dr William Hunter, Mr Wedderburn, afterwards chancellor, and the Honourable Charles Townshend. He had a particular pleasure in fostering rising merit. In the year 1759, he stimulated James Macpherson to collect what were called the *Poems of Ossian;* and he afterwards accompanied him on one of his tours, partly with the hope of sharing in the pleasure of discovering the poetical remains of distant ages, but chiefly with the view of searching for materials which might throw light on the history of the rebellion in 1745.

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[1] The following are some of the most remarkable pamphlets published on this occasion:—1. Admonition and Exhortation of the Presbytery of Edinburgh. 2. Witherspoon's Serious Enquiry into the Nature and Effects of the Stage. 3. The Immorality of Stage Plays in general, and of the Tragedy called Douglas in particular, briefly illustrated. 4. The Usefulness of the Edinburgh Stage seriously considered. 5. The Tragedy of Douglas analysed. 6. A Letter to Mr David Hume on the Tragedy of Douglas. 7. An Apology for the Writers against the Tragedy of Douglas, with Remarks on that play. 8. The Deposition, or Fatal Miscarriage, a tragedy. 9. Douglas, a Tragedy, weighed in the balances and found wanting. 10. The First Night's Audience, an excellent new ballad. 11. The Stage or the Pulpit, two parts. 12. The Apostle to the Theatre his Garland. 13. The Finishing Stroke, or Nothing, a ballad. 14. The Infernal Council, an excellent new ballad. 15. A Song or a Sermon, a new ballad, Saturday, 29th January 1757. 16. The Admonition, an execrable new ballad. 17. Advice to the Writers in Defence of Douglas. 18. An Epilogue to the Tragedy of Douglas, spoke by the Author. 19. An Argument to prove that the Tragedy of Douglas ought to be Burnt by the Hands of the Hangman [ironical, by Dr Carlyle] 20. The Moderator, Nos. 1 and 2. 21. Votes of the Presbytery of Edinburgh, 29th December 1756. 22. A Letter to the Reverend the Moderator, &c. of the Presbytery of Haddington. 23. A Letter to the Author of the Ecclesiastical Characteristics. 24. The Morality of Stage Plays seriously considered [by Dr Ferguson]. 25. Some serious Remarks on a Pamphlet, entitled the Morality of Stage Plays seriously Considered [by the Reverend Mr Harper, an Episcopalian clergyman]. 26. The Players' Scourge. 27. A Letter to the Author of the Ecclesiastical Characteristics. 28. A Second Letter to the same. 29. Unto the Right Ethereal the Siplers, the Petition of Poor Alexander Bonum Magnum. Most of these are unfavourable to the play (some of them written by Mr Maclaurin, afterwards Lord Dreghorn); others contain very indecorous strictures on the conduct of Drs Cuming, Walker, and Webster, who were active in discouraging the attendance on the theatre, and in prosecuting offending brethren.

In 1769, his tragedy of the *Fatal Discovery*, the fable of which is borrowed from one of the fragments ascribed to Ossian, was performed at Drury-Lane, with indifferent success. At this time the prejudice against Scotchmen was so strong in London that Garrick apprehended a total failure of the play if the author were known. At his suggestion, therefore, the title was altered from *Rivine* to the *Fatal Discovery;* and for some nights the representation was greeted with loud applause, the play being ascribed either to Gray or to Smith. Mr Home's love of praise, however, betrayed the secret, and from that moment the audience sensibly diminished every night. In February 1773, *Alonzo* was brought out, and was well received. This play is recommended by the simplicity of the plot, the harmony of the versification, and the dignity of the sentiments; but some of the incidents are improbable, the language occasionally too mean, the apostrophes too frequent, and it has more eloquent declamation than natural feeling, more graceful description than pathetic effect. The acting of Mrs Barry affected the feelings of the audience so powerfully as to disarm the severity of criticism. To this tragedy, as well as the *Fatal Discovery*, Garrick furnished an epilogue. The theatrical career of Mr Home was closed with the play of *Alfred*, which was represented at Drury-Lane in January 1778. It was listened to the first evening; but a less crowded house was never known than on the second, and after the third performance the author withdrew it.

For many years Mr Home lived chiefly in London. In 1767 he obtained from Sir David Kinloch a long lease of Kilduff, a farm in East Lothian, on which he built a house. In 1770 he married Miss Home (daughter of Mr Home, minister of Fogo, formerly of Polwarth), a lady of very delicate constitution, who, however, survived him several years.

In 1778, when the Duke of Buccleuch raised the regiment of *South Fencibles*, Mr Home's military ardour induced him to accept a commission as lieutenant, the same rank which he had held more than thirty years before; and he gave occasion to some sneers from his graver brethren, by sitting in the General Assembly in his scarlet regimentals. After being nearly two years an officer, he was disabled for military service by a fall from his horse, which, though it did not permanently affect his health, continued through life to impair the vigour of his faculties, and to diminish the flow of his spirits. About this time he left Kilduff, and took up his residence in Edinburgh for the remainder of his life. Till within five years of his death, he was accustomed to pay an annual visit to London; and such was the force of habit, that his friends experienced great difficulty in prevailing with him to desist from these expensive and unnecessary journeys.

In 1798 an edition of his plays was published, in two volumes, now rarely to be procured.

His last work, the *History of the Rebellion in* 1745, was published at London in 1802, in a quarto volume. It had long been understood to be in a state of perfect preparation, but it was not expected to appear in the author's lifetime, as there was reason to apprehend that much of the matter which it contained would prove offensive to some distinguished individuals, whose hostility it was not desirable to encounter. In the first sketches of it, the author is said to have ardently applauded the disinterested motives and gallant conduct of the adherents of the house of Stuart, to whom he had been opposed in the field; and whilst he did ample justice to their devoted attachment and heroic efforts, he was not sparing of the indignation due to the barbarities perpetrated by the prevailing party after the victory of Culloden. Some influence, however, was exerted to hasten the publication, and the author had not the courage to resist the temptation to suppress and qualify many of his first statements. As a composition, it was certainly not improved by what were intended as the finishing emendations; but, if its interest has been weakened, its impartiality has probably been more effectually secured than if it had retained its original form; and, though the book gave much less satisfaction than if it had not been so anxiously expected, its merit has certainly been unduly depreciated. The style, indeed, is negligent, and the reflections not profound; but if the comments of the author are few and obvious, the detail is generally so full as to enable the reader to draw just conclusions; the battles are graphically described, and, as far as the narrative extends, it is entitled to unreserved credit. Perhaps the chief cause why the work was never highly applauded has been, that it is not written so as to gratify the prejudices either of one party or another.

Mr Home died at Merchiston, in the neighbourhood of Edinburgh, on the 5th of September 1808, when he had nearly completed his eighty-sixth year. In private life no man was ever more entirely beloved. His affections were equally warm and stedfast; and much as he had moved in the highest circles, not without pluming himself sufficiently on his intimacy with the great, he never forsook the interest of his friends in humbler stations, or betrayed any expectation of deference from those who were dependent on his good offices. His temper was placid, and though there were occasions on which he manifested some warmth of feeling, he was neither apt to resent injuries nor to inflict pain. He was never known to grudge any exertion which tended to benefit or gratify his friends; and long after the activity of his mind had begun to languish, he continued as eager as ever to confer unsolicited favours, and to use all the influence which he possessed to reward neglected merit. He was alleged to be rather apt to flatter; but the fact was, that he appeared never to discover any defects in the character of those whom he esteemed; and, with all the blindness of a lover to the objects of a first attachment, the overflowing benevolence of his heart disposed him to invest his early friends with every perfection of which human nature is susceptible, and to spread the veil of charity over blemishes and offences. If he had not been early enticed into the vortex of fashion and politics, he might have attained higher eminence as an author; but, in spite of all the temptations of vanity, and the petulant and persevering attacks of envy, he could scarcely, under any circumstances, have proved more amiable as a man. (P. P. P.)

HOME, *Sir Everard*, an eminent surgeon, was born about the year 1755. He was of Scottish extraction, and his connection with the Hunters brought him into notice at an early period of life. At one time he was held in high estimation as a surgical practitioner, and obtained the more substantial advantage of an extensive practice. He had the good fortune to be appointed one of the surgeons to St George's Hospital; and this circumstance, added to the publication of various works which attained a considerable share of celebrity, contributed to extend his reputation, the advantages of which he lived nearly half a century to enjoy. In 1813 he was created a baronet, and was also appointed serjeant-surgeon to the king. For several years before his death, which took place on the 31st of August 1832, in the seventy-seventh year of his age, Sir Everard Home had retired from practice, and sought in private life the repose which his increasing age and infirmities required. Sir Everard was the author of Practical Observations on Stricture, of Lectures on Comparative Anatomy, and of various papers in the Philosophical Transactions; but none of his productions discovers much depth of research, or any great originality of speculation. (A.)

HOMER, the greatest, and perhaps also the least known, of all poets. After so many ages, all the details of his life are still an object of doubt, and even his existence is a problem. Some represent him as a native of Egypt, the son of Damasgoras and Echras, whilst his nurse, a daughter of Horus, priest of Isis, was a prophetess; according to these persons, he played in his cradle with nine turtle doves, and the first accents of his voice resembled the warbling of nine different kinds of birds. Others give him an origin still more illustrious, and seek to ennoble the birth of the poet on whom the far higher distinction of genius had conferred immortality. But whilst his admirers compose for him these splendid genealogies, and even make him descended in the right line from Apollo himself, his detractors see in him only a wretched mendicant, who begged from town to town; a plagiary, who strolled about through the world in quest of the authors who had, before his time, written on the war of Troy; a man of slender parts, easily vanquished in the poetical contest with Hesiod, and other poets. The most celebrated and the least ridiculous of these pretended histories is that which, notwithstanding the doubts and conjectures of several learned men, continues to be attributed to Herodotus; probably because there is something piquant in the notion that the father of history had written the life of the father of poetry. But, however this may be, since Strabo has not disdained to cite as an authority this historical romance, nor the learned Larcher to translate it, we conceive it necessary to exhibit a rapid analysis of its contents.

A certain Menalippus, by birth an Athenian, but settled at Cumæ in Ionia, having married the daughter of a citizen called Homyres, had by her a daughter named Critheis, who after the death of her parents passed under the guardianship of Cleonax, the friend of her father. This Cleonax abused the trust which had been reposed in him, and Critheis became pregnant by her guardian. But the latter, being anxious to conceal the condition of his ward, sent her to Smyrna, where she gave birth to Homer, whom she called *Melesigenes* (from the river Meles, on the banks of which he was born), and where also she was reduced to the necessity of spinning wool for subsistence. After this misfortune, Phemius, who taught literature and music with credit at Smyrna, having frequent occasion to see Critheis, who resided near him, conceived a passion for the lady, married her, and adopted her child. Homer, having become an orphan by the death of Phemius, succeeded to the fortune and the school of his adoptive father, and in the capacity of teacher soon acquired great reputation. But a shipmaster called Mentes, a lover of learning and poetry, having become acquainted with Homer, persuaded the poet to abandon the school at Smyrna, and to accompany him in his voyages. Homer, who already meditated the *Iliad*, and wished to acquire personally the knowledge of different countries, particularly those which he might have occasion to describe, eagerly embraced the opportunity thus offered; and, during several voyages, he failed not to treasure up in his mind whatever he deemed worthy of being remembered. After having visited Italy and Spain, he landed on the island of Ithaca, where he learned many particulars respecting Ulysses; he also visited Egypt, whence he brought into Greece the names of the gods of that country, with the chief ceremonies of their worship; and having finished his travels, he returned to Smyrna, and there completed his *Iliad*. It was his intention to remain in that place; but public favour having abandoned him, he left the ungrateful country, and wandered through several cities in Asia Minor, reciting his verses, and experiencing in turn good and evil fortune. At length he established himself at Chios, where he opened a school, acquired some property, married, became the father of two daughters, and was at last struck with blindness. It was in this retreat that he composed the *Odyssey*; but being desirous to pass into Greece, that he might display his genius upon a larger theatre, he died on his passage, at Ios, one of the Sporades, the inhabitants of which raised on the sea-shore a tomb to his memory.

If in all this narrative there be little that is true, it contains nothing which shocks in the recital; and if, in fact, it be merely a romance, it has at least a certain degree of verisimilitude. Of all the cities which disputed the honour of having given birth to Homer,[1] Smyrna and Chios are those which supported their pretensions by proofs apparently the most plausible. The citizens of Chios boasted of possessing, in the family of the *Homeridæ*,[2] the descendants of this illustrious poet, in honour of whom they had struck a medal, representing Homer, and the river Meles, on the banks of which he is said to have been born. But, amidst so many different opinions, the most probable seems to be that Homer first saw the light near Smyrna; that his life was wandering, like that of the poets of his time; that, in the course of his travels, he visited the Greek cities, composing hymns for the festivals of the gods, and reciting his poems in the religious and public assemblies; that he lost his sight, a deprivation which he felt acutely, and deplored with mournful pathos; and that he lived for some time at

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[1] Varro reckons seven of them, in a distich which Aulus Gellius (lib. iii. c. 2) has preserved.

Smyrna, Chios, Colophon, Salamis, Rhodos, Argos, Athenæ,
Orbis de patria certat, Homere, tua.

[2] Leo Allatius distinguishes the *Homeridæ* from the *Homeristæ*, a kind of itinerant singers, or minstrels, who recited in public the verses of Homer; but this is a vain dispute of words, and Allatius is here evidently influenced by a desire to ensure to Chios, where he himself was born, the preference over the other cities of Greece which disputed the honour of having given birth to the great poet.

Chios, and died, at an advanced age, in the small island of Ios. But if he was reduced to indigence, and sometimes compelled to beg an asylum during his life, the Smyrneans, Ptolemy Philopator, and others, consecrated temples to him after his death, and the Argives paid him divine honours.

The epoch in which this great poet was born is not less obscure than the history of his life. If we may believe some Greek writers, he was contemporary with the siege of Troy, and had actually witnessed the events which he celebrated in song. But others place his birth at an epoch nearer to ours by eighty, a hundred, and even upwards of three hundred years. Velleius Paterculus, who wrote towards the close of the reign of Tiberius, or about the year 37 of our era, affirms that nine hundred and fifty years had elapsed between the age of Homer and his own time. Pliny and Juvenal, who flourished under Vespasian and Domitian, reckon nearly a thousand years; and Solinus, with some degree of confidence, assigns the epoch of the death of Homer by fixing it in the seventy-second year after the capture and destruction of Troy. According to the Arundelian marbles, he flourished in the tenth century before Christ, whilst other authorities assign the eighth as the period to which he belonged. In this conflict, or rather chaos, of different opinions, the learned Larcher, whose judgment is an authority in matters of chronology, gives a calculation from which it follows that Homer must have been born 884 years before our era; and this epoch appears more reconcileable with the details of the brilliant and sumptuous arts of a refined luxury, which he sometimes retraces, and which appear but little compatible with the rudeness of an age approximating more closely to the time of the Trojan war. The age of Homer indeed is pretty clearly indicated by the following considerations: 1. At the funeral of Patroclus, Achilles celebrates almost all the games which were subsequently in use at Olympia in the most refined period of Greece. 2. The arts of casting in bas-relief, and of engraving on metals, had already been invented, as is proved, amongst other things, by the shield of Achilles; but neither Homer nor Moses makes any mention of painting. 3. The delicious gardens of Alcinous, the magnificence of his palace, and the sumptuousness of his table, prove that the Greeks had already learned to admire luxury and splendour. 4. The Phœnicians had already introduced ivory, purple, and incense from Arabia (as in the description of the grotto of Venus in the Odyssey), *byssus* or fine linen (perhaps cotton), and rich robes. 5. The carriage in which Priam goes to seek Achilles is made of cedar; and the grotto of Calypso is fragrant with that odoriferous wood. 6. The voluptuous baths of Circe indicate a great advancement in luxury. 7. The young slaves of the suitors are described as beautiful, graceful, and fair-haired, such precisely as the fastidiousness of modern times requires as servants. 8. Men dress their hair as carefully as women; a habit with which Hector and Diomede reproach Paris. 9. The Homeric heroes eat nothing but roast meat, the most simple mode of cookery, demanding only a brasier; and this custom continued in sacrifices. Boiled meat came into use afterwards. 10. Lastly, Homer seems to have lived in an age when the strict heroic or feudal right had fallen into disuse in Greece, and popular liberty had begun to appear; for his heroes contract marriages with foreign women, bastards succeed to their fathers' thrones, and many other circumstances unite to show that the heroic or feudal right had expired. From all these authorities, then, we incline to the opinion of those who place the age of Homer long subsequent to that of the Trojan war, though probably not so late as the reign of Numa, with whom he is thought by some to have been contemporary.

But the admitted difficulty, or rather impossibility, of arriving at any thing positive in this respect, induced several writers to fly to the opposite extreme; and whilst some assigned bases to the Homeric chronology which they considered as certain, others called in question the very existence of Homer himself, and supported their opinion with what they deemed incontestable authorities and unanswerable reasonings. The boldest and most singular of these paradoxes is that of Jacob Bryant, who does not, it is true, deny the existence of Homer, but who makes him a native of Thebes in Egypt. In the view of this learned person, Homer was a superstitious poet, who, after having grown old on the banks of the Nile, purloined the poems of the ingenious *Phantasia* deposited amongst the archives of the temple of Isis. According to him, the events of the Iliad and Odyssey were, in the original, mere reminiscences of Egyptian annals; but the adroit plagiary, it seems, transported the scene into the Troad, and disguised under Greek names the gods and heroes of the monarchy of the Pharaohs. Nor was this a solitary extravagance. A learned Dutchman, Crœsius, discovered, in the Odyssey, the history of the Israelites under the patriarchs, and detected the capture of Jericho in the Iliad; whilst another went still further, and gravely maintained that Homer and Hesiod were natives of Belgium. But the hypothesis of Wolf is one of a far higher order; and the weight of such a name must always command a serious consideration of those opinions to which its sanction is deliberately attached.

This distinguished critic and scholar, to whom we are indebted for the best edition of Homer which has yet appeared, attempts, in his *Prolegomena ad Homerum*, to prove that the author of the Iliad and Odyssey is an imaginary being; in Homer he sees a rhapsodist, and nothing more, a minstrel who laid the foundations of that fabric which his successors from age to age slowly raised until it obtained the elevation, symmetry, and unity which we now admire in its general structure. This sceptical hypothesis had not the merit of novelty; but it made little or no impression upon the learned until it borrowed from the talent and erudition of Wolf all the authority necessary to excite general attention, and to call for rigorous examination. Two Frenchmen, of no great distinction, Hedelin and Perrault, are supposed to have led the way in questioning the personal existence of Homer as the author of the Iliad, and to have first suggested some hints of a theory respecting the composition of that poem, which have since been developed with profound learning and wonderful talent by Wolf and Heyne. Hedelin's book, entitled *Conjectures Académiques, ou Dissertations sur l'Iliade*, was published in 1715; and that of Perrault appeared not long afterwards, under the title of *Parallèle des Anciens et des Modernes*. Hedelin had the exquisite judgment to compare the rhapsodies to the *chansons du Pont-Neuf*, and to maintain that the Iliad was made up "ex tragediis et variis canticis de trivio, mendicorum et circulatorum," in the manner of these Parisian ballads. Not long afterwards Bentley expressed a similar opinion respecting the history and compilation of the Iliad. "Homer," says he, "wrote a sequel of songs and rhapsodies to be sung by himself, for small earnings and good cheer, at festivals and other days of merriment: the Iliad he made for the men, and the Odysseis for the other sex. These loose songs were not collected together in the form of an epic poem till about five hundred years after." But a still bolder theory was promulgated in the *Scienza Nuova* of Giambattista Vico, the second and complete edition of which appeared at Naples in 1730; a work which, from its enigmatical style and form, is one of the most obscure books of modern times, but which was intended by its author to form a *Novum Organon* of politico-historical knowledge. Vico's uncompromising reasoning *a priori*,—which, borrowing no assistance from history, will let no history stand in its way,—is not likely to make any one convert to his whole system. But parts of it have of late years been adopted or approved by very distinguished writers;[1] and, in regard to the Homeric poems, he has sketched, with sufficient clearness, the outline of the very theory which is developed with so much ability and force in Wolf's *Prolegomena ad Homerum.* Vico, in fact, distinctly asserts that the Iliad and the Odyssey were first constructed by the Pisistratidæ:—"Ch' i Pisistratidi . . disposero e divisero, o fecero disporre e dividere i poemi d'Omero nell' Iliade e nell' Odissea; onde s' intenda, quanto innanzi dovevan' essere stata confusa congerie di cose, quando è infinita la differenza degli stili dell' uno e dell' altro poema."[2] He expresses a suspicion that the Homer of the Odyssey belonged to the west, and the Homer of the Iliad to the north-east of Greece; and, in his *Discoverta del vero Omero,* he seems to intimate an opinion that Homer himself is an ideal personage, but that his poems are, if we may so express it, the collective voice of the heroic age, in which all history was poetry, and all poetry founded on history. "E certamente," says this modern Heraclitus, "se, come della guerra Trojana, cosi di Omero, non fossero certi gran vestigi rimasti, a tante difficultà *si direbbe ch' Omero fosse stato finto un poeta d' idea, il quale non fù particular huomo in natura.* Ma tali difficultà, est insiememente i poemi di lui pervenutici sembrano farci cotal forza di affermarlo per la mettà, *che quest' Omero sia egli stato un' idea; ovvero carattere eroico di huomini Greci, in quanto essi narravano cantando la loro storia.*"[3]

The substance of this theory, as stated by Wolf and Heyne, is, that whether any such person as Homer ever existed or not, the Iliad and the Odyssey were not composed entirely by him or by any other person, but are compilations, methodised by successive editors, of minstrelsies, the effusions of various poets of the heroic age, and all having one common subject or theme; namely, the war of Troy, and the exploits and adventures of the Grecian chiefs engaged in it. The question as to whether

> The blind old man of Scio's rocky isle

ever lived or not, does not enter as an essential ingredient into the theory so ably elucidated by Wolf and Heyne. That Homer lived and Homer sung, is indeed denied by both, as it had previously been by Giambattista Vico; but, even if the fact of his personal existence were admitted to the fullest extent desired by his unitarian admirers, the material question as to the dispersion of the separate books or rhapsodies, and their reincorporation, or rather their primary construction, into one uniform whole, would still remain to be settled. The theory of which we have traced the origin and development may no doubt appear at first view startling and paradoxical; but, however unlike to any thing of which we may have heard, and however impossible it may be thought in the age in which we now live, there are arguments in its favour, which, with all unprejudiced inquirers, will ever save it from neglect or contempt, and which, in any view, merit the most serious consideration. Of these we shall now proceed to lay a condensed abstract before our readers.

Wolf, Heyne, and their numberless followers in Germany, contend that the argument derived from the apparently undoubting belief of the earliest as well as the greatest writers of Greece, after the Homeric age, and from the general consent of all mankind in the same faith ever since, proves a great deal too much: That, besides the Iliad, Odyssey, Batrachomyomachia, Hymns, and Epigrams, at least twenty other poems[4] were, in former times, ascribed to Homer: That many passages of these poems which are still preserved, contain variations from, and even direct contradictions of, the tenor of the Iliad: That, in the age of Herodotus, the Cyprian verses, and the *Epigoni,* were commonly considered as Homeric poems: That Thucydides quotes the Hymn to Apollo exactly in the same tone in which he quotes or speaks of the Iliad: That nevertheless the general opinion now is that these hymns are not by the author of the Iliad: That Plato expels Homer from his republic, on account, amongst many others, of a well-known passage in the Odyssey:[5] That nevertheless many of the ancients, as well as moderns, who admitted the genuineness of the Iliad, doubted or denied that of the Odyssey: That there is nothing in this weakness of critical discernment, even when imputed to Herodotus, Thucydides, and Plato, which should surprise a Hellenist, seeing that, in the times of republican independence, the investigation of the genuineness of the national compositions formed no part of scientific criticism, much less of the general duties of the philosopher and historian: That as Herodotus and Thucydides quote Homer merely as an historical authority, so Plato censures him for moral or political reasons; and hence a reference to his poems was equally necessary for both purposes, whether the common belief as to their origin were well founded or the contrary: That, in modern Europe, at the period of the revival of letters, this branch of criticism became of paramount importance, and conferred the greatest benefits on awakening learning, by rescuing the genuine relics of ancient Greece and Rome from the mass of fiction and interpolation which had been accumulated on them during seven centuries of barbarism: That, in fact, the early Greeks knew no literature but their own; and, considering how little attention even we, with our different habits and capabilities, ever paid to the mere external history of our earliest works, until a very recent period, we have no reason to think it unaccountable that a chronicler, historian, or philosopher of ancient Greece, should either never have doubted, or but hinted doubts, as to the genuineness of a body of popular poetry, supposed to be of Asiatic growth, and of an antiquity open to nothing but conjecture.

The Wolfian hypothesis rests also upon grounds of external probability. "It is further said," observes Mr Coleridge, "that the art of writing, and the use of manageable materials, were entirely, or all but entirely, unknown in Greece and its islands at the supposed date of the composition of the Iliad and Odyssey;[6] that, if so, these poems could not have been committed to writing during the time of their composition; that, in a question of comparative probabilities, like this, it is a much grosser improbability that even the single Iliad, amounting, after all curtailments and expungings, to upwards of 15,000 hexameter lines, should have been actually conceived and perfected in the brain of one man, with no other help but his own and others' memory, than that it should in fact be the result of the labours of several distinct authors; that if the Odyssey be counted, the probability is doubled; that if we add, upon the authority of Thucydides and Aristotle, the Hymns and Margites, not to say the Batrachomyomachia, that which was improbable becomes morally impossible; that all that has been so often said as to the fact of as many verses or more having been committed to memory, is beside the point in question, which is not whether 15,000 or 30,000 lines may not be learnt by heart from print or manuscript, but *whether one man can originally compose a poem of that length*, which, rightly or not, shall be thought to be a model of symmetry and consistency of parts, *without the aid of writing materials;* that, admitting the superior probability of such an achievement in a primitive age, we actually know nothing similar or analogous; and that it so transcends the common limits of intellectual power, as at least to merit, with as much justice as the opposite opinion, the character of improbability."[1]

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[1] Niebuhr is largely indebted to the *Scienza Nova* for its views of the early history and real character of the Roman state; whilst the praiseworthy labours of Michelet promise to extend the fame and influence of this singular work farther than the enigmatical obscurity of the original Italian would ever admit of. (See *Principes de la Philosophie de l'Histoire, traduits de la 'Scienza Nuova' de J. B. Vico,* par Jules Michelet, Paris, 1827.)

[2] *Scienza Nuova,* lib. ii. p. 373.

[3] *Scienza Nuova,* lib. iii. c. 7. Mr Coleridge has placed at the end of his account of the origin and preservation of the Homeric poems a translation of Vico's treatise on the discovery of the true Homer.

[4] These were, *Amazonia, Thebaid, Arachnomachia, Geranomachia, Iresione, Epigoni, Epithalamia, Epicichlides, Capra, Ilias Minor,* &c. &c.

[5] Λ'. xi. 487.

[6] "Jam vero non modo nullum tale in Homero extat testimonium rei vel vestigium, nullum ne tenuissimorum quidem initiorum legitimæ scripturæ vel Cadmei muneris indicium, sed, quod longe maximi momenti est, contraria etiam omnia. Nusquam vocabulum *libri,* neque *scribendi,* nusquam *lectionis,* nusquam *litterarum*: nil in tot millibus versuum ad lectionem, omnia ad auditionem com-

This is undoubtedly a strong case; nor is it easy to see how the force of the argument urged by Wolf and his followers can be resisted, unless the facts upon which it mainly depends be disproved. We may be powerfully impressed with the grandeur and *unity* displayed in the Iliad; this impression may be strengthened by more frequent study of the general effect of the poem; and we may feel reluctant to abandon the ancient faith, with which so many interesting recollections and associations are entwined: But, as long as the external facts remain unrefuted, "the internal evidence of the unity of design" will never prevail over the conclusion deduced from them. Mr Milman, indeed, seems to think, that, on the general question of the origin of letters, the mass of authorities collected with great industry, and the arguments urged with equal ingenuity by Kreuser,[2] in some degree endanger Wolf's hypothesis as to the recent introduction of writing into Greece, that is, scarcely prior to the time of Solon. But he admits it to be "undoubtedly embarrassing that, if writing was common in the days of Homer, no allusion, except in one doubtful passage,[3] should be found, in either of the great poems, to an art, which might at first sight appear to be necessarily mingled up with all the transactions of war or pacification, of public and private life." Besides, the precise fact, whether alphabetical characters were absolutely unknown in Greece in the age of Homer, is declared by Heyne to be immaterial to the argument; because, whether known or not, it is certain that down to a period later by two centuries than the latest date assigned as the era of Homer, there were no materials which a Greek author could have employed for the ordinary purposes of composition. It is of no avail to prove that some Greeks had the art of carving on marble or on wood; nor is the difficulty removed by presenting a blind poet with a pen of iron and some plates of lead. If there be any weight in the objection, that no one person could have composed the Iliad and the Odyssey by the force of mere mental retention alone, nothing will ever dispose of it except a demonstration that the poet had some manageable substance upon which to write. The main point, as Mr Coleridge has most justly observed, is not whether poems of such length might not be preserved by memory, *when once composed*, but *whether they could have been constructed in the mind of the bard, without the assistance of letters and writing materials*, to record the fleeting thoughts which passed in quick succession, and were succeeded by others hurrying forward in unceasing and inexhaustible rapidity. The preservation of poems by memory, when once composed, and their oral transmission from age to age, may at once be conceded, because it leaves unimpaired the force of the argument founded upon the moral impossibility of any one person having both composed and retained in his mind, as well as communicated to others, as many as thirty thousand verses.

The more sagacious and candid of those who maintain the unity and authorship of Homer have accordingly felt and acknowledged the force of Wolf's argument. It is indeed admitted by Milman, one of the ablest of his opponents, that even Kreuser's argument in favour of the early introduction of letters and writing into Greece leaves the main question undecided; and, besides, Kreuser himself is a follower of Wolf upon the fundamental point in dispute. In an essay read to the academy of Berlin, the author, M. de Mérian, adopts the same position as Wolf; he denies to Homer the use of writing materials, but says the poet might have done very well without them. This, however, is cutting the knot, not resolving it. The material issue is, Could the poet do at all without them? Of the cases cited by M. Mérian, one is not in point, and the other is unsupported by authority. After many irrelevant instances of learning by heart from book or recitation, he alleges the example of the Italian improvvisatori, and that of Tasso, who, he says, composed four hundred stanzas of his *Gierusalemme Liberata*, equal to 3200 verses, without ever writing them down. The story, however, is not authenticated by any kind of evidence; and unless there be Tasso's own word for it, who will believe that he never tried one of those stanzas in a written form? Besides, it is well known that, during many years of learned leisure, Tasso meditated and arranged the plan of his poem, of which he drew up numerous sketches; so that these four hundred stanzas were, at most, but the filling up of a picture, the outline of which had already been prepared. As for the improvvisatori, it is sufficient to observe that, with a tolerable stock of common-places in their heads, and with a language on their tongues, one half of which rhymes to the other, these people may, with a little practice and a very small exertion of skill, pour forth verses, as they are called, to almost any extent. But what, we would ask, has such a trick as this to do with the mental composition and correction of thirty thousand hexameters of the Iliad and Odyssey? Cesarotti, it is true, talks gravely of Macpherson's *Ossian*, which he translated, as an instance of poetry of considerable extent, composed by a poet to whom writing was unknown. This, however, is producing one hypothesis which,

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parata; nulla pacta aut fœdera nisi coram; nullus veterum famæ fons præter memoriam et famam et illitterata monumenta; ex eo Musarum, memorum dearum, diligens et in Iliade enixe repetita invocatio; nullus in cippis et sepulcris, quæ interdum memorantur, titulus; non alia ulla inscriptio; non æs signatum aut facta pecunia; nullus usus scripti in rebus domesticis et mercatura; nullæ geographicæ tabulæ; denique nulli tabellarii, nullæ epistolæ, quarum si consuetudo fuisset in patria Ulyssis, vel si πτυκτοι πινακες percontationibus procorum et Telemachi sufficissent, procul dubio Odysseam aliquot libris breviorem, aut, ut Roussavius conjiciebat, omnino nullam haberemus." (Wolfii *Prolegom. ad Homerum*, pp. 88, 89, 90.)

[1] Coleridge, *General Introduction to Homer*, pp. 38, 39. London, 1834, second edition.

[2] In his *Vorfrage über Homeros*.

[3] "The *silence* of Homer," says Mr Milman, "after all the only extant authority for the Homeric age, is the great difficulty, if indeed he is silent, and if the fatal characters, the σηματα λυγρα of the letter of Bellerophon, were but symbolic or hieroglyphic signs." (*Quarterly Review*, vol. xliv. p. 141.)

to say the least of it, is doubtful, to prove another the truth of which is denied. In fact, all unprejudiced critics are pretty well agreed as to the history and character of the English Ossian; and it is now generally understood and believed, that Macpherson treated the legendary poems ascribed to the Celtic bard, much in the same fashion as the Pisistratidæ are supposed to have done in the case of those attributed to Homer, fusing a number of detached fragments into one mass, filling up interstices and vacuities with a sort of cement prepared by himself, and thus imparting to the whole (as in *Temora*) an *unity*, which certainly could not have been predicated of the materials with which he worked. The Ossian of Macpherson is, in truth, an instance in point against the principle stated by Cesarotti, or rather in favour of its opposite. In the affecting narrative of the imprisonment of Silvio Pellico,[1] we are indeed informed that he and his friend Maroncelli, during their confinement, composed many thousand verses, without the use of writing materials, and with nothing but the power of memory upon which to rely for the preservation of their compositions. This is no doubt one of the best authenticated instances of the power of memory in composition which is anywhere to be found. But still, before even this can be admitted as a pertinent example, it will be necessary to see the verses so composed, and to determine the relation which they bear to the poetry of the Iliad and the Odyssey; for it is evident that the point in dispute cannot be affected by the mere fact of any number of loose lines having been composed under circumstances so extraordinary, by men entirely separated from the living and active world. Improvisation by itself is nothing. The question is, could a couple of epics, possessing all the qualities requisite in the very highest species of poetry, have been composed and preserved without the aid of writing materials? This is the real issue. Milton was struck with blindness as well as Homer; but the verses which *he* dictated, after he had been deprived of his sight, were immediately committed to writing by faithful and devoted amanuenses. Would they ever have been heard of, if Milton had been as destitute and helpless as Homer is represented to have been?

Further, it is urged that the artificial construction of the plots of the Iliad and Odyssey, so commonly relied on as an argument for the unity of these poems, is in fact a complete demonstration that their present form cannot be genuine. That the cyclic poets who were contemporary with Homer, or followed in the order of time his age, all composed their works on a plan the very reverse of that which the critics praise so highly in the Iliad and Odyssey, is established by the censure of Horace, and the testimony of all antiquity. This may be seen, as well from the poem of Quintus Smyrnæus, which is founded on the *Æthiopis*, *Ilias Parva*, and the *Ilii Excidium* of Arctinus and Lesches, as from the epitomes of many other old cyclic poems still preserved in the fragments of the *Chrestomathia* of Proclus, if such evidence be not superfluous. The authors of the Dionysiacs, Thebaids, Epigoniads, Naupactica, Genealogies, and other works of that sort, never dreamed of rushing *in medias res*, as it is said that Homer does; never laid distant trains for future catastrophes; never carried on parallel lines of narrative; never concerned themselves about the critical canon of a beginning, a middle, and an end. They uniformly commence *ab ovo*, and conclude when the war or the pedigree is at an end. They have no hero in favour of whose dramatic superiority all others are depressed; they have no single primary action, relieved by episodes; they are ignorant of concealments, recognitions, windings-up, and all other cognate artifices. One story follows another, in the order of mere history, just as in the Indian and Persian epics, in the northern Eddas, in the Spanish poem of the Cid, and in the early chronicles of every nation with which we are acquainted; the skill and fire of the poet are shown, not in the artifice of grouping a multitude of figures into one picture, but in raising admiration by the separate beauty of each successive image or delineation. They tell the tale as the tale had been told to them, leaving out nothing. Now, if the Iliad and the Odyssey, such as we actually have them, were previously in existence, or if any poems so constructed were publicly known, soon after the latest date assigned to Homer, how are we to account for the undeniable fact that this splendid example did not find a single imitator amongst the contemporaries or the followers of Homer for centuries afterwards? It can scarcely be said that no poet arose of sufficient genius to effect this. The names of many of the old heroic poets were celebrated in the best ages; and to rival the plots must certainly have been found an easier task than to equal, far less excel, the poetry of the Homeric epics. Some attempt of this sort might at least have been expected; and what the lowest poetaster now does first, and sometimes does best, could not certainly exceed the powers of Hesiod and the authors of the *Theogonia*. Yet we meet with nothing of the kind. "Quintus Smyrnæus, or Calaber," says Mr Coleridge, "composed his books as a supplement to the unfinished Iliad. We may not rate Quintus very highly as a poet; but have we any right to set him down for such a heavy fool as to have ventured upon the completion of a divine poem, which Aristotle had declared absolutely perfect in its plot, if the numerous examples of former writers of supplements had not been lying before his eyes? Suppose, for a moment, that the Iliad handed down to us had ended, as surely it might have ended, in the death of Hector, and the return of Achilles in triumph to the Grecian camp; and that the substance of the last two books had been added by Quintus in the beginning of his supplement; should we have commended him the more for sagaciously detecting the want of finish, and the premature termination of the narrative? And is it not possible that Aristotle might have lauded the plot of the Iliad nothing the less, if the catalogue of the ships and troops had never been inserted?"

Upon the whole, then, Homer, according to this hypothesis, was the ideal or heroic character of the Greek people, relating its own history. This is the general deduction from all the reasonings of Wolf and his followers, who contend that every thing which is absurd and improbable in Homer, as hitherto conceived, becomes appropriate and even necessary in the Homer thus supposed. 1. In reference to the uncertainty respecting the country of Homer, they observe, that if the people of Greece contended amongst themselves for the honour of having given birth to him, and if all claimed him as a citizen, it was because they were themselves Homer. 2. The poverty and blindness of Homer were those of the rhapsodists, who, being blind (whence their Ionian name of ὁμηροι), had the more powerful memories. 3. Homer composed the Iliad in his youth, that is to say, in the infancy of Greece, when she was all burning with sublime passions, with pride, resentment, and revenge. Greece, therefore, in her infancy, would admire

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[1] Maroncelli nel suo sotteraneo avea composti molti versi d'una gran bellezza. Me li andava recitando, e ne componeva altri. Io pure ne componeva, e li recitava. E la nostra memoria esercitavasi a ritenere tutto ciò. Mirabile fù la capacità, che acquistammo di poetare lunghe produzioni a memoria, limarle e tornarle a limare infinite volte, e ridurle a quel segno medesimo di possibile finitezza che avremo attenuto scrivendole. Maroncelli compose cosi a poco a poco, e ritenne in mente parecchie migliaja di versi lirici ed epici. Io feci la tragedia de Leoniero da Dertona e varie altre cose." (*Le mie Prigioni*, c. 75.)

Achilles, the type or hero of force. 4. But Homer composed the Odyssey in his old age, when the passions of the Greeks began to be cooled by reflection, the mother of prudence. Greece would, therefore, naturally admire Ulysses, the type or hero of wisdom. In the youth of Homer, the pride of Agamemnon, the insolence and violence of Achilles, pleased the Greeks; in his old age they had begun to take pleasure in the delights of Calypso, the voluptuousness of Circe, the songs of the Sirens, and the sports of the suitors of Penelope. 5. The individual character of Homer having thus disappeared, the poet, or rather the poetry, becomes at once justified from all critical censures respecting the lowness of the thoughts, the grossness of the manners, the barbarism of the comparisons, the idioms, the licenses of versification, the discrepancy of dialects, and finally, for having elevated men to the rank of gods, and degraded gods below the level of men. 6. To Homer is assigned the privilege of having alone possessed the faculty of inventing the poetical fictions of Aristotle and the heroic characters of Horace; the privilege of an incomparable eloquence in his savage similes, his terrible pictures of the dying and the dead, and his sublime delineation of the passions, with the merit of a style at once simple, grand, and picturesque. All these qualities belonged to the heroic age of Greece. 7. Homer is henceforth assured of three immortalities; of having been the founder of civilisation in Greece, the father of all the other poets, and the source of the different systems of philosophy afterwards promulgated in his country; titles which could not possibly belong to Homer such as the world has hitherto imagined him. The Homer of the schools could not be regarded as the founder of Greek civilisation, because, from the epoch of Deucalion and Pyrrha, that civilisation had been commenced by the institution of marriage. He could not be regarded as the father of poets, because Orpheus, Amphion, Linus, and Musæus, to whom some chronologers add Hesiod, had flourished before his time. According to Cicero, there were many heroic poets prior to Homer; and Eusebius names Philammon, Thamyris, Demodocus, Epimenides, Aristeas, and others. Nor, finally, could he be the source of the Greek philosophy; for the philosophers did not derive their doctrine from, but engrafted them upon, the Homeric fables. Homer only afforded to the philosophers an occasion of meditating on the highest truths of metaphysics and morals, giving them, in addition, great facility in illustrating their speculations.[1]

The more we read the more we admire the two immortal poems of Homer, and the less are the generality of persons inclined to doubt that they were conceived by one and the same mind; whilst the infinite art by which the innumerable parts are connected and arranged forms perhaps the most remarkable feature in the Iliad and Odyssey, as well as the best argument for the unity of their authorship, and the individuality of Homer. In these poems, according to Mr Milman, "there is nothing of the elaborate art of a later age; it is not a skilful compiler arranging his materials so as to produce the most striking effect; the design and the filling up appear to be evidently of the same hand; there is the most perfect harmony in the plan, the expression, the versification; and we cannot, by any effort, bring ourselves to suppose that the separate passages, which form the main interest of the poem, the splendid bursts, or more pathetic episodes, were originally composed without any view to their general effect; in short, that a whole race of Homers struck, as it were by accident, all these glorious, living fragments, which lay in a kind of unformed chaos, till a later and almost mightier Homer commanded them to take form, and combine themselves into a connected and harmonious whole."[2] Another circumstance to which the advocates of the unity and authorship of Homer attach very great importance, is the perfect consistency of the characters in the different parts of the poem. It is quite inconceivable, they think, that there should have been a sort of conventional character assigned to different heroes by the minstrels of Greece. "To take Mr Coleridge's illustration of the ballads on Robin Hood," says Mr Milman; "in all these, bold Robin is still the same frank, careless, daring, generous, half-comic adventurer: So Achilles may have been by prescription,

Impiger, iracundus, inexorabilis, acer;

Ajax heavy and obstinate, Ulysses light and subtle; but can we thus account for the finer and more delicate touches of character, the sort of natural consistencies, which perpetually identify the hero, or even the female, of one book, with the same person in another?"

Some of those persons who have written upon the same side of the question as Mr Milman, and indeed Mr Milman himself, are inclined to doubt whether the poems of Homer, consistent and harmonious as they now appear, could have been preserved by tradition alone; and an able French critic has condemned the opinion "qui, en admettant qu'Homère soit l'auteur de l'Iliade et de l'Odyssée, veut qu'il en avait jamais écrit un seul vers, et que restés, en dépôt, dans sa memoire, il les allait réciter de ville en ville, afin d'obtenir de la pitié et de l'admiration publique, les secours que sollicitait sa profonde indigence. Supposer," adds the same writer, "que la tradition orale a seule conservé deux poèmes aussi étendus, pendant le long espace de temps ecoulé entre Homère et les premières editions connues; attribuer aux rhapsodes une portion considerable de ses ouvrages, c'est franchir toutes les bornes d'une critique raisonable. Comment se flatter, d'ailleurs, d'avoir fait une découverte echappée aux critiques de l'antiquité les plus célèbres, et qui ont apporté un soin si religieux à la révision des poèmes d'Homère, depuis Aristote jusqu'à cet Aristarque, dont le nom est devenu synonyme de critique par excellence?" All this, however, seems to be more plausible than sound. For, in the first place, if the art of writing was unknown in Greece in the age of Homer, or at least confined to carving on wood, or engraving on stone or metal, it follows that, for a certain period, the poems of Homer must have been preserved by oral tradition, because there practically existed no other method by which they could be handed down from one age to another. If it be impossible that two poems so extensive could have been preserved by oral tradition, then it is at least equally so that they could have been composed at the period to which they are commonly referred. Secondly, it is no argument whatever against a discovery in criticism to tell us that, if it were well founded, it could not have escaped the most celebrated critics of antiquity, from Aristotle to Aristarchus, who had applied themselves, with religious care, to the revision of Homer. This kind of argument, if sound, would cut down almost every discovery. Bacon discovered and explained the method of reasoning by induction, which had escaped

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[1] To the praise here bestowed on Homer, may be subjoined that of having been the most ancient historian of paganism who has come down to our times. "His poems," says Mr Coleridge, "are two great treasure-houses, in which the manners of the first ages of Greece are preserved. But the lot of the Homeric poems has been similar to that of the laws of the Twelve Tables. On the one hand, the world has ascribed those laws to the Athenian legislator, from whom, it is said, they passed to Rome, whilst no one has seen in them the history of the common law of the heroic tribes of Latium; on the other, the world has believed the poems of Homer to have been the work of the rare genius of an individual, instead of discovering in them the history of the common law of the heroic people of Greece." (*General Introduction*, p. 98.)

[2] *Quarterly Review*, xliv. p. 154.

Aristotle and all his successors; Newton discovered the law of gravitation, which, in its application to explain the motions of the heavenly bodies, and connect the whole solar system, had never been so much as suspected even by the most illustrious of his predecessors; Young, with rare sagacity, found out the method of interpreting the Egyptian writings, monumental and civil, which so many persons had, through a long tract of ages, sought for in vain. But were it now to be said, in objection to these discoveries, as M. Durivier has said in opposition to the hypothesis of Wolf and his followers, how could their authors flatter themselves with having found out what so many illustrious men had failed to discover? the answer would be, that each of these discoveries must be judged of by the direct evidence produced in support of it; that the increase of knowledge is progressive; and that, with regard to the particular case in question, the science of criticism is, in a great measure, one of modern growth.

To this succinct analysis of the different opinions entertained respecting Homer, succeeds naturally the critical history of his works. He had composed, or at least the ancients attributed to him, a large number, of which a catalogue may be found in the *Bibliotheca Græca* of Fabricius, and in the *Chrestomathia* of Proclus. Of the greater part there remain only the titles, about which even the learned are not always agreed. We should doubtless have little to regret in the loss of the Batrachomyomachia, a burlesque production, in which, with the exception of some details and verses, we find no traces of the genius and style of Homer; or in that of the Hymns, which are twenty-four in number, amongst which two or three have been supposed to belong to Homer. On this subject the reader may consult two critical letters of Rhunken, in his second edition of the Hymn to Ceres, Leyden, 1782; Mitscherlich, Ilgen, Matthiæ, and Hermann, have also published editions of these Hymns, which are valuable for the critical accuracy of the text, and the conjectures as to their supposed dates and authors. The epigrams and smaller poems bear no stamp of authenticity, and hence we may dispense with entering into any particular statement concerning them. It is in the Iliad and the Odyssey alone where we must seek for, and where we will find, the genius of Homer in all its force, and in all its splendour and originality.

If we can credit the statements of Ælian and Plutarch, it was Lycurgus, the celebrated Lacedæmonian lawgiver, who first collected, in Ionia, the scattered fragments of the poems of Homer, united them together, and introduced them into the Peloponnesus. But the glory of arranging them in the order in which they have reached us was, it seems, reserved for Pisistratus, who brought them to Athens, and for his son Hipparchus, who ordained that they should be recited annually during the Panathenaic festival. This fact, related in the *Hipparchus*, a dialogue attributed to Plato, is confirmed by the authority of Cicero, who concedes to Pisistratus, seconded by the poet-philosopher Solon, the merit of having put into order the verses of Homer, which he found in a state of confusion. After the edition of Hipparchus may be mentioned that which Aristotle revised by the advice of Alexander, and which the conqueror, an enlightened friend of letters, deposited in the precious casket which he had found amongst the treasures of Darius. But notwithstanding the authority of Plutarch, who sometimes placed too much reliance on memoirs evidently unworthy of confidence, this famous edition of the casket had, according to Strabo, been revised by Calisthenes and Anaxarchus, and was only presented to Alexander by his illustrious instructor. It is possible, however, that a second revision, enriched with the remarks of Aristotle himself, may have been made under the eyes of the Macedonian conqueror. Before Aristotle, Cynethus of Chios, Stesimbrotus, Theagenes, and Antimachus of Colophon, had already undertaken to comment on the text of Homer. The scholia of Venice, published by the learned Villoison, leave no doubt whatever as to this fact. We have not the same certainty respecting the editions of Cassander king of Macedonia, and Ptolemy Evergetes II. king of Egypt, whatever may have been said by Athenæus, Casaubon his learned interpreter, and the second Burmann. But it was the school of Alexandria which began to give truly classical editions of the works of Homer; Zenodotus of Ephesus, Aristophanes of Byzantium, Aristarchus, and Crates, occupied themselves not only with the revision, but also with the critical explanation, of the text; and Aristarchus is said to have first divided the Iliad and the Odyssey each into twenty-four books, a division which appears so natural and judicious that it has been constantly adopted ever since. So much for the Greek editors of Homer; let us now pass on to his interpreters.

At their head stands Didymus, a grammarian of Alexandria, who flourished under the reign of Augustus. He had enriched several poems with his commentaries; but the scholia on the Iliad and Odyssey printed with his name are evidently not his, and are neither of the same epoch nor by the same hand; in fact, he is often cited in them himself, and mention is made of writers who flourished at a subsequent period. With regard to their literary merit, the remarks, purely grammatical, are only simple glosses on the text; but those which relate to the subject-matter are not without ability, and may be consulted with advantage. This compilation, extracted partly from Didymus, and partly from various other commentators whose names are not mentioned, contains what are usually called the *lesser scholia*. Those on the Iliad were published, for the first time, at Rome, in 1517, folio, and those on both poems united, at Venice, in 1528, in two vols. 8vo. Soon afterwards, that is, from 1542 to 1550, appeared the great work of Eustathius on Homer, which was printed at Rome, in four vols. folio, and included the beautiful table of Devaris. This work, which is merely a compilation from the scholiasts and commentators who had preceded the learned archbishop of Thessalonica, presents nevertheless an immense repertory of literary and grammatical erudition. But it could have been wished that a more severe criticism had directed this vast compilation, or that an able and practised hand had made from it a judicious extract, which might have put into circulation riches almost unknown, or only accessible to the small number of persons who are profoundly skilled in the Greek language. The same observation may be applied to the valuable scholia discovered and published at Venice by Villoison.

We shall not attempt here to give a detail of the numerous editions of Homer. His works complete, including the Iliad, the Odyssey, the Batrachomyomachia, and the Hymns, were printed for the first time at Florence, in 1488, in two vols. folio, under the superintendence of Demetrius Chalcondylas, assisted by another Demetrius from the island of Crete. The printer, Bernardo Nerli, dedicated the collection to Pietro, son of Lorenzo de' Medicis. This rare and precious edition was faithfully reproduced, with a few corrections, in 1504, by the Aldine presses, at Venice, in two vols. 8vo. But the second Aldine edition of 1517 presents sensible differences in the text, which the subsequent editions reproduce, till that of 1528 inclusively. This is what may be called the first age of the editions of Homer. The second dates from Henri Etienne, who, with the assistance of an ancient manuscript, and the commentaries of Eustathius, collected a certain number of various readings, which he gave upon the margin, or developed, along with his own conjectures, in the notes of his beautiful work entitled *Poetæ Græci principes Heroici*

Carminis, Paris, 1566. With Barnes the Hellenist, who was celebrated in his own time, but whose reputation must necessarily diminish with the progress of philological criticism, commences a third epoch, which may be denominated that of Clarke, or perhaps of Ernesti, who improved upon the labours of Clarke, as Clarke had improved upon those of his predecessor Barnes. But he did not dissemble that his edition still left much to be desired; and he modestly admitted that he had only prepared materials for future editors. Such an editor as Ernesti appears to have contemplated was found in the person of Wolf, who, in 1784 and 1785, published at Halle, in Saxony, a complete edition of Homer, the superiority of which, in regard to correctness, was soon generally acknowledged. This edition was distinguished for an exact and severe revision of the text; and in it the learned professor had already announced the system afterwards developed and adopted by him, when Villoison published his famous edition of the Iliad, in folio, Venice, 1788. This edition occupies too important a place in modern philology, and, as some think, concerns too deeply the glory of Homer individually, to be passed by with a simple notice, or without entering into some details. Villoison was busily occupied at Venice with the publication of his *Anecdota Græca*, when, by accident, he discovered, in the library of St Mark, a manuscript of Homer, which, in his judgment, belonged to the tenth century, and was consequently anterior by two hundred years to the Commentaries of Eustathius. This manuscript contained the Iliad entire, accompanied with an immensity of scholia, abridged from those of Zenodotus, Aristophanes, Aristarchus, Crates Mallotes, Ptolemy of Ascalon, and several other celebrated grammarians. But that which particularly struck him, was observing the margins filled with asterisks, daggers, and all the different signs adopted to distinguish verses supposed to have been altered or transposed, from those the authenticity of which was universally recognised. The publication of the work did not fail to realise the great hopes which the learned of Europe had conceived from its mere announcement, and the success of the edition was complete. But it confirmed Wolf more than ever in the opinion that it was to the critics of Alexandria that recourse must be had in order to recover and reconstitute the true text of Homer; and, fortified by the new proofs of the truth of his assertion which he conceived to have under his eyes, he ably profited by the assistance which these ancient scholia afforded him, and made no difficulty in substituting for the ordinary readings of the text the variations which appeared to him to be demonstrated. Thus, by a singular chance, the beautiful monument elevated to the glory of Homer by one of the most famous Hellenists of his age, became the basis of a system calculated to deprive Homer of the admiration which, for ages, had been lavished on him. Villoison was so much affected by this circumstance that he repented of having ever published his Iliad. That of Wolf, accompanied with the Odyssey and the Hymns, re-appeared at Leipsig in 1804, in four vols. small 8vo. This edition adds to its other merits that of a typographical execution which does much honour to the press of M. Goschen. The edition of the Iliad by Heyne, in eight vols. 8vo, which appeared at Leipsig in 1802, has not completely justified the expectations which might have been entertained of such an editor. His principal merit consists in presenting a clear and exact interpretation of the text, and in collecting, in the *Excursus* and Commentaries which accompany it, all that is important to be known for the perfect understanding of Homer. The doctrine of Heyne on the *spirits* rough and smooth (*asper et lenis*), which, according to him, were much more strongly aspirated in the time of Homer, and pronounced like the Æolic digamma, has met with more adversaries than partisans; although it explains very well how certain syllables, naturally short, become long at the end of a word, when the following one begins with a vowel, and causes to disappear the hiatuses which are of so frequent occurrence in the verses of this great poet.

From the commencement or towards the middle of the sixteenth century, Homer was translated into prose and verse amongst the Italians, the English, the French, the Spaniards, and other nations; but we shall only notice those versions which occupy a place more or less distinguished in literature. In Italy the most esteemed are those of Salvini, Cerutti, Cesarotti, and Monti; Salvini, however, translated all that remains of Homer, but the others confined themselves to the Iliad. In England, the translation of Pope threw into the shade those of Chapman, Ogilvy, and Hobbes; but many, nevertheless, prefer to it that of Cowper, as more exact, and preserving better the simple and natural colour of the original; whilst some are of opinion that the recent version of Sotheby, the accomplished translator of Wieland's *Oberon* and Virgil's *Georgics*, is, in several respects, superior to all its predecessors. The French have, in prose, Madame Dacier, Bitaubé, Lebrun, and Dugal-Montbel, each of whom is distinguished for some particular merit. Of the French translations in verse we shall only notice two; those of Rochefort and of M. Aignan, which are both considered excellent. The Germans attach much importance to the versions of Bodmer, of the Count de Stolberg, brother of the translator of Sophocles, and of Voss, all of whom have translated Homer into hexameter verses; a system of versification which prevailed in that school, and which was applied to the ancients, with what success we shall not venture to pronounce. Spanish literature contains no good translation of Homer. The most recent, and, comparatively speaking, the best, is that of Don Saverio Malo, a gentleman employed in the Royal Library at Madrid.

We shall not expatiate here on the literary merit of the prince of poets. It is too generally known, and too deeply felt, to require any exposition at our hands. Besides, what addition could we hope to make to the admirable Essay of Pope on the Life and Writings of Homer; to the *Discours Préliminaire* of Rochefort; and, above all, to the eloquent eulogium which the Abbé Barthélemy puts in the mouth of the Scythian Anacharsis? The dissertations of Lamotte are also, in their kind, so much more honourable to the author or authors of the Iliad and Odyssey, that the number and severity of the criticisms contained in them give to the praise a character more solid and less equivocal. The authority of genius is powerful, nay universal. That of Homer has, for thirty centuries, presided over the destinies of almost every literature of the world. It was from the works of the first and greatest of poets that Æschylus, Sophocles, Euripides, and others, derived not only the subjects of their tragedies, but the spirit and sentiments by which these are animated, and the varied charms of that style of which Homer possessed the secret, and left them a model. It was to his genius that the epic poets, as Virgil and Tasso, were indebted for their sublime beauties; it was from his works that the greatest artists of ancient and modern times borrowed their finest conceptions; and both are the more elevated in proportion as they approach nearer to their great model. In a word, as Homer has been denominated κατ' ἐξοχην, *the Poet*, so the expression *Homeric beauties*, having passed into a proverb, has become amongst men of letters the appropriate qualification of the grand and the beautiful in poetry.

(Besides the works already quoted, see *Biographie Universelle*, art. HOMERE; Chalmers's *Biog. Dictionary*, art. HOMER; Blackwell's *Inquiry into the Life and Writings of Homer*, second edition, London, 1736, in 8vo; and Wood's *Essay on the Original Genius and Writings of Homer*, London, 1775, in 4to.) (A.)

HOMER, *Omer*, or *Chomer*, a Jewish measure, containing the tenth part of the ephah. See CORUS and MEASURE.

HOMICIDE signifies in general the taking away of the life of a human being. It is of three kinds; *justifiable*, *excusable*, and *felonious*. The first has no share of guilt at all; the second very little; but the third is the highest crime against the law of nature that man is capable of committing. See PENAL JURISPRUDENCE.

HOMILY, in ecclesiastical writers, a sermon or discourse upon some point of religion, delivered in a plain manner, so as to be easily understood by the common people. The word is Greek, ὁμιλια, formed from ὁμιλος, *cœtus*, assembly or council.

The Greek homily signified a familiar discourse, like the Latin *sermo;* and discourses delivered in the church took these denominations, to intimate that they were not harangues or matters of ostentation and flourish, like those of profane orators, but familiar and useful discourses, such as those of a master to his disciples, or of a father to his children.

All the homilies of the Greek and Latin fathers were composed by bishops. We have none of Tertullian, Clemens Alexandrinus, and many other learned persons, because, in the first ages, bishops alone were admitted to preach. The privilege was not ordinarily allowed to priests till towards the fifth century. St Chrysostom was the first presbyter who preached regularly. Origen and St Augustin also preached, but it was by a peculiar license or privilege.

Photius distinguishes a *homily* from a *sermon* by this, that the homily was performed in a more familiar manner, the prelate interrogating and talking to the people, and they in their turn answering and interrogating him, so that it was properly a conversation; whilst the sermon was delivered with more form, and in the pulpit, after the manner of the orators.

The practice of compiling homilies, which were to be committed to memory, and recited by ignorant or indolent priests, commenced towards the close of the eighth century, when Charlemagne ordered Paulus Diaconus and Alcuin to form homilies or discourses upon the Gospels and Epistles, from the ancient doctors of the church. This gave rise to the famous collection entitled the *Homilarium of Charlemagne*, which being followed as a model in many productions of the same kind, composed by private persons, from a principle of pious zeal, contributed much, according to Mosheim, to nourish the indolence and to perpetuate the ignorance of a worthless clergy.

There are still extant several fine homilies, composed by the ancient fathers, particularly by St Chrysostom and St Gregory.

Clementine HOMILIES, in *Ecclesiastical History*, are nineteen homilies in Greek, published by Cotelerius, with two letters prefixed; one of them written in the name of Peter, the other in the name of Clement, to James bishop of Jerusalem, in which last they are entitled Clement's Epitome of the Preaching and Travels of Peter. According to Leclerc, these homilies were composed by an Ebionite in the second century; but Montfoucon supposes that they were forged long after the age of Athanasius. Dr Lardner apprehends that the Clementine homilies were the original or first edition of the Recognitions; and that they are the same with the work censured by Eusebius under the title of Dialogues of Peter and Appian.

HOMOGENEOUS, or HOMOGENEAL (composed of the Greek words ὁμος, *like*, and γενος, *kind*), is a term applied to various subjects, to denote that they consist of similar parts, or of parts of the same nature and kind; in contradistinction to *heterogeneous*, where the parts are of different natures or kinds.

HOMOLOGATION, in the civil law, the act of confirming or rendering a thing more valid and solemn, by publication, repetition, or recognition thereof. The word comes from the Greek ὁμολογια, *consent* or *assent*, formed from ὁμος, *similis*, like, and λογος, from λεγειν, *dicere*, to say; that is, to say the same thing, to consent or agree.

HOMOLOGOUS, in *Geometry*, an appellation given to the corresponding sides and angles of similar figures.

HONDEKOOTER, MELCHIOR, a Dutch painter, born at Utrecht, who excelled in painting animals, and especially birds. His father and grandfather were of the same profession, and their subjects the same. He was trained to the art by his father; but surpassed him, and even the best of his contemporaries. Till he was seventeen years of age he continued under the direction of his father, and accustomed himself to paint different sorts of birds; but he took particular pleasure in representing cocks, hens, ducks, chickens, and peacocks, which he described in an elegant variety of actions and attitudes. After his father's death, which happened in 1653, he received some instructions from his uncle John Baptist Weeninx; but his principal and best instructor was nature, which he studied with intense application. His pencil was neat and delicate; his touch light; his colouring natural, lively, and transparent; and the feathers of his fowls were expressed with a swelling softness, which might have readily and agreeably deceived the eye of any spectator. It is reported that he had trained up a cock to stand in any attitude he wanted to describe, and that it was his custom to place that creature near his easel, so that at the motion of his hand the bird would fix itself in the proper posture, and would continue in that particular position without the smallest perceptible alteration for several hours at a time. The landscapes which he introduces as the backgrounds of his pictures are adapted with peculiar judgment and skill, and admirably finished; they harmonize with his subject, and always increase the force and the beauty of his principal objects. He was very happy in imitating the natural plumage of the fowls he painted; which not only produced a charming effect, but may also assist an intelligent observer in determining which are the genuine works of this master, and which the impositions. He died at Utrecht in 1695, aged fifty-nine.

HONDURAS, a settlement of Great Britain, in the southern part of the North American continent, and province of Yucutan. It is situated between the parallels of 17. and 19. north latitude, and 88. and 90. west longitude, on a peninsula which forms the Bay of Campeachy on the west and the Bay of Honduras on the east. Its name is derived from the Spanish term Hondura, which signifies depth, and was originally given to the coast by its discoverers, on account of the great depth of water along the shore. According to the best geographical authorities, the line which embraces this settlement commences at the mouth of the Rio Grande, or Hondo, whose course it at first follows, and afterwards runs parallel with it for thirty miles. It then turns south, and passes through the New River Lake, in a straight line, to the river Balize, up which it ascends for a considerable distance, till again bending in a southerly direction, it meets the head of the Libun, whose course it pursues to the sea. The whole settlement embraces an area of 62,750 square miles.

This coast was discovered by Columbus in the year 1502, but little that can be relied upon is known of its early settlement. The abundance and fine quality of the wood, particularly mahogany and logwood, seem first to have drawn attention to it; and at a pretty early period it was occasionally resorted to by wood-cutters. But the first permanent establishment of British wood-cutters was made at Cape Cartoche, by some adventurers from Jamaica, whose numbers increasing, they extended as far south as the river Balize, and as far west as the neighbourhood of Campeachy. The Spaniards, however, did not quietly submit to this usurpation of their territorial dominion. Several expeditions were fitted out against the settlers, but they were uniformly unsuccessful; and on two occasions, in 1659 and 1678, so complete was their discomfiture, that the town of Campeachy itself was taken by the logwood-cutters, with only the assistance of the seamen engaged in the trade. This last repulse occurred eight years after a treaty had been concluded with Spain, by which the territorial right of Britain to the occupancy of Honduras was generally, although not specifically, embraced. The successes of the settlers aroused the jealousy of the Spaniards, and led to a renewed discussion of their right to the territory which they occupied. This would appear to have been again generally admitted; but the Spaniards finally succeeded in driving the woodmen from the Campeachy shore, and confining them to the limits which we have already defined. An attempt was again made in 1718 to dispossess the British of the territory on the river Balize; but the firmness of the woodcutters deterred the Castilians from effecting any thing, except the erection of a fortification, which in a few years they abandoned. In 1754 an expedition was undertaken to exterminate the colony; but by a treaty of peace concluded in the year 1763, the Spaniards were compelled to admit the right of occupancy to the British colonists, which, however, they subsequently attempted to annul. In 1779 the Spaniards again attacked the settlement, and after destroying property to a considerable amount, they took a number of the colonists prisoners, and marched them off in irons to Merida, whence they were shipped to the Havannah, and there confined till 1782. In 1784 Britain obtained from Spain a specific grant of "the lands allotted for the cutting of logwood," by which Honduras became as much a territorial occupancy of the British crown, as Jamaica or any other of our colonial possessions. The last attack on the settlement was made during the war in 1798, but the expedition, which consisted of 3000 men, was gallantly repulsed; and since that period the colony has remained undisturbed by foreign aggression.

The coast of the Bay of Honduras is low, and the shore is studded with a number of low islands or keys, which, however, are verdant. As we recede from the coast, the land rises into a bold and lofty country, interspersed with rivers and lagoons, and covered with gigantic forests. The inland frontier is formed by an immense chain of mountains, which are also covered with impenetrable forests and brushwood. Through this rocky barrier there is only one pass, namely, that leading to Peten. It is merely a pathway, which might be defended by a few men. The lagoons or sheets of water, and the falls and rapids of the rivers, constitute sublime and beautiful features in the general aspect of the country. The river and lagoon of Manatee, which is situated ten leagues south of Balize, is considered as extremely grand. At about a mile from the mouth of the river is the lagoon, a magnificent sheet of water, extending for several leagues in a northerly direction. In many places immense mountains ascend from its margin, overtopping large valleys and wood ranges of great extent, where the tiger, antelope, armadillo, quash, opossum, racoon, and several species of deer, abound. Amongst the feathered tribes there are numbers of quails, plovers, pigeons, pheasants, and wild turkeys. The deficiency of streams amongst the mountain ridges is supplied by the presence of large marshy spots or shallow ponds, the banks of which are frequented by almost every species of water game. Fish abound during a great part of the year in these ponds, but the latter dry up in the season of drought, and then vast flocks of sea-fowl congregate around them to prey upon the fish which have been left dry by the evaporation of the waters. The alligator is also a frequent visitor; and, to partake of this repast thus yearly provided for him, he has been known to traverse trackless wilds, and make long journeys into the interior. Eight or ten miles from the lakes the rapids begin, and the high rocky banks of the river assume a romantic and beautiful appearance. Further on there is a cataract of about a quarter of a mile in length, and of considerable acclivity. A cluster of beautiful caves, through which the river winds its way, and beneath which the traveller must pass, is next reached. They have been described as equally singular and grand:—"These magnificent natural excavations of the mountains are semicircular at the entrance, and about five yards in diameter. Within the cave the arch rises to the height of a hundred feet, and leads to another low arch, which, being passed, a second cavern of large size opens, beyond which is a third with a circular orifice, through which the river enters. During the floods the mouths of the caverns are filled with water, which boils up with prodigious fury, and thus detains travellers many days before they can pass through the caves or tunnels. In the rainy season, as the water increases on the upper or inland sides of the mountains, the river forces its passage through the interstices and openings in its sides with tremendous noise, forming an indescribably grand cascade of from forty to fifty feet high, issuing from an hundred orifices."[1]

The country is technically divided into the Pine and the Cahoun ridges. The soil of the former has a substratum of loose reddish sand, and its indigenous products consist of those varieties of vegetation the assimilative powers of which are strong and perennial. Extensive prairies expand over this soil, and the pine, from which it derives its name, is extremely abundant. The soil of the Cahoun ridge consists of a deep loam, capable of growing every species of European as well as of tropical aliment. Its fertility occasions the growth of much brushwood, and it is covered with the wild cotton and other gigantic trees.

Fruits, spontaneously produced, are exceedingly abundant, and consist of oranges of excellent quality, shaddocks, limes, mangoes, melons, pine-apples, water-melons, avocato pears, cashew, cocoa-nuts, and many others. They are all found in the neighbourhood of Balize, but are sometimes brought in large quantities from more elevated plantations. The mahogany and logwood trees are at present the staples of Honduras. The former is found best in elevated situations; and growing generally solitary, it is discernible at a great distance, from the yellow hue of its foliage. It is cut down at about twelve feet from the ground, and when felled, the logs are dragged to the banks of the streams and floated down in rafts. It is said that the boughs and limbs afford the finest wood, but the size is principally looked to in Britain. The logwood is found in low swampy grounds, growing contiguous to fresh water creeks and lakes, on the edges of which the roots, the most valuable part of the wood, ramify. They are felled during the dry season, and carried off when the wet season has laid the ground under water. There is another valuable tree called the *pinus occidentalis*, which grows to the height of sixty feet, and covers many thousand acres of country. It contains an immense quantity of tar and turpentine, and might be turned to good account were the vexatious duties on colonial timber removed. The pine-wood is of course highly inflammable, and in this respect it is very valuable to the poor, who make torches of it. It likewise powerfully resists decay, and is in consequence much used by builders. The cahoun, or cohoon tree as it is pronounced, is valuable on account of an oil which it yields. This unctuous product, when unadulterated, is almost colourless, destitute of any disagreeable taste, and when burned as a lamp oil it emits a beautiful palish flame without smoke or smell. There are various other kinds of wood of beautiful vein and close texture, such as ironwood, clay-wood, rosewood, palmaletta, and the like. Amongst minerals, veins of fine marble and mountains of alabaster are known to exist. Several valuable specimens of crystals have been found, and gold has at various periods been detected; but no pains were ever taken to ascertain whence it proceeded. Labouring Creek, which lies on the Balize, about one hundred miles inland, is remarkable for the petrifying properties possessed by its waters. They have also a powerful cathartic effect on strangers, and when applied externally to an ulcer, have a healing property.

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[1] "There are also magnificent caves in the river Libun, eight or ten days' journey from Balize; and some interesting caverns exist in the creeks or arms of the old river."

The country abounds with all kinds of animals fit for the food of man. Except in very rough weather, the supply of salt-water fish of excellent quality is abundant. The common green turtle, when in a healthy condition, is a staple commodity in the market. It is often five feet long, and weighs from 200 to 250 lbs.

Balize, the capital of the settlement, is divided into two parts by the river of the same name. The part of the town which is situated upon the south or right bank of the river, along the eastern edge of a point of land, is completely insulated by a canal on its western side, which runs across from a small arm of the sea, and bounds the town on its south side. The houses are about 500 in number, and are in general well built, spacious, and even elegant. They are for the most part constructed of wood, and raised ten feet from the ground. The two parts of the town are connected by a bridge, which was built in 1818. It is twenty feet in width, and its span is 220 feet. It is entirely constructed of wood, and is well secured by balustrades on each side. The streets of Balize are regular, running parallel north and south, and intersected by others. The main one runs in a north-easterly direction to the bridge from the government-house, which is situated on the south-east point or angle of the island on the right bank of the river, and bounded on the south and east by the sea. Behind the government-house is the church, on the east side of the main street. The whole town is embowered in groves and avenues of the cocoa-nut and tamarind trees. Fort George is situated about half a mile from the river, on a small low islet.

The climate in the neighbourhood of Balize is generally moist. July is the hottest and dryest month of the year, and then the maximum heat is 83°, the medium 82°, and the minimum 80° of Fahrenheit. The great heat, however, is tempered by the sea breezes, which almost constantly prevail. During the wet seasons the thermometer sinks to 60°, and the variation in the temperature is sometimes very great. But the climate is by no means unhealthy; indeed it is asserted in the Honduras Almanack that it is more favourable to European constitutions than any other climate under the tropics. Where temperance and regularity are observed, the average duration of human life will not be less in Honduras than it is in this country.

There are various classes of society in this settlement, including Europeans, coloured people, Indians, and Mosquito men. The blacks of Honduras are distinct from the aborigines of the country, being of African descent. In general they are inclined to indulge those low propensities which are exhibited in a state of barbarism. A few of them, either from national usage or other causes, show an utter aversion to spirituous liquors, but by far the greater proportion are guilty of the most beastly excesses in this respect. Having been derived from various regions, they still retain all their national peculiarities; and, to keep themselves distinct from every other tribe, each nation selects one individual, on whom the rest of his people bestow the title of king, and who exercises over them a certain degree of authority. The blacks, as a body, have upon the whole little intelligence, and their dulness of comprehension is remarkable. It is asserted, however, in the Honduras Almanack, the best authority on this point, that some of the blacks exhibit an originality of talent and a degree of mental activity little inferior to their European brethren. They are much attached to their country, and with a native of his own land a Honduras black will share his last plantain. The *coloured* population has resulted from the intercourse of Europeans with Africans or Indians. They of course, morally speaking, assume a medium status, and partake more or less of the qualities of black and white, according to their distance from either. The *Mosquito* shore men abound in the colony. They are remarkable for a fine muscular formation of body, but in their countenances they exhibit an utter destitution of intelligence, and their habits are most barbarous. They acknowledge the existence of a good and evil spirit; and the little power of thought which they possess is displayed in their conduct towards their deities. The good spirit is neglected, because, say they, his goodness is so great that nothing is to be feared from his wrath, whilst, on the other hand, the evil spirit is propitiated, in order to deprecate his malevolence. The whole wealth of a Mosquito man consists in his canoe, paddle, and harpoon. With these he satisfies the cravings of nature, and his grovelling nature asks for no more. The *Indians*, the real aborigines of the place, are a timid, inoffensive race, apparently more under the influence of instinct than of reason. They perform the most astonishing journeys through woods as trackless as the sea, and impervious to all but themselves, with infallible correctness of direction and amazing rapidity. Although free from vindictive or malicious propensities, they are addicted to drunkenness to an excessive degree.

In religious matters Honduras forms part of the bishopric of Jamaica, and facilities are afforded by the establishment for religious instruction. There is a well-endowed school attached to it, conducted on the Madras system, and the average daily attendance of children is above a hundred. There are likewise two mission schools, and considerable benefit has already been reaped from these institutions. Not one of the least is the change of sentiment which has taken place with regard to marriage. Only a few years back this ceremony was little regarded, and virtue and decency were absolutely despised. A better feeling, however, is now beginning to prevail, of which the legislature has taken advantage; and, for the encouragement of public morals, great facilities to the marriages of the lower orders of blacks have been afforded by recent laws and regulations. Petty larceny, and misdemeanours resulting from intemperance, frequently occur; but atrocious crimes are happily seldom perpetrated. In the mechanical arts the blacks display little or no ingenuity, but the coloured people, approaching nearer to the European standard of mind, are considerably above the negroes in this respect. In architectural designs, however, and other arts by which domestic comforts are enhanced, the whites alone are to be depended upon. Some years back the inhabitants of Honduras were content with stoccadoed huts of the most primitive construction, but now there are many large, commodious, and even elegant houses, particularly in Balize.

The grand authority of the settlement is a mixed legislative and executive power, designated the Magistrates of Honduras, by whom enactments are made; and these become laws to be enforced by the executive part of the government, after they have been sanctioned by the king's representative. The magistrates are in number seven, and annually elected by the inhabitants. In them the power is vested, and they conduct the whole public business of the colony, without receiving any remuneration for their services. The superintendent is of course a nominee of the crown of Great Britain.

The militia of Honduras, which is a thousand strong, consists of a brigade of artillery and a regiment of the line; there is likewise a local maritime force, the whole being under the command of the superintendent and his aides-de-camp and staff. The following table exhibits the revenue and expenditure of Honduras from 1807 till 1830.

	Revenue.	Expenditure.		Revenue.	Expenditure.
1807	£7,566	£8,291	1819	£15,967	£16,896
1808	6,005	5,170	1820	17,249	17,266
1809	6,829	6,066	1821	12,306	12,027
1810	9,523	9,604	1822	14,831	14,296
1811	8,643	8,981	1823	19,294	20,112
1812	6,590	6,312	1824	14,125	14,163
1813	5,438	5,548	1825	17,594	17,634
1814	5,474	5,629	1826	13,256	13,755
1815	12,944	12,527	1827	17,415	17,562
1816	10,672	9,276	1828	10,653	10,760
1817	8,168	8,838	1829	11,744	11,759
1818	16,501	18,193	1830	15,673	15,806
Total,	104,353	104,435	Total,	180,107	182,036

It will be perceived that the revenue of this colony has very materially increased, and it would still increase were the interest of this settlement more attended to at home. Its resources are very great, and were emigration properly encouraged, it would soon become of vast importance both in a political and in a commercial point of view, more especially as there are still uncultivated many thousand square miles of the richest soil. Trade is yet in its infancy, but the value of the imports in 1830 was L.234,379, and of the exports L.316,151, employing a shipping inwards of 13,918 tons, and outwards of 16,351 tons, independently of a large coasting trade, which is on the increase. The following table exhibits the quantities of the principal articles exported from 1824 to 1830.[1]

Years.	Mahogany.	Cedar.	Indigo.
	Feet.	Feet.	Lbs.
1824	5,573,819	2,493	199,867
1825	5,083,170	21,000	211,447
1826	6,385,589	30,171	358,552
1827	6,904,998	19,781	81,767
1828	5,466,806	...	1,610 leeroons.
1829	4,631,391	912	1,474 ......
1830	4,556,986	...	2,650 ......

Much discrepancy prevails amongst authorities relative to the numbers of the inhabitants. The following table exhibits the aggregate population of Honduras from 1823 to 1830.

Years.	White and Free Coloured.		Slaves.		Total.	
	Males.	Females.	Males.	Females.	Males.	Females.
1823	842	798	1654	814	2496	1612
1826	1896	891	1606	804	3502	1695
1829	1596	920	1329	798	2925	1718
1830	937	919	1347	680	2284	1599

It is almost superfluous to observe, that here, as in all our other colonies, the name of slave has ceased to designate a subject of the British empire. (R. R. R.)

HONE, a fine kind of stone, used for setting razors, pen-knives, and other cutting instruments.

HONEY, a sweet vegetable juice, collected by the bees from the flowers of various plants, and deposited in the cells of the honey-comb. See BEE.

HONFLEUR, a maritime city of France, in the arrondissement of Pont l'Eveque and department of Calvados. It is an ill-built town, situated on the Seine, opposite to Harfleur. There are four churches, 1027 houses, and 9780 inhabitants, who subsist partly by the fishery, and carry on some manufactures of vitriol, of alum, and of lace. The herring fishery is the most extensive. Before the Revolution it was the principal place for the Newfoundland fishery and for the colonial commerce. Long. 0. 3. E. Lat. 49. 17. N.

HONDSCHOOTE, a town of France, in the arrondissement of Dunkirk, in the department of the North. It stands on the canal leading from Bergues to Furnes, contains 539 houses, and 3168 inhabitants. It is remarkable on account of the battle fought there in 1793, when the Duke of York, with the combined armies, advanced to take possession of Dunkirk, and was defeated by the French under the command of General Houchard.

HONITON, a market-town of the hundred of Axminster, in the county of Devon, 159 miles from London. It consists of one long street, on the great road from the metropolis to Exeter. It has suffered by frequent fires, and good houses have been constructed instead of those which were burned. The parish church is half a mile from the town, but there is a chapel of ease within it. It is an ancient burgh, and still returns two members to parliament, who are chosen by about five hundred voters. It had formerly considerable trade in making serges, but that has of late years greatly declined. Some employment for females is provided, by making thread lace; and none is more highly esteemed than that which bears the name of this place. There is here a well-attended market on Saturday. The population amounted in 1801 to 2377, in 1811 to 2735, in 1821 to 3296, and in 1831 to 3509.

HONORIACI, in *Antiquity*, an order of soldiery under the eastern empire, who introduced the Goths, Vandals, Alani, Suevi, and other tribes, into Spain. Didymus and Verinianus, two brothers, had, with great vigilance and valour, defended the passages of the Pyrenees against the barbarians; but being at length killed, the emperor Constantius appointed to defend those passages the *honoriaci*, who, not contented with laying them open to all the nations of the north then ravaging the Gauls, actually joined the spoilers.

HONOUR, a testimony of esteem or submission, expressed by words, actions, and an exterior behaviour, by which we make known the veneration and respect we entertain for any one on account of his dignity or merit. The word *honour* is also used in general for the esteem due to virtue, glory, and reputation. It is further employed to signify virtue and probity themselves, and an exactness in performing whatever we have promised; and in this last sense we use the term *a man of honour*. But *honour* is more particularly applied to two different kinds of virtue; bravery in men and chastity in women. Virtue and Honour were deified amongst the ancient Greeks and Romans, and had a joint temple consecrated to them at Rome; but afterwards each of them had separate temples, which were so placed that no one could enter the temple of Honour without passing through that of Virtue; and by this the Romans were continually put in mind that virtue is the only direct path to true glory. Plutarch tells us, that the Romans, contrary to their usual custom, sacrificed to Honour uncovered; perhaps to denote, that wherever honour is, it wants no covering, but shows itself openly to the world.

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[1] The tables given above, and much other information, have been derived from Mr Montgomery Martin's work on the British colonial possessions, to which the reader is referred for more minute details regarding this settlement.

Honour, or *Rank*. The degrees of honour which are observed in Britain may be comprehended under these two heads; *nobiles majores*, and *nobiles minores*. Those included under the first rank are, archbishops, dukes, marquisses, earls, viscounts, bishops, and barons, which are all distinguished by the respective ornaments of their escutcheons; and those of the second are baronets, knights, esquires, and gentlemen. There are some authors who pretend that baronets are the last under the first rank; and their reason is, because this honour is hereditary, and by patent, like that of the nobility.

Honours of War, in one sense, are stipulated terms, which are granted to a vanquished enemy, and by which he is permitted to march out of a town, from a camp or line of intrenchments, with all the pomp and circumstance of military array. In another sense, the honours of war mean the compliments which are paid to great personages or military characters, when they appear before a body of armed men. The former, however, is the most common acceptation; and with respect to it we may observe here, that it is extremely difficult to describe the honours of war specifically, as almost every thing depends on the general by whom a capitulation is granted. In some instances the troops of a besieged garrison are permitted to march out with arms shouldered, drums beating, colours flying, and all or part of their baggage; in others, they are only allowed to advance silently in front of their works, ground or pile their arms, face to the right, and return within their intrenchments. To give examples on a matter so plain must be altogether superfluous.

Military Honours. All armies salute crowned heads in the most respectful manner, drums beating a march, colours and standards dropping, and officers saluting. Their guards pay no compliment, except to the princes of the blood, and even that by courtesy, in the absence of crowned heads.

To the commander-in-chief the whole line turns out without arms, and the camp-guards beat a march, and salute. To generals of horse and foot, they beat a march, and salute; to lieutenant-generals, three ruffles, and salute; to major-generals, two ruffles, and salute; to brigadiers, rested arms, one ruffle, and salute; to colonels, rested arms, and no beating. Sentinels rest their arms to all field officers, and shoulder to every officer. All governors who are not general officers, in all places where they are governors, have one ruffle, with rested arms; but for those who have no commission as governors, no drum beats. Lieutenant-governors have the main-guard turned out to them with shouldered arms. The master-general of the ordnance has the same respect and honours paid to him as the generals of cavalry and infantry.

Honour-Point, in *Heraldry*, is that next above the centre of the escutcheon, dividing the upper part into two equal portions. See Heraldry.

HONOURABLE, a title conferred on the younger sons of earls and the sons of viscounts and barons; as also on such persons as have the king's commission, and upon those who enjoy places of trust and honour.

HOOD, Robin, a famous outlaw and deer-stealer, who chiefly harboured in Sherwood Forest in Nottinghamshire. He was a man of family, and played his pranks about the end of the twelfth century. He was famous for archery, and for his hospitable treatment of all travellers who came in the way; levying contributions on the rich, and relieving the poor. At last, having fallen sick, and requiring to have blood taken, he is said to have been betrayed and bled to death. He died in 1247, and was buried at Kirklees in Yorkshire, then a Benedictine monastery.

Hood, in *Falconry*, is a piece of leather, with which the head of a hawk, falcon, or the like, is covered. See Falconry.

Hood's *Island*, the most northerly of the Mendoza's islands, in the South Pacific Ocean, discovered in 1774 by Captain Cook. Long. 138. 52. W. Lat. 9. 26. S.

HOOGHLY, an extensive district in the province of Bengal, formerly called Saatgong, situated principally between the 21st and 22d degrees of north latitude, and extending a considerable distance along both sides of the river Hooghly. It is bounded on the north by the districts of Burdwan and Kishenagur, on the south by the sea, on the east by Jessore and the Sunderbunds, and on the west by Midnapoor. This district consists of low flat land, very fertile; but that part which is nearest to the sea is very thinly inhabited; it is called the Sunderbund, is swampy, covered with wood, and remarkably unhealthy. It is intersected in every direction by rivers and their branches, which afford great facilities for internal navigation; but these waters are unfortunately infested by gang-robbers or river pirates, who are a most ferocious banditti, robbing in gangs, and often using torture to extort from their victims the disclosure of their hidden treasures. Along the shores of the ocean salt of an excellent quality is manufactured on account of the government. Although this district is so near Calcutta, which affords a ready and constant market for its produce, the greater part of the country lies in a completely desert state, infested by alligators, tigers, and a countless variety of vermin and reptiles.

Hooghly, an ancient and formerly a large town in the province of Bengal, situated on the western bank of the Hooghly, nearly twenty-six miles above Calcutta, and supposed to have been founded by the Portuguese about the year 1538. During the Mogul government, it was a town of great consequence, being the port of the western arm of the Ganges, where the duties on merchandise are collected. It very soon drew away all the trade from Saatgong, which had been before the government port of Bengal. During the prevalence of the Portuguese dominion in India, Hooghly was fortified, and continued to flourish till the year 1632, when it was attacked by order of the emperor Shah Jehan, and, after a siege of three months and a half, was taken by the Mogul troops, a thousand of the Portuguese being killed, and four thousand four hundred men, women, and children taken prisoners. From this period Hooghly became the imperial port. All the officers of the government were ordered to remove thither, and it was placed under the jurisdiction of a special governor. In the year 1642, the English, and soon afterwards the Dutch, obtained the permission of the native government to erect factories. After this period, every encouragement was given to commerce; and Hooghly, which was called Bukhshy Bunder, became a great commercial emporium between Europe, Persia, Arabia, and India. In 1686 hostilities commenced between the English and the nabob. An action ensued, in which the nabob's troops were defeated; and at the same time the town of Hooghly was cannonaded, and five hundred houses burned. The result, however, was a disgraceful peace; an amicable arrangement was made by the military superintendent of the district. But in consequence of Calcutta being an open town, the agent and council retired to that place. Long. 88. 28. E. Lat. 22. 54. N.

Hooghly *River*, properly the Bhagirutty, a river of Bengal, formed by the junction of the two westernmost branches of the Ganges, the Cossimbazar, and the Jellinghy. This is the port of Calcutta, being the only branch of the Ganges that is navigated by large vessels; yet the entrance to the river is rendered extremely dangerous and difficult, by reason of numerous sand banks in it, which are frequently shifting. The shoals are very numerous where the Ganges is joined by the Roopmarain; and as this river directly faces the approach from the sea, whilst Hooghly turns to the right, it occasions the loss of many vessels, which are carried up the Roopmarain by the force of the tide. The spring-tides run up with great violence, advancing at the rate of fifteen miles an hour. This is what is called by the Europeans the Bore, which commences at Hooghly Point, where the river first contracts itself, and is perceptible above Hooghly town; and though the distance is above seventy miles, it traverses this space in about four hours, running along the opposite bank to the Calcutta side, whence it crosses at Chitpoor, about four miles above Fort William, and rushes with great violence past Barnagore, Duckinsore, &c., frequently oversetting boats and driving ships from their anchorage. At Calcutta it sometimes occasions an instantaneous rise of five feet. The tide does not rise more than thirty miles above Calcutta; and during the rainy season its influence is checked by the large body of water that comes down the river. The Hooghly contains several kinds of good fish, particularly the cockup, sable mangoe fish, and prawns; and it abounds also in crocodiles and sharks. It is about three quarters of a mile broad at Calcutta, and eight or ten miles wide at the mouth. It is only navigable for ships as high as the tide reaches, and the upper part of it is nearly dry during the hot season; yet there are few rivers that can boast of a more extensive commerce, all the towns belonging to European nations, and several others by the natives, standing on its banks. It is esteemed to be the most sacred branch of the Ganges by the Hindus, and it is on this account that those who cannot afford to bury their dead throw them into the Hooghly.

HOOK, in *Angling*. See Angling.

Hooks of a Ship, are all those forked timbers which are placed directly upon the keel, as well in her run as in her rake.

Can-Hooks, those which being made fast to the end of a rope with a noose, like that which brewers use to sling or carry their barrels on, are made use of for slings.

Foot-Hooks, in a ship, the same with futtocks.

Loof-Hooks, a tackle with two hooks, one to hitch into a cringle of the main or foresail, in the bolt-rope at the leech of the sail by the clew, and the other is to hitch into a strap, which is spliced to the chess-tree. Their use is to pull down the sail, and succour the tackles in a large sail and stiff gale, that all the stress may not bear upon the tack. It is also used when the tack is to be seized more secure, and to take off or put on a bonnet or drabler.

Hook Pins, in *Architecture*, are taper iron pins, only with a hook-head, to pin together the frame of a roof or floor.

HOOKAH, amongst the Arabs and other nations of the East, is a pipe of a singularly-complicated construction, through which tobacco is smoked. Out of a small vessel of a globular form, and nearly full of water, issue two tubes, one perpendicularly, on which is placed the tobacco, the other obliquely from the side of the vessel, and to that the person who smokes applies his mouth; and the smoke by this means being drawn through water, is cooled in its passage, and rendered more grateful. One takes a whiff, draws up a large quantity of smoke, puffs it out of his nose and mouth in a dense cloud, and passes the hookah to his neighbour; and thus it goes round the whole circle. The hookah is known and used throughout the East; but in those parts where the refinements of life prevail, every one has his hookah sacred to himself; and it is frequently an implement of a costly nature, being of silver, and set with precious stones. In the better kind, that tube which is applied to the mouth is very long and pliant; and for this reason it is termed the snake. People who use it in a luxurious manner fill the vessel through which the smoke is drawn with rose-water, and the fume thereby receives some of the fragrant quality of that liquid.

HOOKE, Robert, an eminent English mathematician and philosopher, was the son of John Hooke, minister of Freshwater, in the Isle of Wight, where he was born in 1635. He very early discovered a genius for mechanics, by making curious toys with great art and dexterity. He was educated under Dr Busby in Westminster school, where he not only acquired a competent share of Greek and Latin, together with an insight into Hebrew and some other oriental languages, but also made himself master of a considerable part of Euclid's *Elements*. About the year 1653, he went to Christ-Church, Oxford, and in 1655 was introduced to the Philosophical Society of that place, where, discovering his mechanical genius, he was first employed to assist Dr Willis in his operations in chemistry, and afterwards recommended to the honourable Robert Boyle, whom he served several years in the same capacity. About this time he was also instructed in astronomy by Dr Seth Ward, Savilian professor of that science; and henceforward he distinguished himself by many noble inventions and improvements of the mechanical kind. He invented several astronomical instruments, for making observations both at sea and land; and was particularly serviceable to Mr Boyle in completing the invention of the air-pump. Sir John Cutler having founded a mechanic school in 1664, he settled an annual stipend on Mr Hooke, intrusting the president, council, and fellows of the Royal Society to direct him with respect to the number and subjects of his lectures; and on the 11th of January 1665 he was elected by that society curator of experiments for life, with an additional salary. In 1666 he produced to the Royal Society a model for rebuilding the city of London, destroyed by fire, with which the society was well pleased; but although the lord mayor and aldermen preferred it to that of the city surveyor, it was not carried into execution. As the rebuilding of the city, according to the act of parliament, required an able person to let out the ground to the proprietors, Mr Hooke was appointed one of the surveyors; and in this employment he acquired most part of his estate. Mr Oldenburgh, secretary to the Royal Society, having died in 1677, Mr Hooke was appointed to supply his place, and began to take minutes at the meeting in October, but did not publish the Transactions. In the beginning of the year 1687, his brother's daughter, Mrs Grace Hooke, who had lived with him several years, died; and he was so affected with grief at her death, that he hardly ever recovered it, but was observed from that time to become less active, more melancholy, and even more cynical, than ever. At the same time, a chancery suit in which he was concerned with Sir John Cutler, on account of his salary for reading the Cutlerian Lectures, made him very uneasy, and increased his disorder. In 1691 he was employed in forming the plan of the hospital near Hoxton, founded by Robert Ask, alderman of London, who appointed Archbishop Tillotson one of his executors; and in December the same year, Hooke was created doctor of physic by a warrant from that prelate. In June 1696, the chancery suit with Sir John Cutler was determined in his favour, to his inexpressible satisfaction. In the same year an order was granted to him for repeating most of his experiments at the expense of the Royal Society, upon a promise of his finishing the accounts, observations, and deductions from them, and of perfecting the description of all the instruments contrived by him; but his increasing illness and general decay rendered him unable to perform the task. He continued some years in this wasting condition; and languishing till he was quite emaciated, he died on the 3d of March 1702, at his lodgings in Gresham College, and was buried in St Helen's Church, Bishopsgate Street.

In his person he exhibited but a mean appearance, being of short stature, crooked, pale, lean, and of a meagre aspect, with lank brown hair, which he wore very long, and hanging over his face. His temper was penurious, melancholy, mistrustful; and though possessed of great philosophical knowledge, he had so much ambition, that he would be thought the only man who could invent or discover. Hence it has been asserted by some that he frequently laid claim to the inventions and discoveries of others, whilst he boasted of many of his own which he never communicated. He wrote, 1. *Lectiones Cutlerianæ*, or Cutlerian Lectures; 2. *Micrographia*, or Descriptions of Minute Bodies made by Magnifying Glasses; 3. A Description of Helioscopes; 4. A Description of some Mechanical Improvements of Lamps and Water-poises, 4to; 5. Philosophical Collections. After his death were published, Posthumous Works, collected from his papers by Richard Waller, secretary to the Royal Society.

The following is a chronological view of the inventions to which he laid claim. It would be harsh to say, with regard to any of them, that he did not at least think himself an inventor; with respect to several, his priority is beyond dispute.

1656. Barometer, or weather-glass.

1657. A scapement, for maintaining the vibration of a pendulum; and not long afterwards the regulating or balance-spring for watches.

1658. The double-barrelled air-pump, and the conical pendulum. His first employment of the conical pendulum was not less ingenious and scientific than it was original. He employed it to represent the mutual gravitation of the planets; a fact which he had most systematically announced. He had shown, that a force, perfectly analogous to gravity on this earth, operated on the surface of the moon and of Jupiter. Considering the numerous round pits on the surface of the moon, surrounded with a sort of wall, and having a little eminence in the middle, as the production of volcanoes, he inferred that the ejected matter fell back again to the moon, as such matter falls back again to the earth. Seeing Jupiter surrounded with an atmosphere, which accompanied and therefore pressed on him, as our air presses on the earth, he inferred that it was the same kind of power that maintained the sun and other planets in a round form. He inferred a force to the sun from the circulation round him, calling it a *gravitation;* and said that it was not the earth which described the ellipse, but the centre of gravity of the earth and moon. He therefore made a conical pendulum, the tendency of which to a vertical position represented the gravitation to the sun, and which was projected at right angles to the vertical plane, and showed experimentally how the different proportions of the projectile and centripetal tendencies produced various degrees of eccentricity in the orbit. He then added another pendulum, describing a cone round the first, whilst this described a cone round the vertical line in order to see what point between them described the ellipse. The results of the experiment were intricate and unsatisfactory; but the thought was ingenious. He candidly acknowledged that he had not discovered the true law of gravitation which would produce the description of an ellipse round the focus, owing to his want of due mathematical knowledge; and therefore he left this investigation to his superiors. Sir Isaac Newton was the person who made the discovery, after having entertained the same notions of the forces which connected the bodies of the solar system, before he had any acquaintance with Dr Hooke, or knew of his speculations.

1660. The engine for cutting clock and watch wheels. The chief phenomena of capillary attraction. The freezing of water a fixed temperature.

1663. The method of supplying air to a diving bell. The number of vibrations made by a musical chord.

1664. His *Micrographia* was, by the council of the Royal Society, ordered to be printed. In that work there are many just notions respecting respiration, the composition of the atmosphere, and the nature of light, which were afterwards attributed as discoveries to Mayow and others, who, though we are far from supposing that they stole their discoveries from Dr Hooke, were certainly anticipated by him.

1666. A quadrant by reflection.

1667. The marine barometer, and the gage for sounding unfathomable depths.

1668. The measurement of a degree of the meridian, with a view to determine the figure of the earth, by means of a zenith sector.

1669. The fact of the *conservatio virium vivarum,* and that in all the productions and extinctions of motion, the accumulated forces were as the squares of the final or initial velocities. This doctrine he announced in all its generality and importance, deducing from it the consequences which John Bernoulli valued himself so highly upon, and which are the chief facts produced by Leibnitz in support of his doctrine of the forces of bodies in motion. But Hooke was perfectly aware of their entire correspondence with the Cartesian or common doctrine, and was one of the first in applying the celebrated 39th proposition of Newton's *Principia* to his former positions on this subject, as a mathematical demonstration of them.

1673. That the catenarian was the best form of an arch.

1674. Steam-engine on Newcomen's principle.

1679. That the air was the sole source of heat in burning; that combustion is the solution of the inflammable vapour in air; and that in this solution the air gives out its heat and light. That nitre explodes and causes bodies to burn without air, because it consists of this air accompanied by its heat and light in a condensed or solid state, and air supports flame because it contains the same ingredients as gunpowder, that is, a nitrous spirit; that this air dissolves something in the blood whilst it is exposed to it in the lungs in a very expanded surface, and, when saturated with it, can no longer support life nor flame, but in the act of solution produces animal heat; that the arterial and venal blood differ on account of this something being wanting in one of them.

1680. He first observed the secondary vibrations of elastic bodies, and their connection with harmonic sounds. A glass containing water, and excited by a fiddlestick, threw the water into undulations, which were square, hexagonal, octagonal, &c. showing that it made vibrations subordinate to the total vibration; and that the fundamental sound was accompanied by its octave, its twelfth, and so on.

1681. He exhibited musical tones by means of toothed wheels, whirled round and rubbed with a quill, which dropped from tooth to tooth, and produced tones proportioned to the frequency of the cracks or snaps.

Hooke.

1684. He read a paper before the Royal Society, in which he affirms, that some years before that period he had proposed a method of discoursing at a distance, not by sound, but by sight. He then proceeds to describe a very accurate and complete telegraph. But, some years previous to 1684, Amontons had not invented his telegraph; so that, though the Marquis of Worcester unquestionably gave the first hint of this instrument, Dr Hooke appears to have first brought it to a useful state.

To him also we are indebted for many other discoveries of lesser note; such as the wheel barometer, the universal joint, the manometer screw, divided quadrant, telescopic sights for astronomical instruments, representation of a muscular fibre by a chain of bladders, experiments showing the inflection of light, and its attraction for solid bodies, the curvilineal path of light through the atmosphere.

HOOKE, *Nathaniel*, author of an esteemed Roman history, and other performances. Of this learned person the earliest particulars to be met with are furnished by himself, in the following modest but manly address to the Earl of Oxford, dated 7th October 1722; "My Lord, the first time I had the honour to wait upon your lordship since your coming to London, your lordship had the goodness to ask me what way of life I was then engaged in; a certain *mauvaise honte* hindered me at that time from giving a direct answer. The truth is, my lord, I cannot be said at present to be in any form of life, but rather to live extempore. The late epidemical distemper seized me, I endeavoured to be rich, imagined for a while that I was, and am in some measure happy to find myself at this instant but just worth nothing. If your lordship, or any of your numerous friends, have need of a servant with the bare qualifications of being able to read and write, and to be honest, I shall gladly undertake any employments your lordship shall not think me unworthy of. I have been taught, my lord, that neither a man's natural pride, nor his self-love, is an equal judge of what is fit for him; and I shall endeavour to remember that it is not the short part we act, but the manner of our performance, which gains or loses us the applause of Him who is finally to decide of all human actions. My lord, I am just now employed in translating from the French a History of the Life of the late Archbishop of Cambray; and I was thinking to beg the honour of your lordship's name to protect a work which will have so much need of it. The original is not yet published. 'Tis written by the author of the Discourse upon Epic Poetry, in the new edition of Telemaque. As there are some passages in the book of a particular nature, I dare not solicit your lordship to grant me the favour I have mentioned, till you first have perused it. The whole is short, and pretty fairly transcribed. If your lordship could find a spare hour to look it over, I would wait upon your lordship with it, as it may possibly be no unpleasing entertainment. I should humbly ask your lordship's pardon for so long an address in a season of so much business. But when should I be able to find a time in which your lordship's goodness is not employed?" The translation here spoken of was afterwards printed in 12mo, 1723. From this period until his death, Mr Hooke enjoyed the confidence and patronage of men not less distinguished for virtue than for rank. In 1730 he published a translation of Ramsay's Travels of Cyrus, in 4to; in 1733 he revised a translation of the History of the Conquest of Mexico by the Spaniards, by Thomas Townsend, printed in two vols. 8vo; and in the same year he published, in 4to, the first volume of the Roman History, from the building of Rome to the ruin of the Commonwealth, illustrated with maps and other plates. In the dedication to this volume, Mr Hooke took the opportunity of "publicly testifying his just esteem for a worthy friend, to whom he had been long and much obliged," by telling Mr Pope, that the displaying of his name at the head of those sheets was "like the hanging out a splendid sign to catch the traveller's eye, and entice him to make trial of the entertainment the place affords. But," he proceeds, "when I can write under my sign, that Mr Pope has been here, and was content, who will question the goodness of the house?" The volume is introduced by Remarks on the History of the Seven Roman Kings, occasioned by Sir Isaac Newton's objections to the supposed 244 years' duration of the royal state of Rome. His nervous pen was next employed in digesting an account of the conduct of the Dowager-duchess of Marlborough, from her first coming to court to the year 1710, 8vo. His reward on this occasion was considerable, and the reputation he acquired by the performance much greater. The circumstances of this transaction are thus related by Dr Maty, in his Memoirs of Lord Chesterfield (vol. i. p. 116): "The relict of the great Duke of Marlborough being desirous of submitting to posterity her political conduct, as well as her lord's, applied to the Earl of Chesterfield for a proper person to receive her information, and put the memoirs of her life into a proper dress. Mr Hooke was recommended by him for that purpose. He accordingly waited upon the duchess, while she was still in bed, oppressed by the infirmities of age. But, knowing who he was, she immediately got herself lifted up, and continued speaking during six hours. She delivered to him, without any notes, her account in the most lively as well as the most connected manner. As she was not tired herself, she would have continued longer the business of this first sitting, had not she perceived that Mr Hooke was quite exhausted, and wanted refreshment as well as rest. So eager was she for the completion of the work, that she insisted upon Mr Hooke's not leaving her house till he had finished it. This was done in a short time; and her Grace was so well pleased with the performance, that she complimented the author with a present of L.5000, a sum which far exceeded his expectations. As soon as he was free, and permitted to quit the house of his benefactress, he hastened to the earl to thank him for his favour, and communicated to him his good fortune. The perturbation of mind he was under, occasioned by the strong sense of his obligation, plainly appeared in his stammering out his acknowledgments; and he who had succeeded so well as the interpreter of her Grace's sentiments, could scarcely utter his own." The second volume of his Roman History appeared in 1745, when Mr Hooke embraced the occasion of congratulating his worthy friend the Earl of Marchmont, on "that true glory, the consenting praise of the honest and the wise," which his lordship had so early acquired. To the second volume Mr Hooke added the Capitoline Marbles, or Consular Kalendars, an ancient Monument accidentally discovered at Rome in the year 1545, during the pontificate of Paul III. In 1758 Mr Hooke published, 1. Observations on the Answer of M. l'Abbé de Vertot to the Earl of Stanhope's Inquiry concerning the Senate of ancient Rome, dated December 1716; 2. A Dissertation upon the Constitution of the Roman Senate, 1743; 3. A Treatise on the Roman Senate, by Dr Conyers Middleton, 1747; 4. An Essay on the Roman Senate, by Dr Thomas Chapman, 1750, a work which he inscribed to Mr Speaker Onslow. The third volume of Mr Hooke's Roman History, to the end of the Gallic war, was printed under his inspection before his last illness, but did not appear till after his death, which happened in 1764. The fourth and last volume was published in 1771. An octavo edition of the whole work was afterwards given to the world.

HOOKER, *alias* VOWELL, JOHN, born in Exeter about the year 1524, was the second son of Robert Hooker, who in 1529 was mayor of that city. He was instructed in grammar by Dr Moreman, vicar of Menhinit in Cornwall, and thence removed to Oxford, but to what college is uncertain. Having left the university, he travelled through Germany, and resided some time at Cologne, where he kept exercises in law, and probably graduated. He then went to Strasburg, where he studied divinity under the famous Peter Martyr. Having returned to England, he soon afterwards visited France, intending to proceed to Spain and Italy; but he was prevented by a declaration of war. He therefore returned to England, and fixed his residence in his native city, where, having married, he was in 1554 elected chamberlain, being the first person who held that office, and in 1571 represented his fellow-citizens in parliament. He died in the year 1601, and was buried in the cathedral church at Exeter. He wrote, amongst other works, 1. Order and Usage of keeping Parliaments in Ireland; 2. The events of Comets or blazing stars, made upon the sight of the comet Pagonia, which appeared in November and December 1577; 3. An addition to the Chronicles of Ireland from 1546 to 1568, in the second volume of Holinshed's work; 4. A Description of the city of Exeter, and of the sundry assaults given to the same (Holinshed, *Chron.* vol. iii.); 5. A Book of Ensigns; 6. Translation of the History of the Conquest of Ireland, from the Latin of Giraldus Cambrensis (Holinshed, *Chron.* vol. ii.); 7. *Synopsis Chorographica*, or an historical record of the province of Devon, never printed.

HOOKER, *Richard*, a very eminent writer and divine, was born at Heavytree, near Exeter, in the year 1553. Some of his ancestors were mayors of that city, and he was nephew to John Hooker the historian. He was first supported by this uncle at the university of Oxford, with the addition of a small pension from Dr Jewel, bishop of Salisbury, who in 1561 got him admitted as one of the clerks of Corpus Christi College. In 1573 he was elected scholar. In 1577 he took the degree of master of arts, and was admitted a fellow the same year. In July 1579 he was appointed deputy professor of the Hebrew language; and in October the same year he was, for some trivial misdemeanour, expelled the college, but immediately restored. In 1581 he took holy orders; and being appointed to preach at St Paul's Cross, he went to London, where he was unfortunately drawn into an unhappy marriage with Joan Churchman, the daughter of his hostess. Having thus lost his fellowship, he continued in the utmost distress till the year 1584, when he was presented to the rectory of Drayton Beauchamp in Buckinghamshire. In this retirement he was visited by Mr Edwin Sandys and Mr George Cranmer, his former pupils. They found him, with a Horace in his hand, tending some sheep in the common field, his servant having been ordered home by his Xantippe. Mr Sandys's representation to his father, of his tutor's situation, procured the latter the mastership of the Temple. In this situation he met with considerable molestation from one Travers, lecturer of the Temple, and a bigoted puritan, who in the afternoon endeavoured to confute the doctrine delivered in the morning. From a situation so disagreeable he solicited Archbishop Whitgift to remove him to some country retirement, where he might prosecute his studies in tranquillity. Accordingly, in 1591 he obtained the rectory of Boscomb in Wiltshire, together with a prebend in the church of Salisbury, of which he was also made subdean. In 1594 he was presented to the rectory of Bishopsbourne in Kent, where he died in the year 1600. He was buried in his own parish church, where a monument was erected to his memory by William Cooper. His great work on Ecclesiastical Polity, first published in 1594, is a strenuous defence of the English establishment; but it is at the same time remarkable for its liberal views of civil government. In this respect it coincides nearly with the theory of Locke; and, indeed, Hoadley says that the author was "styled the father of the Whigs." Hooker is beyond all question one of the most dignified and eloquent of our early writers. "I know not," says Mr Hallam, in his *Constitutional History of England*, "whether any later writer has more admirably displayed the capacities of our language, or produced passages more worthy of comparison with the splendid monuments of antiquity." He was the author of several sermons and tracts. His life, by Isaac Walton, is well known. Dr Garden, bishop of Worcester, published his works in folio, with a life by himself, in 1662. This collection has been several times reprinted, both in folio and in octavo. The last edition, in three vols. 8vo, with Walton's life prefixed, was published in 1830.

HOOKERY, a town of Hindustan, in the province of Bejapoor. It is now greatly reduced, being a poor town, but still exhibits the remains of the magnificence which it formerly possessed when it was under the Mahommedan government. The last of the Mogul sovereigns died in 1643. It is fifty-five miles south-south-west from Merritch. Long. 74. 47. E. Lat. 16. 13. N.

HOOLAIVA, or HOLAIVA, one of the Hapaee islands, in the South Pacific Ocean, which was found in a state of nature when visited by Captain Cook in 1777. It is joined to Lefooga by a reef that is dry at low water; and is thirty miles north-north-east of Annamooka. Long. 185. 36. E. Lat. 19. 52. N.

HOOLE, JOHN, translator of the *Gierusalemme Liberata* of Tasso, was the son of Samuel Hoole, watchmaker, London, and born at Moorfields in 1727. Having received some elementary instruction from his uncle, a tailor in Grub Street, he was sent to a private school in Hertfordshire, kept by Bennet, the publisher of Roger Ascham's works, where he acquired a knowledge of the Latin and French languages, and some smattering of Greek. It was the wish of the father to bring up his son to his own trade of watchmaker, in which he had met with considerable success; but the shortsightedness of young Hoole proving an insuperable objection, he was, at the age of seventeen, placed as a clerk in the accountant's department in the East India House. About this time, having accompanied to the theatre his father, who had access behind the scenes, he contracted a fondness for the stage, which, if indulged, might have proved fatal to him, seeing he was entirely devoid of histrionic talents; but his attention having been diverted from this pursuit, he employed his leisure in improving himself in Latin, and in learning Italian, which he studied with the view of being able to read in the original the *Orlando Furioso* of Ariosto, of which, while a boy, he had become enamoured in the translation of Sir John Harrington. From admiring he soon proceeded to translate his favourite production; but after having made some progress in his task, he laid it aside for a time, in order to execute a translation of the *Gierusalemme Liberata*, which, accordingly, he commenced in 1758. In 1761 he printed a specimen, which appears to have met the approbation of his friends; for the whole was published in 1763, with a dedication to the queen, written by Dr Johnson. This translation is distinguished for cold correctness and elaborate elegance; but, in the transfusion, the essential spirit of poetry has in a great measure evaporated, leaving a residuum, the general character of which is insipidity. In 1773 Hoole published the first volume of his *Orlando Furioso*, which was favourably received by the public; but the further prosecution of the translation was interrupted by his receiving an appointment as auditor of accounts to the East India Company, an office which occupied much of his time and attention; nor did the whole make its appearance until 1783, when it was published in five vols. 8vo. In 1785 he wrote the life of his friend Mr Scott, the poet of Amwell, with whom he had become acquainted in 1757; in 1791 he published the Orlando reduced to twenty-four books, in two vols. 8vo; and, in 1792, he gave to the English public Tasso's juvenile production, *Rinaldo.* He also published, in three vols. 8vo, the dramas and other poems of Metastasio, his versions of which display more spirit and variety than his translations of Tasso and Ariosto, of which the chief characteristic is an uniform and monotonous smoothness of versification. He was also the author of several dramas, namely, *Cyrus*, which appeared in 1768, *Timanthes* in 1770, and *Cleonice* in 1775; but none of these had any success on the stage. Mr Hoole lived in habits of intimacy with Dr Johnson, whom he attended in his last illness; and died at Dorking on the 2d of August 1803, in the seventy-sixth year of his age. In his private character he was amiable and estimable; but though a man of taste and a good scholar, he had not the slightest pretension to poetical genius, though, from long practice, he had acquired considerable skill in the mechanical construction of verse. He had no kindred sympathies with the *mens divinior* of true poetry, and in his hands, accordingly, its finer spirit generally escaped. (A.)

HOOLY ONORE, a town of Hindustan, in the Mysore rajah's territories. The fort is of a square form, with towers at the angles, and two on each face. In 1792 this fort was taken by the British, and completely sacked and destroyed by the Mahrattas. Prior to this invasion the country was flourishing and well cultivated; but so dreadful was the havoc occasioned by the Mahrattas, that, according to the statement of one officer, every evening when the army encamped they could count ten villages in flames. It is a hundred and twenty-two miles northwest from Seringapatam. Long. 75. 41. E. Lat. 13. 44. N.

HOONGA-HAPAEE, and HONGATONGA, two small islands in the South Pacific Ocean, consisting of large uninhabitable rocks, seen at the distance of fifteen leagues. They are thirty and twenty-six miles north from Tongataboo.

HOOPER, JOHN, bishop of Worcester, and a martyr in the Protestant cause, was born in Somersetshire, and educated at Oxford, probably in Merton College. In 1518 he took the degree of bachelor of arts, and afterwards became a Cistertian monk; but at length, disliking his fraternity, he returned to Oxford, and there became infected with Lutheranism. In 1539 he was made chaplain and house-steward to Sir John Arundel, who afterwards suffered with the protector in the reign of Edward VI. But that very Catholic knight, as Wood calls him, discovering his chaplain to be a heretic, Hooper was obliged to leave the kingdom. After continuing some time in France, he returned to England, and lived with a gentleman called Seintlow; but being again discovered, he escaped in the habit of a sailor to Ireland, whence he embarked for the Continent, and fixed his abode in Switzerland. When King Edward came to the crown, Hooper returned once more to his native country. By his old patron Sir John Arundel's interest with the Earl of Warwick, he was consecrated Bishop of Gloucester in 1550; and two years after he was nominated to the see of Worcester, which he held *in commendam* with the former. But Queen Mary had scarcely ascended the throne, when Bishop Hooper was imprisoned, tried, and, not choosing to recant, condemned to the flames. He suffered death at Gloucester, on the 9th of February 1554, being then nearly sixty years of age. He was an avowed enemy to the church of Rome, and not perfectly reconciled to what he thought remnants of popery in the church of England. In the former reign he had been one of Bonner's accusers, a circumstance which sufficiently accounts for his being made one of Queen Mary's first victims. He was a person of good parts and learning.

HOOPER, *George*, an eminent English divine, was born at Grimley, Worcestershire, on the 18th of November 1640. Having been instructed in grammar and classical learning, first at St Paul's, and afterwards at Westminster School, where he was a king's scholar, he was thence elected, 1657, to Christ Church, Oxford, where he took his degrees at the regular periods, and distinguished himself by his knowledge in philosophy, mathematics, Greek and Roman antiquities, and the oriental languages. In 1677 he was appointed almoner to the Princess of Orange, and went over to Holland, where he resided about a year, and then returned. In 1680 he is said to have been offered the divinity professorship at Oxford, which, however, was conferred on Dr Jane. In 1685 he attended the Duke of Monmouth in the Tower, and had much free conversation with that unfortunate nobleman, to whom, in his last moments, Hooper administered the consolations of religion. In 1691 he succeeded Dr Sharp in the deanery of Canterbury; in 1698 he was appointed preceptor to the Duke of Gloucester; and in 1701 he was chosen prolocutor of the Lower House of Convocation. In May 1703 he was nominated to the bishopric of St Asaph; and in March following he was translated to the bishopric of Bath and Wells, over which he presided during the long period of twenty-three years and a half. Bishop Hooper died at Berkley, Somersetshire, whither he had been accustomed occasionally to retire, on the 6th of September 1727, in the eighty-seventh year of his age. Besides some sermons, he published several works in his lifetime, and left a number of manuscripts, some of which he permitted to be printed. The following is a catalogue of both, viz. 1. The Church of England free from the imputation of Popery, 1682; 2. Discussion of the Controversy between the Church of England and the Church of Rome, concerning the Infallible Guide; 3. The Parson's case under the Land-tax, 1689; 4. A Discourse concerning Lent, 1694; 5. A Calculation of the credibility of Human Testimony, *Phil. Trans.* for October 1699; 6. New Danger of Presbytery, 1737; 7. Marks of a Defenceless Cause; 8. A Narrative of the Proceedings of the Lower House of Convocation from February 1700 to June 1701; 9. De Valentinianorum Hæresi conjecturæ, quibus illius Origo ex Ægyptiaca Theologia deducitur, 1711; 10. An Inquiry into the State of the Ancient Measures, 1721; 11. De Patriarchæ Jacobi Benedictione Conjecturæ. Among the manuscripts above mentioned, are a Latin sermon, and a Latin tract on Divorce. A beautiful edition of the works of Hooper was printed at Oxford, 1757, in folio, under the superintendence of Dr Hunt, professor of Hebrew. (A.)

HOORN, a city of the Netherlands, in the province of North Holland, and the capital of a circle of its own name. It is situated on the Zuyder Zee, is surrounded with ancient walls, and has a good harbour, with docks, and accommodations for ship-building. It contains ten churches, 2640 houses, and (in 1834) 10,200 inhabitants. The district around it is celebrated for the quantity of cheese it produces, more than four million pounds having been exported in some years. It was the place where that mode of curing herrings which has contributed much to the wealth of the country, was first practised. It was the birthplace of the navigator Schouten, who discovered the southernmost cape of America, which still universally bears the name of his native city. It was taken by the English and Russians in September 1799, but was speedily abandoned, from being too far in advance of the line of operations. Long. 4. 54. E. Lat. 52. 38. N.

HOORN *Islands*, two islands in the South Pacific Ocean, discovered in the year 1616 by Le Maire and Schouten. They were afterwards seen by the navigator Maurelle in 1781. The natives are treacherous, and had well nigh succeeded in cutting off a trading vessel by which they were visited in 1801. They are encircled by a reef of rocks. Long. 171. 30. E. Lat. 15. S.

HOP, a plant of great importance in brewing. This plant was originally brought into England from the Netherlands in the year 1524. Hops are first mentioned in the English statute book in the year 1552, viz. in the 5th and 6th of Edward VI. c. 5. And by an act of parliament of the first year of James I. c. 18, it appears that hops were then produced in abundance in England.

HOPE is the desire of some good, attended with a belief of the possibility at least of obtaining it, and enlivened with joy, greater or less, according to the greater or less probability of our possessing the object of our hope.

Hope, *Sir Thomas, Bart.* lord advocate to King Charles I. The earliest progenitor of this celebrated person noticed by our genealogists is *John de Hoip*, who, they say, came from France in the retinue of Margaret, queen of King James V. His son *Edward Hoip* was a person of reputation in Edinburgh in the time of Mary; and being a great promoter of the Reformation, was chosen a commissioner to represent the city in the memorable parliament of 1560. He was father of *Henry Hoip* or *Hope*, a considerable merchant, who had by his wife Jaqueline de Tott, a Dutch woman, said by a contemporary to have some time kept a worsted shop in Edinburgh, two sons, *Henry* and *Thomas*. The former became ancestor of the great and opulent branch of the *Hopes*, long settled at Amsterdam. Thomas, the individual before us, after passing through his grammatical education, which he did with some applause, obtained the place of servitor or clerk to the eminent Mr (afterwards Sir) John Nicolson of Laswade, advocate, under whom were, in all probability, formed the elements of his after fortunes. The situation of clerk to a practising advocate of the Scottish bar is at this day of some consequence; it was then of more. Prior to the institution of the College of Justice in 1532, division of labour in the profession of the law was scarcely known; and in the *advocate*, or *procurator*, as he was indifferently called, were united at once the chamber counsel, the barrister, and the attorney. The legal skill and knowledge, however, which the institution of the College of Justice induced, gradually detached the business of an attorney; and by act of sederunt dated 13th July 1596, advocates' first clerks were empowered to act below the bar, exclusive of all third persons. The place was valuable on a higher ground; it was almost the only path to professional knowledge, and indeed the domestic nursery of the bar. Our ancient common law having, on the erection of the Court of Session, been superseded by the principles of the Roman jurisprudence, the Scottish bar was, till the union, or rather till our own day, generally prepared for at some one of the foreign colleges, of which those of France and Italy were the most frequented, until the lustre of the Cujacian school in the Low Countries, aiding the connection which arose between us and them at the Reformation, drew the student thither. A knowledge of *practice*, however, still remained to be acquired; but Edinburgh had not yet its chairs of law, nor had the bar sent forth its Craig, its Stair, or its Mackenzie; and, according to the principles of the papal tribunals, of whose spirit the Court of Session partook so largely at its institution, the deliberations of the court were in secret with shut doors; none were then admitted within except the judges and officers of court, and these were all sworn to secrecy. The chamber of a practising advocate was therefore sought by all who meant to make the law the object of their pursuit. In the situation of servitor to Mr Nicolson we find Hope in the year 1600, in which also he married Elizabeth, daughter of John Binning, Esq. of the old and wealthy house of Binning of Wallyford, county of Haddington. About the same time he was appointed solicitor for life, in all actions and causes touching the collection and receipt of new augmentations, with a salary of L.200 Scots per annum. This appointment was made "with advice and consent" of Mr John Preston of Barns, a lord of session, and afterwards president of that court, collector-general of the augmentations; who also, on the 10th of March 1599, resigned his seat as one of the commissaries of Edinburgh, in Hope's favour. The general assembly also nominated him solicitor to the church.

On the 7th of February 1605 he was admitted advocate; and on the 9th of April following, we find him "advocate-substitute" (that is, as we understand, substitute to the king's advocate, then Hamilton of Binning) in the prosecution before the justiciary, at the instance of James Libberton, servant to James, Lord Balmerino, president of the Court of Session, against certain individuals for an assault.

His next appearance was on the other side of the bar, in the famous case of the ministers, which, as it exemplifies much not only of Hope's character, but also of the sentiments of the time in regard both to religious and civil liberty, merits some attention.

In 1592 presbyterianism was established in Scotland by law, but much against the wish of the sovereign, who accordingly lent all his efforts to suppress it again, and to substitute in its stead the show and subordination of episcopacy. His first attack was directed against the general assembly (the convocation of the Scottish church), which, although its meeting "every yeir at the least, and oftener *pro re nata*, as occasion and necessity sall require," was expressly secured by statute of the above year, he prorogued twice successively, first on account of the accession, and then on pretence of adjusting the union. A third prorogation was issued, and, as if to declare that the power of calling the assembly was in the king, no time was fixed for its meeting. The royal designs being thus manifest, it became incumbent on the church, if it meant to maintain its liberties, now to make a stand. Accordingly nine presbyteries sent their representatives to Aberdeen on the 2d of July 1605, the day and place named in the former prorogation. When they had assembled, Straiton of Laurieston, the king's commissioner, presented them a letter from the privy council, which being addressed "to the brethren of the ministry, convened at their assembly in Aberdeen," they resolved should not be read till they were constituted. They proceeded accordingly to elect a moderator and clerk. They then took up the letter, when a messenger-at-arms, also from the privy council, entered, and charged them to dismiss under pain of rebellion. The church having, in constituting their meeting, asserted their right to a general assembly, were prepared to comply with the wish of the council, and only requested the king's commissioner to name a day and place for next assembly. On his refusal, the moderator appointed the assembly to meet again on the last Tuesday of September ensuing, and then dissolved the meeting with prayer. The conduct of the church on this occasion was worthy of a people who had their religious liberty secured to them by law, and was marked at once by zeal for the rights of the church and respect for the authority of the sovereign, by intrepidity and moderation; but no sooner was the king apprised of it, than he directed the parties to be proceeded against with all rigour. John Forbes, minister at Airfurd, the moderator, John Welsh, minister at Ayr, and four others, were therefore cited to appear before the privy council to answer for their conduct. They appeared accordingly, but respectfully declined the jurisdiction of the tribunal as incompetent. A new crime thus sprung into being; and Hamilton, the king's advocate, and his ready instrument on all occasions, thereupon brought a prosecution against the six ministers, under an act passed during the infamous administration of Arran in 1584, which declared that none should decline the judgment of the king or privy council, under the pain of treason. On the 10th of January 1606 the trial came on at Linlithgow, and the counsel chosen by the prisoners were, "Mr Thomas Gray and Mr Thomas Hoip, advocates," Craig and Oliphant having refused to plead in the cause, though it seems they had previously engaged to do so. Gray was a man of sincere affection to the cause, and of good skill in the law; but he had no great readiness of utterance. Hope had never before pleaded in that court. A formal plea was first put in and overruled. Hope then argued the case to the court; but all his arguments, able and conclusive though they were, and his courage, learning, and ingenuity in maintaining them, proved unavailing; the indictment was sustained, and the truth of the facts sent to the jury as their only province; for, according to the practice of that time, all the facts of the case were circumstantially stated in the indictment, with a view to limit the jury to the single point whether the facts were proved or not, their effect, if proved, being already settled by the authority of the court, which the juries of that period scarcely ever ventured to dispute. The jury by a majority, and after much tampering and undue influence, found all the defendants guilty of treason, and in September following they were banished the kingdom for life.

The next notice we have of Hope is in a letter from the council to the king, dated 24th June 1608, where Oliphant, Russel, King, and he, are mentioned as "the most learned and best experienced of their professioun;" and we find that he gradually entered on the largest professional practice of his time. His knowledge of tithes and church-law was particularly remarked, so that King Charles I., whose anxiety to recover the church property is well known, impressed with a sense of his value, immediately on his accession appointed him king's advocate, in conjunction with the aged Sir William Oliphant of Newton. The king also then knighted him; and the Court of Session, by act of sederunt dated 12th July 1626, passed at the king's request, allowed him to plead covered. The nature of this last act has been strangely misapprehended by some of our writers. The usual explanation is, that having *two* (Playfair, Sharp, and some other peerage writers, assert he had *three*) sons on the bench, the court indulged him with the privilege of pleading with his cap on like the judges; it being deemed indecorous, they say, that a father should stand uncovered before his sons. The truth is, however, that Hope had no son on the bench at this time, nor for six years afterwards; and the act of sederunt had an origin altogether different. From the institution of the College of Justice till this time, the king's advocate was a member, not only of the bar, but also of the bench. But in February 1626, Oliphant was removed from the bench, and a royal ordinance issued, that no officer of state should have an ordinary seat there. It was this ordinance which was the occasion of the act in question; and the intent and meaning of the act no doubt was to assert and establish the equality of the king's advocate with the bench. It was not long before Hope took occasion to vindicate his dignity in a more substantial way; for it appears that, on account of some expressions used by him at the bar, the judges thought fit to visit him with a public censure. This, however, was not to be endured by Hope; so on his application to the fountain of honour, a royal letter, of date 4th December 1626, was despatched to the judges, in which the king sharply reproved them for their want of respect, and desired that in future none in his high office should be rashly censured, without first acquainting the king therewith.

On the 11th of February 1628, Hope was created a baronet; and on Oliphant's death in April following, he obtained a patent of the office of sole advocate to the king and prince for life, with a pension of L.200 sterling yearly out of the crown rents; an allowance larger than that enjoyed by the judges, or than had previously been annexed to the office. Not being a lord of session, a letter from the king was then also transmitted to the judges to allow him to remain in court during its deliberations, "sua that he may heir and knaw such thingis as sall happin to occur that concernis his majesty," the deliberations of the court being at this time carried on with shut doors; and as they proved dilatory in the matter, the king despatched a peremptory order, dated 10th October 1628, to allow him to sit within the bar, and to remain in court during its deliberations, both, in fact, ancient privileges of the king's advocate. This they obeyed on the 19th of November 1628, taking Hope's oath "to keip the secreits of the house." In 1630 he received from the crown a gift of L.2000. In 1632 his eldest son was knighted, and made a lord of session; and the next year his second son likewise received the honour of knighthood.

It was in 1632 that Hope produced his Minor Practicks, or Observations on the Law, delivered by him to his son orally, it is said, at his mornings' toilet. It is distinguished for its legal learning, the breadth and boldness of its views, the acuteness of its remarks, and the subtilty of its distinctions. To this last quality of it, indeed, we are indebted for the sketch of its author by Dirleton, who characterises Hope as "juris nostri peritissimus, sed nimiæ et captiosæ subtilitatis." A more minute account of Hope is given by Mackenzie. His forte, says he, consisted in a wonderful power of invention, which supplied him with so great a multitude of topics that he commonly wanted time for their exposition. His course in debate was uniform, yet peculiar; for when he had propounded an argument or exception, he usually adduced the reason upon which it was founded, and if that appeared doubtful, then the reason of the reason, or the ultimate principle itself. The resources of rhetoric were not unknown to him, but it seemed as if they were unnecessary. Of the illustrious triumvirate who in the days of Hope, Nicholson, and Stuart, adorned the Scottish bar, Nicholson improved our eloquence, Hope the law itself.

It was he who, according to some, devised the irritant and resolutive clauses of entails; the one to annul the deed attempted to be granted, the other to dissolve and forfeit the right of the person making the attempt. He also devised the title by adjudication on an heir's feigned bond.

We are moreover told that he recommended to the lords of erection, or titulars of church lands, a mode of getting all the kirk livings back again, notwithstanding the act of parliament which annexed them for ever to the crown, by causing a wadset of the same to be taken, and declaring in the writs that his majesty was indebted in large sums of money, though indeed he owed none. To the exercise of Hope's ingenuity in this last case, however, a different criterion must be applied from any that can be used in the others, he being in the employment of his sovereign to obtain and secure the annexation. Burnet expressly says that "Sir Thomas Hope, a subtle lawyer, who was believed to understand the matter of church property beyond all the men of his profession, though in all respects he was a zealous puritan, was made the king's advocate, *on his undertaking to bring all the church lands back to the crown;* yet," adds the bishop, "he proceeded in the matter so slowly, that it was believed he acted in concert with the party that opposed it."

Hope's conduct was equally unprincipled in another respect. During the struggles between the king and the puritans, he was the adviser of both. The tumult at Edinburgh in 1637, the supplication to the privy council in 1638, the war against the king in 1639, and the convention of estates in 1643, were all known to and approved of by him; yet all this time he was the king's advocate, and by his flattering carriage, says Bishop Guthry, insinuated himself so far with his majesty, that notwithstanding information enough, his majesty consulted and was ruled by him in most of his affairs. On account of the benefits derived by them from his counsels, the Covenanters continued him in his office of king's advocate; his second son, Sir Thomas, who had commanded the *College of Justice troop* in their army against the king, they made a lord of session, and lord justice general of Scotland; and his sixth son, Sir James, they made governor-general of the mint, then an office of importance, to which they annexed an exclusive local jurisdiction, both civil and criminal. The king, on the other hand, appointed Hope to almost the only place then in his gift, namely, that of his commissioner to the general assembly, a place new to a commoner, and in which Hope, now giddy with the height to which he had been raised, carried himself proudly and extravagantly. He died in November 1646. (U. U. U.)

Hope *Island*, an island situated in the South Pacific Ocean, and discovered in 1772. It is not far from Ceram island. There are also two small islands of this name near the north-east coast of New Holland. Long. 214. 36. W. Lat. 15. 41. S.

HOPLITES, Hoplitæ (formed from ὁπλον, *armour*), in *Antiquity*, were such of the candidates at the Olympic and other sacred games as ran races in armour. One of the finest pieces of Parrhasius was a painting representing two hoplites; the one running, and seeming to sweat large drops, and the other laying down his arms, exhausted and out of breath.

HOPLITODROMOS (formed from ὁπλον, *armour*, and δϱεμω, *I run*), in the ancient gymnastic sports, a term applied to such persons as went through toilsome and robust exercises in complete armour.

HOPLOMACHI, 'Οπλομαχοι (composed of ὁπλον, *armour*, and μαχομαι, *I fight*), in *Antiquity*, were a species of gladiators who fought in armour; being either completely armed from head to foot, or provided only with a casque and cuirass.

HOPPER, a vessel in which seed-corn is carried during the time of sowing. The word is also used for the wooden trough in a mill, into which the corn is put to be ground.

HOR, a mountain or mountainous tract of Arabia Petræa, situated in that circuit which the Israelites took to the south and south-east of Edom in their way to the borders of Moab. On this mountain Aaron died. The inhabitants were called *Horites*. This tract was also denominated *Seir*.

HORÆA, in *Antiquity*, were solemn sacrifices, consisting of fruits and other products of the earth, offered in spring, summer, autumn, and winter, that heaven might grant mild and temperate weather. These, according to Meursius, were offered to the goddesses called 'Ωϱαι, or *Hours*, who, being three in number, attended upon the sun, presided over the four seasons of the year, and had divine honours paid them at Athens.

HORAPOLLO, or Horus Apollo, was, according to Suidas, a grammarian of Panoplus in Egypt, who taught first at Alexandria, and afterwards at Constantinople, under the reign of Theodosius, or about the year 380 of our era. But as there were several persons of this name, it is uncertain whether the grammarian of Panoplus, or some other Horus Apollo, was the author of the two books still extant, "concerning the hieroglyphics of the Egyptians," which Aldus first published in Greek, 1505, in folio. These books have often been republished since, with a Latin version and notes; but the best edition of them is that of Cornelius de Pauw, which appeared at Utrecht in the year 1727, in 4to. Fabricius is of opinion that the *Hieroglyphica* did not emanate from the grammarian of Panoplus, to whom indeed Suidas does not attribute it, but that it is the production of another Horus Apollo, who flourished about fifteen hundred years before Christ, and wrote upon hieroglyphics in the Egyptian language, and from whose work an abstract was afterwards made, and translated into the Greek language. And this much seems certain, that, whatever may have been the epoch of the original author, the two books of *Hieroglyphics* contain the substance of an older work, interspersed with the fancies and conceits of a later age, when the true import of many of the Egyptian symbols was no longer understood. These books, however, besides being exceedingly curious in themselves, have derived a new and unexpected interest from the discoveries of Dr Young and M. Champollion; and though the former somewhat hastily treated the explanations of Horus Apollo as mere puerilities, the latter showed, in a very satisfactory manner, that some of them at least were well founded, and susceptible of confirmation from the interpretation of the hieroglyphical texts on the monuments; in other words, assuming these explanations as correct, and combining such assumptions with the values of other characters ascertained by different means, he found that the whole led to results, the truth of which was either self-evident or demonstrable. At the same time, it cannot be disputed that, in the abridged Greek version, there are many absurdities that could never have had a place in the Egyptian original from which it was made, and which must therefore be regarded as the interpolations of an age when the knowledge of hieroglyphics had declined, and the values of the more recondite symbols, particularly the tropical and ænigmatical, had been lost. Besides, the analogies on which Horus Apollo endeavours to explain the original employment and secondary import of the signs, are, many of them, fanciful and remote, though sometimes ingenious; they proceed upon assumptions, the truth of which cannot now be ascertained, and which are occasionally too far fetched and ridiculous not to startle the most credulous. It is highly probable, indeed, that, in the course of ages, the primary analogies were forgotten; that, in practice, many of the signs were employed arbitrarily, without reference to their precise original import, whether kuriological or tropical, usage prevailing over strict principle; and that abbreviated forms, though possessing in use a known and determinate value, were no longer susceptible of being resolved and re-expanded into their original elements. But, with all these drawbacks, this abridgment is highly curious in itself, and, in several instances, has afforded a clue to explanations which, but for the assistance afforded by it, might never have been discovered. See the article Hieroglyphics, *passim*. (A.)

HORATII, three Roman brothers, who, under the reign of Tullus Hostilius, fought against the three Curiatii, belonging to the Alban army. Two of the Horatii were killed; but the third, by his address, successively slew the three wounded Curiatii, and by this victory rendered the city of Alba subject to the Romans.

HORATIUS, surnamed *Cocles*, from his losing an eye in combat, was nephew of the consul Horatius Pulvillus, and descended from one of the three brothers who fought against the Curiatii. Porsenna having laid siege to Rome, drove the Romans from Janiculum, and pursued them to the wooden bridge over the Tiber, which joined the city to Janiculum. Largius, Herminius, and Horatius Cocles, sustained the shock of the enemy at the bridge, and prevented them entering the city with the Romans; but Largius and Herminius having passed the bridge, Horatius Cocles was left alone, and repulsed the enemy till the bridge was broken down under him, when he threw himself armed into the

Tiber, swam across the river, and entered Rome in triumph.

HORATIUS Flaccus, Q. one of the most celebrated of the Roman lyric poets, who was born on the 8th of December, B. C. 65, and died at the age of fifty-seven, B. C. 8. He was the son of a freedman of Venusia, a small village on the confines of Apulia and Lucania. His father's employment seems to have been that of an auctioneer (*Sat.* i. 6, 86); but he possessed also a small landed property, which, however, he soon abandoned to proceed to Rome, where he had a better opportunity of attending to the education of his son. The studies of the young poet were directed by the most eminent scholars of which Rome could then boast, and amongst others by Orbillius Pupillus, a celebrated philosopher. Towards his twentieth year Horace followed the custom which was then prevalent amongst the young Romans, and proceeded to Athens with the view of studying under the philosophers which that city still produced. He seems first to have directed his attention to the doctrines of the Academic School, though he was afterwards captivated by the more congenial philosophy of the Epicureans; and the general complexion of his life seems to have been influenced by this predilection, though, towards its close, he seems to have leaned a little towards the sterner and nobler creed of the Porch. He does not, however, acknowledge himself as the partisan of any peculiar system (*Epist.* i. 1, 13), but, like most of the eminent Romans of his time, was of the Eclectic School, which pretended to be a selection of the more reasonable doctrines of all the others. The murder of Cæsar, and the disturbances which ensued (B. C. 43), interrupted the philosophical studies of Horace. His feelings led him to support the cause of freedom, and he became a tribune in the army of Brutus; but his conduct at the battle of Philippi, which he has himself characterised with equal candour and naïveté, showed that he was not qualified to distinguish himself in the career of arms. He took advantage of the amnesty which the conqueror found it politic to grant after this unsuccessful attempt at resistance, and returned to his native country, where he found little cause of satisfaction either in the political aspect of the times, or in the events which had taken place in his own family. The death of his father had left him to his own resources, and his small patrimony had been confiscated in consequence of the part which he had taken in public affairs. It was about this time that he seems first to have attracted notice by his poetical genius, and to have become acquainted with the poets Virgil and Varius. Through their interest he was introduced to Mæcenas and Augustus, who not only admitted him to their intimate friendship, but presented the poet with a small property in the country of the Sabines, where he spent the greater part of his life in the quiet enjoyment of rural happiness. Here he composed most of those works which have immortalized his name.

The works of Horace are of two kinds; lyric and didactic. To the first class belong the Odes, and in the latter we reckon the Satires and Epistles, which are often distinguished by the general name of *Sermones* or *Eclogæ.* (See Bentley, *Præfat. ed. Horat.*) Though Horace was only pursuing the path in which he had been preceded by Lucilius, still we must consider the appearance of his Satires as constituting a new era in this particular species of composition. The overthrow of the Roman republic, and the consequent check given to freedom of speech, the change which had taken place in political affairs, and the personal connection of the poet with Augustus, Mæcenas, and the other distinguished men of the emperor's court, may well be supposed to have been little calculated to produce a satire of the peculiar character and freedom of Lucilius. Satire of such a kind was not only impracticable, but would have been without interest and without effect from the change which had taken place in the modes of thinking amongst the Romans. Such a change could not escape the notice of a man so clear headed and well acquainted with the world as the poet; the acts of men around him seemed to him to be the result of folly, and in this ridiculous light he presents them before us in his Satires. The object which he had in view was not so much to lash with all the power of indignant virtue the crimes of mankind, and thereby to procure their amendment, as, by the employment of the most delicate irony, and by laughter and ridicule, to draw them to the path of virtue. It was in this way alone that he could hope to improve the character of his contemporaries. The Satires of Horace supply in some degree the absence of all pure Roman comedy, representative of their actual life and manners. They may be considered as a mirror, in which the details of private life, and the every-day transactions of the times, are faithfully reflected. The Epistles resemble the Satires in character, except that they teach more directly lessons of virtue and morality.

Horace was a poet in his philosophy, and a philosopher in his poetry. He viewed the one through the medium of the imagination, and attempered the other with the sober spirit of truth. His observation is intuitive and unerring, his ridicule keen but not envenomed; he laughs at human follies without attempting to depreciate or degrade human nature; his sarcasms, though cutting, are felt to be just as well as polished; and we recognise in him the Democritus of poetry, who employed ridicule as an instrument of correction, not of malice. Hence his writings, with which we are familiar from boyhood, carry with them attractions which are felt in every period of life, and in almost every rank of society. They charm alike by the harmony of the numbers, the purity of the diction, the correctness of the imagery, and the justness of the sentiments. They exhilarate the gay, and interest the serious, according to the nature of the subject upon which the poet exercises his power. Professing neither the precision of analysis, nor the copiousness of system, they possess advantages which analysis and system rarely attain. They exhibit human imperfections as these really are, and human excellence as it practically ought to be; they develope every principle of virtue in morals, and point out every modification of decorum in manners; they please without the glare of ornament, and instruct without the formality of precept. These exquisite compositions are the productions of a mind enlightened by study, and invigorated by observation; they are comprehensive, but not visionary; delicate, but not fastidious; in them sagacity is unwarped by prejudice, and generosity uncramped by suspicion. They are distinguished by diction always adapted to the sentiment, and by efforts nicely proportioned to the occasion. They exhibit elegance without affectation, sublimity without bombast, satire without buffoonery, philosophy without mysticism. Hence it is that the writings of Horace are more extensively read, more clearly understood, and more acutely relished, than those of almost any other ancient author; they are perfect models of their kind, and will pass down to the most distant posterity as among the most finished and faultless productions of the classic muse.

Numerous editions have been published of his works, but the best are those by Gesner, Lips. 1752, 1772; Bentley, Cantab. 1711; Doring, Lips. 1803; Fea, Rom. 1811; to which may be added the more recent editions of Wakefield, Hunter, and Mitscherlich. The first four books of the Odes have been translated into English verse by Wrangham (Lond. 1820), and the Satires and Epistles by Dunster (1712).

HORDE, in *Geography*, is used to signify a company or mass of wandering people, who have no settled habitation, but stroll about, dwelling in waggons or under tents, ready to shift their quarters as soon as the herbage and fruits are exhausted.

HORDICALIA, or Hordicidia, in *Antiquity*, a religious feast amongst the Romans, in which they sacrificed cattle large with young. This feast fell on the 15th of April, on which day they sacrificed thirty cows with calf to the goddess Tellus, or the Earth, part of them being immolated in the temple of Jupiter. The calves taken out of their bellies were burned to ashes, at first by the pontifices, but afterwards by the eldest of the vestal virgins.

HOREB, or Oreb, a mountain of Arabia Petræa, contiguous to Mount Sinai on the south, and the scene of many miraculous appearances.

HORISPOOR, a town of Hindustan, in the Sikh territories, in the province of Lahore, ninety-eight miles east-south-east from the city of Lahore. Long. 75. 27. E. Lat. 31. 30. N.

HORIZON, or Horison, in *Geography* and *Astronomy*, a great circle of the sphere, dividing the world into two parts or hemispheres; the one upper and visible, the other lower and hidden. The word is pure Greek, ὁριζων, which literally signifies bounding or terminating the sight, being formed from ὁριζω, *termino, definio*, to bound or limit. See Astronomy and Geography.

The horizon is either *rational* or *sensible*. The *rational, true*, or *astronomical horizon*, which is also called simply and absolutely *the horizon*, is a great circle of the sphere, the plane of which passes through the centre of the earth, and the poles of which are the zenith and nadir. It divides the sphere into two equal parts or hemispheres. The *sensible, visible*, or *apparent horizon*, is a lesser circle of the sphere, which divides the visible part of the sphere from the invisible. Its poles, too, are the zenith and nadir, consequently the *sensible horizon* is parallel to the *rational;* and it is cut at right angles, and into two equal parts, by the verticals. The sensible horizon is divided into *eastern* and *western*. The *eastern* or *ortive* horizon is that part of the horizon in which the heavenly bodies rise; the *western* or *occidual* horizon is that in which the stars set. The altitude or elevation of any point of the sphere is an arch of a vertical circle intercepted between it and the sensible horizon. By sensible horizon is also frequently meant a circle, which determines the segment of the surface of the earth, over which the eye can reach, and it is also called the *physical horizon*. In this sense we say, a spacious horizon, a narrow, scanty horizon, and so forth.

HORIZONTAL, something which relates to the horizon, or is taken in the horizon, or on a level with the horizon. Thus we say, a *horizontal plane*, a *horizontal line*, and the like.

Horizontal Dial is that which is drawn on a parallel to the horizon, having its gnomon or style elevated according to the altitude of the pole of the place for which it is designed. Horizontal dials are, of all others, the most simple and easy. The manner of describing them may be seen under the article Dialling.

Horizontal Line, in *Perspective*, is a right line drawn through the principal point, parallel to the horizon; or it is the intersection of the horizontal and perspective planes. See Perspective.

Horizontal Plane is that which is parallel to the horizon of the place, or nothing inclined thereto. The business of levelling is to find whether two points be in the horizontal plane, or how much is the deviation between them.

Horizontal Plane, in *Perspective*, is a plane parallel to the horizon, passing through the eye, and cutting the perspective plane at right angles.

Horizontal Range, or *Level Range*, of a piece of ordnance, is the line it describes when directed parallel to the horizon or horizontal line.

HORN, in *Physiology*, a hard substance growing on the heads of different animals, particularly the cloven-footed quadrupeds, and serving them both as weapons of offence and defence.

Horn is also a sort of musical instrument of the wind kind, which is chiefly used in hunting, to animate and bring together the dogs and the hunters. The term anciently was, *wind a horn*, all horns being in those times compassed; but since straight horns have come into fashion, they say *blow a horn*, and sometimes *sound a horn*.

The *French Horn* is merely a wreathed or contorted trumpet.

Horn Distemper, a disease incident to horned cattle, affecting the internal substance of the horn, commonly called the pith, which it insensibly wastes, leaving the horn hollow.

Horn-Work (*ouvrage à corne*), in fortification, an outwork composed of a front and two branches; the front consisting of two half bastions and a curtain. This work is of the nature of a crown-work, but smaller, and serves the same purposes. The use of horn-works, in general, is to occupy some rising grounds in advance of the principal fortification, the distance of which determines that of the horn-work; and they are placed either before the curtain or before the bastions, according to circumstances.

HORNBERG, a town of the duchy of Baden, in Germany, in the circle of Kinzig, the capital of a bailiwick of the same name, in the Black Forest, comprehending one town and thirteen villages, with 8350 inhabitants. The town is situated in a romantic vale, and contains 1225 individuals.

HORNBY, a market-town in the parish of Melling, of the hundred of Lonsdale, in the county of Lancaster, 249 miles from London. It is situated on the river Lyne, has a Gothic church with an octagonal tower, and near to it is an ancient castle, built by the Barons Monteagle. There is a good market held on Thursday. The population amounted in 1801 to 414, in 1811 to 420, in 1821 to 477, and in 1831 to 383.

HORNCASTLE, a town and parish of the county of Lincoln, in Lindsey Division, 136 miles from London. It stands on the river Bane, in a valley which at seasons is nearly overflowed. It was an ancient Roman station, and some of the walls constructed by the Romans are still visible. There is a medicinal spring near the town, but it is not much applied to. There is a good market, which is held on Saturday. A canal has been constructed, which connects the river Bane with the Witham. The population amounted in 1801 to 2015, in 1811 to 2622, in 1821 to 3058, and in 1831 to 3988.

HORNCHURCH, a town in the hundred of Romford, of the county of Essex, fourteen miles from London, the population of which amounted in 1801 to 1331, in 1811 to 1562, in 1821 to 1938, and in 1831 to 2186.

HORNE, George, an English prelate of considerable eminence, was born in the vicinity of Maidstone, in the county of Kent, in the year 1730. His father was rector of Otham; and having for some time acted in the capacity of tutor at Oxford, was well qualified to superintend the education of his son. However, that the latter might not be spoiled by too long a residence at home, he was, by the advice of a friend, sent, at the age of thirteen, to Maidstone school, where he continued under an eminent teacher for two years, and acquired some knowledge of oriental literature, particularly the Hebrew. In his fifteenth year he went to Oxford, where he laboured indefatigably to store his mind with almost every branch of useful learning, and resolved to make polite literature subservient to the knowledge and illustration of the Scriptures. He studied the Hebrew more attentively, and was exhorted to abandon the method of Buxtorf, encumbered as it is with the Masoretic punctuation. The rectitude of his conduct, and the vivacity of his conversation, gained him the esteem of every person with whom he was acquainted. In the year 1749 he was made bachelor of arts, and next year was elected to a fellowship in Magdalen College, without any solicitation upon his part.

About this time he became a proselyte to the mysteries of Hutchinsonianism, chiefly through the influence of Mr William Jones. At the age of nineteen, his mind was completely fettered by these doctrines, believing that it was the design of Sir Isaac Newton and Dr Clarke to subvert the theology of the Scriptures, and introduce the stoical *anima mundi* instead of the God of the Universe. Under the influence of such an infatuation, it is not astonishing that he should have endeavoured to discredit the system of Newton. He obtained the degree of master of arts in the year 1752, when he engaged in a controversy on the subject of the Cherubim. With a view to recommend the writings of Hutchinson, he published, A fair, candid, and impartial state of the case between Sir Isaac Newton and Mr Hutchinson, in which is shown, how far a system of physics is capable of mathematical demonstration; how far Sir Isaac's, as such a system, has that demonstration; and consequently, what regard Mr Hutchinson's claim may deserve to have paid it. In the year 1753 Mr Horne entered into holy orders, and acquired high reputation as a public speaker, his compositions being excellent, and his elocution graceful. Whilst preaching before the university, he introduced some of his peculiar notions, which again led him into controversy. A pamphlet made its appearance, entitled A Word to the Hutchinsonians; or, remarks on three extraordinary sermons lately preached before the university of Oxford, by Dr Patten, Mr Wetherell, and Mr Horne. To this our author replied in an Apology for certain gentlemen in the university of Oxford, aspersed in a late anonymous pamphlet. The vindication of the hint to the Hutchinsonians was supposed to be the production of Dr Kennicott, who afterwards became so famous for his labours in collating Hebrew manuscripts, and his valuable edition of the Hebrew Bible. Mr Horne was chosen proctor of the university in 1758; and, on the honourable termination of his authority, was created bachelor of divinity. When Mr, afterwards Dr Kennicott, gave to the world proposals for collating the text of the Hebrew Bible, for the purpose of correcting the original, and preparing for a new translation, Mr Horne became very much alarmed. He apprehended that the adoption of such a measure would overwhelm the sacred text with licentious criticism; and on this ground he published, in 1760, A View of Mr Kennicott's method of correcting the Hebrew text, with three queries formed thereon, and humbly submitted to the consideration of the learned and Christian world. But an acquaintance which thus began in hostility was afterwards converted into genuine friendship, which continued throughout the whole of life.

In 1764, Mr Horne was created doctor in divinity, although not as yet advanced to any conspicuous station. On the death of Dr Jenner, the president of Magdalen College, in the beginning of 1768, Dr Horne was appointed to succeed him in a post at once honourable and valuable; after which he exchanged a single for a married life. Next year he published Considerations on the Life and Death of St John the Baptist, being the substance of several sermons preached by him before the university. In 1771 he was chosen chaplain in ordinary to his majesty, which he held for ten years. In 1772, when a number of clergymen had formed the resolution of petitioning parliament for relief as to subscribing the liturgy and thirty-nine articles, Dr Horne determined, if possible, to defeat their object; and for this purpose he published Considerations on the projected Reformation of the Church of England, in a letter to Lord North.

He now set about finishing his greatest work, which had occupied his attention for almost twenty years. This was his Commentary on the Book of Psalms, which appeared in 1776, in two volumes quarto. It exhibits profound erudition and fervent piety, and will be perused with pleasure and advantage by every judge of merit. In the same year he was chosen vice-chancellor of the university, which he held till the end of the year 1780. On the publication of Dr Adam Smith's letter, containing an account of the death of Mr David Hume, Dr Horne publicly animadverted upon it, in A Letter to Adam Smith, LL.D. on the life, death, and philosophy of his friend David Hume, Esq. by one of the people called Christians. In 1779, Dr Horne published, in two volumes octavo, Discourses on various subjects and occasions, which have procured the approbation of all description of readers.

As vice-chancellor of the university he became acquainted with Lord North, to whose interest, joined with that of Lord Hawkesbury, he was in 1781 indebted for the deanery of Canterbury. His time was now divided between that city and Oxford; and the conscientious discharge of every part of his complex duty made him universally beloved. In 1784 he published Letters on Infidelity, similar to his reply to Dr Adam Smith. The books against which he levelled his ridicule are, An Apology for the Life and Writings of David Hume, Esq.; Hume's Dialogues on Natural Religion; an Essay on Suicide by the same author, and a treatise entitled Doubts of the Infidels. In the year 1790, when Dr Bagot was translated to the see of St Asaph, Dr Horne was appointed to succeed him in the see of Norwich. His last literary labours were, Observations on the case of the Protestant Dissenters with reference to the Corporation and Test Acts, 1790; and a Charge intended to have been delivered to the clergy of the diocese of Norwich, at his first visitation, 1791. When he was raised to the episcopal dignity, his health, always delicate, began rapidly to decline; but from the waters of Bath he received great relief, and to this place he repaired a third time in the harvest of 1791. On his way thither, however, he was seized with a stroke of palsy, and after languishing for a few weeks, he died at Bath, on the 17th of January 1792, in the sixty-second year of his age.

He was powerfully animated in his last moments by those hopes which spring from the promises of the gospel, and the inexpressible satisfaction of a well-spent life. His erudition was extensive, his piety sincere, and his life irreproachable. His charity, both of a public and private nature, was extensive; and if not in debt at the end of the year, he felt perfectly satisfied. His posthumous works are, Discourses on several Subjects and Occasions; a volume of Sermons; and, Cautions to the Readers of Mr Law.

HORNERS, those people whose business it is to prepare various utensils from the horns of cattle. The horners were a considerable fraternity in the city of London some centuries ago. In the reign of Edward II. they complained to parliament, that by foreigners buying up the horns in England, they were in danger of being ruined, and their business lost to the nation. For this reason was made the statute 6 Edward IV. by which the sale of horns to foreigners, excepting such as the horners refused, was prohibited; and the wardens had power granted them to search all the markets in London, and twenty-four miles round, and to inspect Stourbridge and Ely fairs, to prevent such practices, and to purchase horns at stated prices. But on plausible pretences this law was repealed in the reign of James I., and thereupon the old evil revived. The horners again applied to parliament, and King Edward's statute was renewed, excepting as to the inspection of the fairs, and still, it is believed, remains in force.

HORNING, in *Scotch Law*, a writing issuing under the king's signet, at the instance of a creditor against his debtor, commanding him, in the king's name, to pay or perform within a certain time, under pain of being declared rebel and put in prison.

HORNINGSHAM, a town of the hundred of Heytesbury, in the county of Wilts, 102 miles from London, in which manufactures of fine cloths are extensively carried on. The population amounted in 1801 to 1030, in 1811 to 1118, in 1821 to 1267, and in 1831 to 1323.

HORNSEY, a large village of the hundred of Ossulton, in the county of Middlesex, five miles north of London, on the ascent of a hill commanding a view over the city. It is one of those places in which the richer citizens have built their rural retreats. The New River winds in a pleasing manner through the lower parts of the parish. The population amounted in 1801 to 2716, in 1811 to 3349, in 1821 to 4122, and in 1831 to 4856.

HORNPIPE, a common instrument of music in Wales, consisting of a wooden pipe, with holes at stated distances, and a horn at each end; the one to collect the wind blown into it by the mouth, and the other to carry off the sound as modulated by the performer.

Hornpipe is also the name of an English air, probably derived from the above instrument. The measure of this air is triple time, with six crotchets in a bar, four of which are to be beat with the hand down, and two up.

HOROGRAPHY, the art of making or constructing dials, called also dialling, horologiography, gnomonica, sciatherica, photosciatherica, and so on.

HOROLOGIUM, Ὡρολογιον (composed of ὡρα, *hora*, time, hour, and λογος, *speech*, *discourse*), a common name amongst ancient writers for any instrument or machine for measuring the hours. (See Chronometer.)

Modern inventions and gradual improvements have given birth to some new terms, and annexed meanings to others totally different from those which they originally had. All chronometers which announced the hour by striking on a bell were called *clocks*. Thus we read of pocket-clocks, though nothing would seem more absurd than to suppose that a clock, according to the modern idea, should be carried in the pocket. In like manner, all clocks which did not strike the hour were called *watches* or *time-pieces;* and the different parts of a striking clock were distinguished by the watch part and the clock part; the former meaning that part which measures the time, and the latter the part which proclaims the hours. In the report of Sir Isaac Newton to the House of Commons in 1713, relative to the longitude act, he states the difficulties of ascertaining the longitude by means of a watch; yet it is obvious, from several circumstances, that his remarks were directly to be understood of a time-piece, regulated by a pendulum; for his objections are founded on the known properties of the pendulum, some of which differ essentially from the properties of the balance and spring. It is also to be remembered that all the attempts of Huygens for finding the longitude were by means of pendulum clocks which did not strike the hour, and which consequently, according to the language of the times, were called *watches*. At this time such machines for measuring time as were fixed in one place were called *clocks* if they struck the hour; if they did not strike the hour, they were called *time-pieces;* and when constructed with greater care, for a more accurate measure of time, they were called *regulators*. Some artists have affected to call such watches as were constructed for astronomical and nautical observations by the name of *time-pieces*, probably to intimate that they possess the advantages of those constructed with a pendulum.

HOROPTER, in *Optics*, is a right line drawn through the point where the two optic axes meet, and parallel to that which joins the centres of the two eyes, or the two pupils.

HOROSCOPE, in *Astrology*, the degree or point of the heavens rising above the eastern point of the horizon at any given time when a prediction is to be made of a future event, as, the fortune of a person then born, the success of a design then laid, the weather, and so on. The word is composed of ὡρα, *hora*, hour, and the verb σκοπεω, *video*, I behold. Such was at one time the infatuation concerning horoscopes, that Albertus Magnus, Cardan, and others, are said to have had the temerity to draw that of Jesus Christ.

Horoscope is also used for a scheme or figure of the twelve houses or signs of the zodiac, in which is marked the disposition of the heavens for any given time. Thus we say, to draw a horoscope, to construct a horoscope, and the like. *Calculating a nativity*, is when the life and fortune of a person are the subject of the prediction.

HORREA, in Roman antiquity, were public magazines of corn and salt beef, out of which the soldiers were furnished on their march along the military roads of the empire. *Horrea* was also the name given to their granaries.

HORROX, Jeremiah, an English astronomer, and the first who observed the passage of Venus over the sun's disc, was born at Toxteth, Lancashire, about 1619. Having acquired some grammatical learning at a school in the country, he was sent to Emmanuel College, Cambridge, where he spent some time in the ordinary routine of academical studies. About 1633 he began to turn his attention to astronomy, and spent some years, with little profit, in studying the writings of Lansbergius. In 1636, he became acquainted with Mr William Crabtree of Broughton, near Manchester, who was engaged in similar pursuits; and both occasionally consulted Mr Samuel Foster, professor of astronomy at Gresham College, London. Horrox, having thus obtained a companion in his studies, resumed them with fresh vigour; he laid aside Lansbergius, whose tables he found as erroneous as his hypotheses were inconsistent; and having procured books and astronomical instruments, he applied himself at once to the theory of the science, and to the observation of the heavens. But whilst thus full of hope and of promise, he was suddenly cut off, on the 3d of January 1641, soon after he had completed the twenty-second year of his age. A short time before his death he had completed his *Venus in Sole Visa*. This interesting phenomenon he had observed at Hoole, near Liverpool; but his observations did not appear till 1662, when Hevelius published them at Dantzig, with some of his own, under the title of *Mercurius in Sole visus Gedani anno* 1661, *Maij* 3, *cum aliis quibusdam rerum cœlestium observationibus rarisque phœnomenis; cui annexa est Venus in Sole pariter visa anno* 1639. Besides this work, he had commenced another, in which he proposed to refute the hypotheses of Lansbergius, and to draw up a new system of astronomy agreeably to celestial observations, but for the most part conformable to the Keplerian laws. Of the papers which Horrox left behind him, all that escaped destruction were published by Dr Wallis in 1673, under the title of *Opera Posthuma*. (A.)

HORROR strictly signifies such an excess of fear as makes a person tremble.

Horror of a Vacuum, was an imaginary principle amongst the ancient philosophers, to which they ascribed the ascent of water in pumps, and other similar phenomena, which are known to be occasioned by the simple weight or pressure of the atmosphere.

HORSE.

Introduction.

The Horse is a distinct genus belonging to the order of *Belluæ*, or large beasts, and in himself the most serviceable of all quadruped animals, as well as the swiftest of those brought under the dominion of man. Notwithstanding these high qualifications, ancient history informs us, that, in the primitive ages of the world, the ass was used in preference to him, not only as a mere beast of burthen, but for the purpose of conveying, from place to place, persons of the highest distinction. This, however, may be satisfactorily accounted for. Previously to the art of horsemanship being known, the ass, a superior race of animal perhaps to that generally found in Europe, was more easily managed than the horse, and better suited to the kind of food usually met with for his support. He was, in fact, found to answer every purpose of horses, until mankind increased in numbers and in wealth, when the complicated interests that were the result brought their services into use, and they were trained to the art of war. But another reason may be given for the late introduction of horses. Their use was interdicted by the Almighty in the early ages of the world, first, lest his favourite people, the Israelites, should be led to idolatry, by carrying on commerce with Egypt; secondly, by their dependence on a well appointed cavalry, they might cease to trust in the promised aid of Jehovah; and, thirdly, that they might not be tempted to extend their dominion by such means, and then, by mixing with idolatrous nations, cease in time to be that distinct and separate people which it was His intention they should be, and without which the prophecies relative to the Messiah could not be fully accomplished. Thus, in the Book of Psalms, the horse commonly appears only on the side of the enemies of God's people; and so entirely unaccustomed to the management of him were the Israelites, at the period of their signal defeat of the Philistines and other idolatrous nations, that David, their commander and king, caused the greater part of the horses of the cavalry prisoners to be cut down, from his ignorance of any use to which he could apply them. In the reign of Solomon, however, a cavalry force was established, but to no great extent.

In the infant state of all nations, indeed, we can readily account for the restrictive use of horses. A great deal of land that might be applied to the production of human food is requisite for their maintenance in all countries; and, in hot and sterile ones, the camel answered better, and was found ready at hand. It is true they were used in the armies of the ancient Greeks and Romans, which were not considered as complete without them. In Greece they were not so numerous; but in a war with the Italic Gauls, the Romans are said to have had no less than seventy thousand horses, and seven hundred thousand foot, to attack their formidable enemies.[1] The army of Xerxes, when reviewed by him at Dorsica in Thrace, after it had passed the Hellespont, is reported by Herodotus, contemporary with him, to have contained eighty thousand horse; but the judicious reader will be inclined to make considerable abatements from the boasted amount of that celebrated but ill-fated expedition, resting, as it does, entirely on the authority of Grecian writers, who represented facts in the light the most unfavourable to their enemies, and the most glorious to their own gallant countrymen.

As in the scale of excellence, the horse ranks first of all animals coming under the denomination of cattle, and, as Buffon justly says of him, "possesses, along with grandeur of stature, the greatest elegance and proportion of parts of all quadrupeds," it is not a matter of surprise, that, as an image of motive vigour, he should have been the subject of the chisel and the pencil of the first artists in the world, or that the description of him by the pen should have been not considered as unworthy the greatest writers of antiquity. But it is in his native simplicity, in those wild and extensive plains where he was originally produced; where he ranges without control, and riots in all the variety of luxurious nature, that we can form an adequate idea of this noble animal. It is here that he disdains the assistance of man, which only tends to servitude; and it is to a description of his release from this servitude, his regaining his natural liberty, that we are indebted for two of the finest similes of the immortal Greek and Roman epic bards. The return of Paris, with Hector, to the battle of Troy, is thus given in the sixth book of the Iliad:—

> "Ὡς δ' ὅτε τις στατὸς ἵππος, ἀκοστήσας ἐπὶ φάτνῃ,
> Δεσμὸν ἀποῤῥήξας θείῃ πεδίοιο κροαίνων,
> Εἰωθὼς λούεσθαι ἐϋῤῥεῖος ποταμοῖο,
> Κυδιόων· ὑψοῦ δὲ κάρη ἔχει, ἀμφὶ δὲ χαῖται
> Ὤμοις ἀΐσσονται· ὁ δ' ἀγλαΐηφι πεποιθὼς,
> Ῥίμφα ἑ γοῦνα φέρει μετά τ' ἤθεα καὶ νομὸν ἵππων."

And Virgil is considered to have even exceeded Homer, in that splendid passage in the eleventh book of the Æneid, where Turnus turning out fully accoutred for the fight, is compared to a horse that has just broken loose from his stall:—

> "Qualis, ubi abruptis fugit præsepia vinclis,
> Tandem liber equus, campoque potitus aperto,
> Aut ille in pastus armentaque tendit equarum,
> Aut, assuetus aquæ perfundi flumine noto,
> Emicat, arrectisque fremit cervicibus alte
> Luxurians; luduntque jubæ per colla, per armos."

It is impossible, at this distance of time, to fix upon the native country of the horse, as he has been found, in various forms, and of various sizes, in every region of the Old World. The difference in size is easily accounted for. The origin of all animals of the same species was doubtless the same in the beginning of time, and it is chiefly *climate* that has produced the change we perceive in them. Warmth being congenial to his constitution, and cold naturally injurious to him, he is produced in the most perfect form, and in the greatest vigour, when subject to the influence of the one, and not only diminutive, but misshapen and comparatively worthless, when exposed to the evils of the other. Buffon, however, is wrong in making the horse indigenous to Arabia, as is clearly proved by a reference to the Sacred Writings. In the reign of Saul, horse-breeding had not yet been introduced into Arabia; for, in a war with some of the Arabian nations, the Israelites got plunder in camels, sheep, and asses, but still no horses. Even at the time when Jerusalem was conquered and first destroyed by Nebuchadnezzar, Arabia appears to have been without horses, as the Tyrians brought theirs from Armenia. That the earliest available uses of the active powers of horses was adopted by the Egyptians, the same authority satisfies us; for we read in the third chapter of Genesis, that when Joseph carried his father's remains from Egypt to Canaan, "there went up with him both chariots and horsemen." One hundred and fifty years afterwards, the horse constituted the principal strength of the Egyptian army; Pharaoh having pursued the Israelites with "six hundred chosen chariots, and with all the chariots of Egypt." The earliest period now alluded to was 1650 years before the birth of Christ; and 1450 years before that event, the horse was so far naturalized in Greece, that the Olympic Games were instituted, including chariot and horse races.

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[1] See Duncan's *Discourse on the Roman Art of War.*

The origin of the native horse of our own country is now merely a question of historical interest, the discussion of which would not lead to much practical benefit. That experiments, founded on the study of his nature and properties, which have from time to time been made to improve the breed, and bring the different varieties to the perfection in which we now find them, have succeeded, is best confirmed by the fact of the high estimation in which the horses of Great Britain are held in all parts of the civilized world; and it is not too much to assert, that, although the cold, humid, and variable nature of our climate is by no means favourable to the production of these animals *in their very best form*, we have, by great care, and after a lapse of nearly two centuries, by our attention to breeding, high feeding, and good grooming, with consequent development of the muscles, brought them to the highest state of perfection (with one exception[1]) of which their nature is susceptible. They may be classed under the following heads, and treated of individually, viz. the Race-Horse, thorough-bred and not thorough-bred; the Hunter; the Hackney, for various purposes; the Charger; the Troop-Horse; the Coach, Chariot, and Gig Horse; the Stage-coach and Post Horse; and the Draught or Cart Horse.

THE RACE-HORSE.

Although we may safely pronounce that the native-breed of English horses, however esteemed for other purposes, could not *race*, in the present acceptation of that word, yet it is equally obvious that they formed the parent stock of the renowned English racer. The first step to improve it by a cross with eastern blood, appears to have been taken by James the First, who gave the enormous sum (in those days) of L. 500 for an Arab stallion, which, however, the Duke of Newcastle, in his work on Horsemanship (great authority at that time), wrote down, on account, chiefly, of his comparatively diminutive size. At the Restoration, however, there appears to have been a tolerably good breed of horses in England, which Charles the Second improved by an importation of Barbs and Turks, whose blood was engrafted on the original stock, already very considerably ameliorated by the services of a stallion called Place's White Turk, imported by Oliver Cromwell's Master of the Horse, who bore that name; and afterwards by those of the Helmsley Turk, followed by Fairfax's Morocco Barb. The change was at this time so visible, that the Lord Harleigh of that day expressed his fears lest it might be carried to such an extreme as to extirpate the strong and useful horse, which, perhaps, the majority of his countrymen were well satisfied with before. In the latter end of Queen Anne's reign, however, the first great trump turned up, to secure future success. This was a stallion, called Darley's Arabian, purchased in the Levant, by a Yorkshire merchant of that name, although without any real attestation of his pedigree, or country. The prejudice against Arabians, and other eastern horses, the effect of the Duke of Newcastle's anathema against them, having now, for the most part, subsided, a good deal of their blood had been infused into the mares of that day, when another stallion, whose services were still more signal, accidentally made his appearance. We allude to the Godolphin Arabian, as he was called, purchased out of a cart in Paris, and consequently of uncertain caste, but evidently the horse of the Desert; who, as will be hereafter shewn, may be said to have won the game. Although at first thought so meanly of, as only to be used as a teazer, yet, fortunately for the Turf, he lived twenty years after his services became notorious (by the accident of his being the sire of a capital racer, out of a mare which the stallion to which he was teazer refused to cover), and, strange to say, no very superior race-horse has appeared in England, for many years, that cannot be traced to his blood. The success of this horse was much facilitated by the lucky coincidence of his arrival in England at a critical time, that is to say, when the stock from Darley's horse, and the several Arabs, Barbs, and Turks, together with the Royal Mares imported by Charles the Second, had been "crossed," as the term is, on each other; and had produced mares worthy to be the channel of imparting his own transcendant qualities to posterity. Taking it for granted, then, that the English race-horse is descended from Arabian, Turkish, and African (Barb) blood; and also taking into consideration the various peculiarities in the form and power of each of those kinds, requiring modification of shape, qualities, and action suited to the purposes for which they were intended, it cannot be denied, that a task of no ordinary difficulty was imposed on the English horse-breeders, and that they have executed that task with a masterly hand. If other countries furnished the blood, England has made the race-horse.

With the exception of one Eastern horse, called the Wellesley Arabian, the grandsire of a winner of the Oaks in 1826, also of Dandizette, who ran second for that stake in 1823, and one or two more good runners, the English Turf has benefited nothing, during the last half century, from the importation of foreign blood. The fact is, that having once gotten possession of the essential constitutional parts necessary to form the race-horse, and which will be described hereafter, we ourselves have, by a superior knowledge of the animal, and the means of availing ourselves of his capabilities, not only by rearing and training, but by riding him also, brought him to a pitch of excellence which will not admit of further improvement. Superior as is the air of the desert, which is said to be so free from vapours, that the brightest steel is not affected with rust, if exposed to it for a night, to that of our humid and ever-varying climate; and propitious as it must be to animals found, *as the horse was found*, in the greatest perfection when reared in it; yet were the finest Eastern horse that could be procured, brought to the starting-post at Newmarket, with the advantage of English training to-boot, he would have no chance at any weight, or for any distance, with even a second-rate English race-horse. It may not, however, be uninteresting to point out what are the essential racing points originally imparted to the horse of our own breed by these foreign stallions and mares, and without which they never would have arrived at any thing approaching the excellence which they have, for the last century, attained.

A good deal of pains has been taken to define the meaning of the term "blood," as applied to the horse called thorough-bred. Osmer, an old but accredited writer on the Horse, pronounced it to be a certain elegance of parts, derived from air, climate, and food, which, being suitable to the true natural conformation of the animal, enables him to perform extraordinary feats of activity and motion, coupled with great endurance of the highest bodily exertion; and hence the expression, "he shews a vast deal of blood," means nothing more than that he is a truly formed race-horse. Where, he asks, is the blood of the Ostrich, whose speed is so great, that it can "laugh at the horse

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[1] The exception is the English cart-horse, as will be stated hereafter.

Race-Horse.

and his rider?" "If the good qualities of the race-horse," says he, "depend upon blood, we could not, as we often do, see one horse very good, and his own brother, with equal advantages of good keep and training, very bad." It was the opinion of this writer, that it has been to the folly of expecting, that what is termed high-blood, in the Eastern horses, unaccompanied with essential form, will produce a racer, so many failures in the attempt to breed race-horses have occurred; that the virtue of what racing men call "blood," has been too much insisted upon, not being sufficiently influenced by the fact, that it can never be considered as independent of form and matter. We conceive there is a great deal of truth in each of the foregoing observations. Blood cannot be considered independently of form and matter, inasmuch as the excellence of all horses must depend on the mechanism of their frames, which, if duly proportioned, and accompanied with superior internal, as well as external organization, gives them stride, pace, and endurance. The quickness of repeating this stride also, and the power of continuance, will depend upon vigour of muscle, capacity of chest, and strength of the constrained lungs. The result, then, of this argument is, that when we speak of some of the celebrated stallions of former days having transmitted the good properties of their blood, or high eastern descent, to the race-horses of the present time, we can only imply, that they have imparted that true formation of parts, that firmness of bone and sinew, and that general superior organization, competent to give facility of action; together with great powers of respiration, which will enable horses to last under the severest trials of their powers. In fact, their excellence is in a great manner mechanical. Were it not so indeed, did they not excel each other according to the degrees of difference in their form and shape, and all the constituent parts, full brothers and sisters would prove of equal goodness on the race-course, health and condition being on a par. But this is very far from being the case; and again, if it depended on blood, the same horse would run alike on every description of ground, which we know rarely happens; but of this we may be assured, that it is a superiority of muscular substance, united with justly proportioned shape, and not innate blood, which enables a horse to bear to be pressed, on any description of ground, still more so upon such as is severe, as several of our race-courses are.

Yet if there must be this elegance of form, these nice proportions in the limbs, or moving levers of the race-horse, how is it that so many of those called "cross-made," plain, and apparently disproportioned horses, possess the power or parts conducive to speed and action? If blood can be defined the peculiar elegance in the texture of the external parts, how happens it that several very ugly horses and mares have at all times distinguished themselves on the Turf? Are there certain occult causes, not discoverable to the eye, that produce this excellence to which the rules and laws of action appear to be opposed? On these points it may be observed, first, that the force and effect of muscular motion is nearly beyond our ken; and, secondly, such horses are really not misshapen, inasmuch as there are hidden virtues in the mechanism of their internal frames, which the eye cannot detect; and where deficient in one point, they are recompensed by additional powers in others. They possess the essential points, although not so elegantly displayed; and this, we believe, is the case with other animals than the horse; although, generally speaking, true symmetry in all is attended with corresponding excellence in their useful properties, and adaptation to the purposes of man.

Those persons who insist upon an innate quality in what is termed "blood," are led to believe that there is something in the *nature* of a thorough-bred horse, which enables him to struggle in a race far beyond his natural capabilities, and which is distinguished by the term "game." We do not think there is. We learn from experience that horses often allow themselves to be *beaten* by others which are inferior to them, from sheer ill temper; but their efforts to *win* a race, we consider to be merely limited by their physical powers, the effect of a proper arrangement of their parts; and that the operation of the mind, or spirit, has nothing at all to do with it. The hero at the Olympic Games had, and the champion of the British boxing ring may have had, feelings which, from the superiority of their nature, and the fact of their character, interest, and future happiness, being all involved in the event, might have induced them to struggle even to the very verge of life; but the same sense of honour, and the same spirit of emulation, cannot be ascribed to the race-horse. If his own acting powers be unequal to those of others opposed to him in the race, he yields to that superiority, although it must be admitted, that what are called sluggish horses will not try to exert themselves to the utmost, unless urged to it by the spur and whip; and others, when spurred and whipped, slacken, instead of increasing, their speed. The final result of this discussion then is, that when, as has been previously suggested, we speak of such horses as King Herod, Highflyer, or Eclipse, having transmitted their blood to the past and present generations of running horses, we can only admit that they have transmitted that true formation of parts necessary to enable them to run races at a prodigious rate of speed, and to endure the severity of training for them.

Although we have spoken in disparagement of horses of the East as racers, upon the same terms with those of our own breeding, we are willing to allow them the merit of being the parent stock of all our racing blood; as it is quite evident the indigenæ of our own country, or of those European ones which approximate to it, would never have produced the sort of race-horse now seen on the British Turf. The nature and character, indeed, of the horse of the Desert, are peculiarly adapted to an animal who, like the race-horse, is called upon to put its physical powers to the severest test to which nature, aided by art, can submit. In the first place, the Arabian horse possesses a firmness of leg and sinew unequalled by any other in the world. This excellence, which he owes to climate, arises from his having larger muscles and *smaller bone* than other horses have;—muscles and sinews being the sole powers of acting, and on them depend the lasting qualities of an animal going at the top of his speed. Bones being the weight to be lifted, serve only to extend the parts; and it is evident, that such as are small, but highly condensed, like those of the deer, and the horse of the Desert, are, by occupying less space, and containing less weight, more easily acted upon by muscular force, than such as are large and porous, and for a greater duration of time, without fatiguing the acting powers. But the excellence of the Arabian horse, or horse of the Desert, does not end with his highly condensed bone, and flat and wiry leg, so much esteemed by the sportsman. All the muscles and fibres of his frame are driven into closer contact than those of any other breed; and, by the membranes and ligaments being composed of a finer and thinner substance, he possesses the rare quality of union of strength with lightness, so essential to the endurance of fatigue in all quick motions. He thus moves quicker and with more force, by reason of the lightness and solidity of the materials of which his frame is composed; and when to these qualifications are added the peculiar and deer-like elegance of his form, and extraordinary share of muscular power for his inches, he appears to furnish all the requisites of the race-horse on a small scale.

We have already accounted for the present breed of English race-horses being no longer susceptible of improvement from any foreign blood. But it is worth inquiring into the reason of the improvement of the horse of the Desert, and indeed of all the countries of the East, not advancing towards perfection, as that of our own breed has done. No doubt it was intended that we should improve upon animal nature, as we improve our own, and nowhere has the attempt been so successful as upon our varieties of domestic cattle; but the horse of the Desert now, if he have not retrograded in his good qualities, is the same animal that he was nearly two centuries back. With the exception of the Wellesley Arabian, said to have been bred in Persia (but the assertion is unaccompanied by proof), who measured fifteen hands two inches high, all the rest that have been imported have been little better than Galloways, which must be attributed to two causes; first, the want of being forced, as our own horses are, in their colthood, by high keep; and, secondly, by adhering too closely to the indigenous breed, or that whose blood is unmixed, by which means it has dwindled. Accurate observers must have noticed, that the greater part of the horses brought to this country as Barbs and Arabians, have exhibited a palpable deficiency in the points contributing to strength, and the want of general substance is apparent at first sight. It is true that, of late years, their estimation has so diminished in this country, that no great pains have been taken to procure stallions of the highest caste, and scarcely any mares have been imported; and several of those sent over have been accompanied by very unsatisfactory pedigrees. We are, however, inclined to think that, as the immediate descendants of such horses are found quite inefficient as race-horses, and but few of the second or third generation have turned up trumps, unless as a rational experiment, the breeding of *race-horses* from Arabians is at an end.

In corroboration, however, of the good qualities of form and texture of this comparatively Lilliputian breed, we give the following extract from a letter of the late Captain Gwatkin, head of one of the Honourable India Company's studs, on the subject of crossing the English thorough-bred horse with foreign blood, dated Hauper, Bengal, September 1828, to shew, by their rate of going, their great endurance under the combined pressure of weight and speed; for to have run these lengths in the time specified, their height only averaging fourteen hands one inch, and of course unfavourable to speed, in addition to the ground being sandy, and therefore void of elasticity, the pace must have been severe from end to end of the course. Unfortunately the ages are not given, or a still better judgment would be formed of the lasting powers of these little animals under more than average weight.[1]

Run at Bengal.

	Name.	Weight.		Time.		Distance.
		st.	lb.	m.	s.	
	Patrician	9	0	5	34	280 yards, less 3 miles.
1807.	Antelope	9	0	6	4	2¾ miles.
1809.	Patriot	9	6	6	46	3 miles and 325 yards.
	Sulky (sent to England)	9	0	6	25	3 miles and 325 yards.
	Oddsbobs	9	0			ran second in the above race.
1818.	Sir Lowry	7	4	4	0	2 miles.
1820.	Nimrod	8	10	4	6	2 miles.
	Sultan (not 14 hands)	8	12	6	16	3 miles.
1826.	Paragon (sent to England)	11	0	4	20	2 miles.
	Esterhazy	11	7	3	42	1¾ miles.
	Cavalier (not 14 hands)	8	7	4	4	2 miles.
1827.	Champion	11	7	3	44	1¾ miles.
1828.	Barefoot	8	4	6	7	second heat of 3 miles.
1828.	Cornet	8	4			ran second to Barefoot.
	Chapeau de Paile	8	3	2	58	1½ miles.
	Redgauntlet	9	0	5	6	2½ miles.
	Botherem	9	3	2	58	1½ miles.

Run at Poonah.

	Name.	st.	lb.	m.	s.	Distance.
1827.	Pyramus (not 13 3)	9	0	4	8	2 miles.
1828.	Dragon	8	8	4	4	2 miles.

Run at Bombay.

	Name.	st.	lb.	m.	s.	Distance.
1827.	Slyboots	8	5	4	2	2 miles.
	Gaslight	9	0	6	16	3 miles.
	Creeper	8	6	4	2	2 miles.

Run at Baroda.

	Name.	st.	lb.	m.	s.	Distance.
1827.	Harlequin	8	4	6	9	3 miles.

Run at Madras.

	Name.	st.	lb.	m.	s.	Distance.
1828.	Orelio	9	0	4	0	2 miles.

We have reason to believe, that the best use to be made of Eastern horses, would be for the production of the English hunter, by the best-shaped hunting mares, nearly thorough-bred. By the help of the dam, and our present improved system of keeping young horse-stock, there would be little fear of the produce not coming to a good size, even in the first generation, as it is, for the most part, the property of these horses to beget stock larger than themselves; but by crossing the female produce in the second with our large thorough-bred horses, hunters for heavy weights might be looked for, with every prospect of success. We know that the virtue of the blood, or constituent parts, of the horse that was no racer (Marske, the sire of Eclipse, for example) has produced a racing son, by acquiring proper formation of parts from the dam; and if to the fine form of the English hunter, could be added the firmness of leg and sinew for which the Eastern horse is so conspicuous, but in which the English hunter is too often deficient, in conjunction with the larger muscles, more highly condensed bone, and well-known powers of endurance of the Eastern horse, not omitting his action, which is generally first-rate, but of which a proper judgment could be formed previously to the choice of the stallion, a great improvement upon our present race of hunters would be effected; and all such as were known to be thus bred, would meet a ready sale. It is a well known fact, that some of the most brilliant hunters England ever produced, were got by Arabian stallions; and one, by Lord Clive's Arabian, was decidedly the best horse in Leicestershire, in Mr Meynell's day, over every description of country. He was the property of the late Mr Childe, of Kinlet Hall, Shropshire, who is said to have been the first to introduce the present very spirited style of riding after hounds. A powerful Toorkoman stallion would not, we think, fail in getting hunters out of good English mares. That breed is the largest of any of the Eastern horses, owing to being reared on better land.

One word more on the subject of the Eastern horse, as connected with the English Turf. Owing to the doubts and uncertainties that hang over the pedigrees and countries of the most celebrated stallions and mares which laid the foundation of our present breed of racers, it is impossible to determine to which individual breed, whether to the Turkish, the Barb, the Arabian, or the Persian, are the greater advantages derived from them to be attributed. They appear to us to be pretty equally divided. To the Byerly Turk we are indebted for the Herod blood (sire of Highflyer); to the Godolphin Arabian, said to be a Barb, for the Matchem blood, the stoutest of any; to the Darley Arabian (the sire of Flying Childers), for the Eclipse blood; and to the Wellesley Arabian, believed to be a Persian horse, to the only real advantage gained to English race-

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[1] See *Old Sporting Magazine*, vol. xxiv. New Series, p. 12.

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horses, by a foreign cross, in later years. It must, however, be observed, that the most famous horses of the last century, such as Childers, Old Crab, Eclipse, and King Herod, did not appear on the Turf before they were five years old; which leads us to suppose, that the failure of horses subsequently bred, as they themselves were bred, from Oriental blood, and trained at an early age, may, in great part, be attributed to the fact, of the immediate produce of such horses requiring more time to come to maturity, or even to a certain degree of maturity, than those, like our present breed of race-horses, further removed from such blood; and the cause may be attributed to climate. It is reasonable to suppose, that the produce of stallions and mares bred in the Torrid Zone, would come slower to perfection in a damper and colder country than it would have done in its own; and we may infer from this, that, in proportion as horses were brought earlier to the post, and races shortened in distance, Eastern blood got into disrepute.

Breeding the Race-Horse.

Amongst the many things in the history of Ancient Greece that have called forth the admiration of mankind, the celebrated games of Olympia claim the foremost place. Independently of their religious association, and advancement of literary spirit, they were highly serviceable to the country; and none proved more so than those at which horse-racing was introduced, which appear to have been completely established in the twenty-fifth Olympiad. That the improvement of the native breed of horses was the chief object of the government, is beyond all doubt, as it has been that of all others who have given encouragement to racing; and it is equally apparent, that the Thessalian courser, so highly extolled by Pindar, and likewise so terrible in war, was the result of a foreign cross. So essential, indeed, was this object considered in Greece, where horses were very scarce even after the time of Pindar, that it is stated, on the authority of Aretius, in a note on Pindar's second Isthmian Ode, that there was a general law in Greece, requiring all, who were able, to breed horses. As to what state of perfection their horses were bred in at this early period, is beyond the power of conjecture; but in Great Britain, from the highly cultivated knowledge of the mechanical structure of living bodies, with the junction of best shapes, although but for the stimulus given by racing, this knowledge would have been comparatively in its infancy, the horse has arrived at the highest state of perfection of which his nature is capable; and in whatever country, and in whatever climate, his racing powers are put to the test, he has scarcely found a rival, excepting under very disadvantageous circumstances. It is true his *lasting* qualities were doubted, and he was challenged to rebut the charge; and the following was the result. On the 4th of August 1825, two second-rate English racers, Sharper and Mina, contended against the most celebrated Cossack horses from the Don, the Black Sea, and the Ural, in a race of the cruel length of forty-seven miles. At starting, Sharper and Mina ran away with their riders more than a mile, and up a steep hill, when the latter horse broke down, and pulled up. Half the distance was run in an hour and forty minutes. In the last half, only one of the Cossack horses was able to contend with Sharper, who, notwithstanding every foul advantage was taken by changing the weight, and dragging along his opponent by a rope, won his race in gallant style, performing the distance in two hours and forty-eight minutes. At starting, the English horses carried three stone more weight than the Cossacks; and, during the latter half of the race, the one Cossack who remained in it was ridden by a mere child.

From the great export trade to the Continent of English horses, and particularly those of full blood, joined to the low price of horse-food during the last twenty years, and on which there is not much prospect of an advance, occupiers of land cannot turn their attention to a much surer source of profit than that of breeding horses, provided they go judiciously to work. But, unfortunately for the speculators in this branch of rural economics, too much is left to chance and experiment, and thus horse-breeding becomes absolutely a matter of speculation, instead of a matter of judgment. It is true, those noblemen and gentlemen whose studs have become eminent on the Turf cannot be included in this charge; but even with the benefit of great experience, and various other advantages, the utmost exercise of their judgment is required, to insure even a prospect of success against such a field as they have to contend with. Having said this, we will lay down a few practical rules for breeding and rearing the various kinds of horses now used in Great Britain, commencing, as before stated, with that of the Race-Horse.

In the first place, it may be observed, there has been a great deal of discussion in various publications on Sporting, but to very little purpose, on the much agitated question, "What constitutes full blood, or, what is termed, a thorough-bred horse?" We consider this question as very easily decided; the term "thorough-bred horse" merely implying one that can be traced through the Stud-Book, by sire and dam, to any Eastern stallion, or to what were called the Royal Mares, imported by Charles the Second, as they, together with two or three of the first imported stallions, form the *ne plus ultra* of all racing pedigrees. As to the assertion, that, for a horse to claim the title of thorough-bred, it is necessary he should be of pure Oriental descent, it cannot for a moment be supported; as, independently of the fact, that only two mares are stated in the Stud-Book, or elsewhere, on authority, to have been imported into England, in the early days of racing, it is well known that the first British race-horses were those of British breed, changed, ameliorated, and, at last, perfected by the admixture of Eastern blood, and judicious crossing afterwards.

The effect of what is called crossing blood is as follows: The first cross gives one-half, or 50 per cent.; the second 75 per cent.; the third $87\frac{1}{2}$ per cent.; and the fourth $93\frac{3}{4}$ per cent. In sheep, after this, if the ewes have been properly selected, the difference in the wool between the original stock and the mixed breed is scarcely perceptible; but with the horse, the breeder must not stop here, if he means to produce a race-horse; and a curious fact is stated respecting sheep, on the authority of the Count Veltheim, of Brunswick, an extensive breeder of that species of stock. "It has frequently occurred to me," says he, "that rams, which, after an improvement of four or five descents, have rivalled all the *visible* qualities of the purest Merinos, when employed in propagation, have got very ordinary lambs, and consequently they are not fit to be used for breeding. On the other hand, a fact may be stated, wherein, after a very opposite cross, pure blood, with evident improvement upon the original stock, was procured on the eighth descent. The late Lord Oxford, very celebrated for his greyhounds, finding them degenerating in courage, crossed his best bitches with a bull-dog. The result was, after several recrossings with pure blood, that breed of greyhounds for which he was so eminently distinguished. The immediate descendants, however, of the Eastern horses, have almost, without an exception, proved so deficient of late years, that our breeders will no more have recourse to them, than the farmer would to the natural oat, which is little better than a weed, to produce a sample that should rival that of his neighbours, in the market."

Much speculation has also been indulged in, as to the effect of close affinity, in breeding the race-horse, or what is called breeding in-and-in; a system which has eminently succeeded in breeding cattle, and also with Lord Egremont's racing stud. Beginning with Flying Childers, several of our very best racers have been very closely bred; and it certainly appears reasonable that, as like is said to produce like, if we have high form and superior organization in an own brother and sister, that high form and superior organization would be very likely to be continued to their incestuous produce. In a work called "Observations on Breeding for the Turf," published a few years back, by Nicholas Hankey Smith, who resided a long time among the Arabs, the author gives his opinion, that colts bred in-and-in show more blood in their heads, are of better form, and fit to start with fewer sweats, than others; but when the breed is continued incestuous for three or four crosses, the animal, he thinks, degenerates. By breeding in-and-in, however, he does not insist upon the necessity of breeding from brother and sister, or putting a mare to her own sire, or the sire to her own dam; but after the first cross, to return to original blood. A recent proof of the good effect of a close affinity in race-horses may be found in the produce of the dam of his late Majesty's favourite mare Maria. By those celebrated stallions, Rubens and Soothsayer, they were worthless; but by Waterloo and Rainbow, grandsons of Sir Peter, and thus combining much of her own blood, they could run to win.

We now come to the most certain source of producing good racers, namely, the choice of stallions and mares, and the treatment of the produce in their colthood. But as regards the two first-named requisites, reference must be had to the parts of the country in which horses are intended to run. If, for the short races of Newmarket, so much the fashion of the present day, a differently formed animal would be required to one intended to clear his way on the provincial courses. But whether it be one description of a race-hosre or another, although the laws of nature are not always certain, a proper junction of shape, or similarity in formation of horse and mare, together with a due regard to blood, gives the fairest prospect of success. We admit it is difficult to account for the degrees of excellence between the running of two full brothers or sisters, where it does not arise (a common case we conceive) from some violence or impression on the womb, when the fœtus is in a soft state, or from a decline in the constitution of the mare, subsequent to her last produce; but when we find the produce of two highly-bred animals, both proved to be good, and with a proper admixture of blood, unable to race, we can attribute it to no other cause than a dissimilitude of parts in the horse and the mare, or a similitude of some parts tending to an extreme in both. Without going so far as to assert that there is no innate quality in blood, we may safely pronounce it so far from being, as some have supposed it to be, independent of form and matter, that, unless accompanied with suitable form and action, it is of very little value in a race-horse. "Sometimes," as Sancho says, "we look for one thing and find another;" but we know of no instance of a bad misshapen horse and a bad misshapen mare, however highly bred, producing good runners.

The first and most important point in the choice of a blood-mare for a racing stud, is the soundness of her constitution and limbs; although, of course, it is desirable she should be of good size and shape, with substance. How highly so ever she may be bred, and however well she may have run, if she have not a sound frame, she cannot be depended upon to breed racers. If she have never been trained, of course the risk is increased; but, in either case, her form and action must not be overlooked, as it too often is, rendering the breeding of thorough-bred stock a mere matter of chance. Should she have appeared in public, her racing capabilities are to be consulted. For example, if pace (speed) was her best, as the jockies say, a stallion should be selected, who, by the known stoutness of his running, is likely to tie her produce to pace, or, in other words, to give them both speed and endurance in a race. Her frame should be roomy, or her produce will be apt to be small, although, it must be admitted, there are exceptions to this rule. She should be of, what is termed, fashionable blood, for, if she be not, and her produce should come to the hammer, *previous to trial*, they would prove utterly worthless in the market.

It cannot admit of a doubt, that it is trespassing on the powers of nature to expect a mare, or any other female animal, to nourish her fœtus, in embryo, so perfectly during the time she is giving suck, as if she were dry or without milk. Nevertheless, it is customary to put all blood mares to the horse the ninth day after foaling, and it is almost too much to expect that the owners will let them lie fallow, although they may in some measure resemble the man who cut up his goose to get at the golden egg. During the period of gestation, however, the thorough-bred mare should be highly kept. All animals well fed, produce their species of a superior description to those which are not well fed; and nothing more forcibly shows the beneficial effect of warmth in rearing superior varieties of the horse, than that the half-starved horse of the desert should be as good as he is even now found to be.

In a racing-stud, the period of putting mares to the horse is much earlier in the year than that of any other sort, by reason of their produce being almost always called upon to go into work before they are two years old. In fact, they can scarcely be dropped too soon in the commencement of a new year, where proper accommodations are provided for them. A peep into the three volumes of the Stud-Book will satisfy inquirers into these matters, that some mares have produced more than twenty colts and fillies, and, in a few instances, the greater part of them proved good runners; but, we should be inclined to think that the average would not exceed six, as the produce of each mare. It sometimes occurs that mares are put into a breeding-stud, when affected by severe lameness in the feet. When this is the case, the operations of neurotomy or unnerving is recommended; as pain, by producing fevers, not only is injurious to the formation of the fœtus, but often causes abortion. Bad, putrid, smells, or being struck on the nose, also produce abortion in brood mares.

Virgil, in his excellent remarks on breeding horses, tells those of his readers who wished to gain a prize, to look to the dam; and, until of very late years, it was the prevailing opinion of Englishmen, that, in breeding a racer, the mare is more essential than the horse to the production of him, in his highest form, and we know it to have been the notion entertained by the late Earl of Grosvenor, the most extensive, though not perhaps the most successful, breeder of thorough-bred stock England ever saw. The truth of this supposition, however, has not been confirmed by the experience of the last half century, and much more dependence is now placed on the stallion than on the mare. The racing calendar, indeed, clearly proves the fact. Notwithstanding the prodigious number of very highly bred and equally good mares that are every year put to the horse, it is from such as are put to our very best stallions that the great winners are produced. This can in no other way be accounted for, than by such horses having the faculty of imparting to their progeny the peculiar external and internal formation absolutely essential to the first-rate race-horse; or, if the term "blood" be insisted upon, that certain innate but not preternatural virtue, peculiarly belonging to some horses but not to others, which, when it meets with no opposition from the mare, or, in the language of the stable, when "the cross nicks" by the mare admitting of a junction of good shapes, seldom fails in producing a race-horse, in his very best form. It is obvious, then, that owners of racing-studs should not hesitate at paying the difference between the price of a first-rate stallion and an inferior one; and there is always one of the former to be found, to suit every description of mare. Breeders of all kinds of horses, but of the race-horse above all others, scarcely require to be cautioned against purchasing, or breeding from, mares, or putting them to stallions, constitutionally infirm. By "constitutionally infirm," is chiefly implied having a tendency to fail in their legs and feet, during their training, which too many of our present racing-breed are given to; although the severity of training is not equal to what it was some years back. It would be invidious to particularize individual sorts; but we could name stallions and mares, from which the greatest expectations were raised, whose progeny have sacrificed thousands of their owners' money, entirely from this cause. It having been clearly shewn, not only in theory but in practice, that the diseases and defects of horses are for the most part hereditary, we may be induced to give credit to the assertion, that the Arabians, after having brought their breed of horses to the highest pitch of improvement of which they themselves considered them capable, have preserved their chief perfections, namely, great endurance of fatigue, with highly organized matter, and natural soundness of limb,—by restricting the use of stallions until approved of by a public inspector of them. Indeed, in several European states, similar precautions are taken, and stallions are provided by their governments, for the use of farmers and others who breed horses, and care is taken in the selection of them to avoid all such as have proved naturally unsound, or been affected by any disease, the influence of which may be hereditary. No part of veterinary pathology is more interesting than that which relates to the hereditableness of disease; and, as an eminent French writer (Professor Dupuy), on the veterinary art, observes, "That person will render an important service to his country, and to rural economy in general, who may show, by incontestible evidence, that those organic diseases (farcy and glanders) are very often hereditary. I knew a mare whose body on dissection presented every appearance of glanders; her filly died at the age of 4½ years of the same tuberculous affection. The other offspring of this mare inherited her particular conformation, and her propensities to bite and kick." The Professor produces three similar instances of inherited disease, all of which, he says, were too evident and well-marked to admit the possibility of any serious mistake, and were attested by the professors of the Veterinary School at Alford. Similar observations follow in relation to the diseases of oxen, cows, sheep, and swine, as also of ophthalmia in horses, all of which are transmitted from one generation to another, the effect of hereditary influence. "These considerations," continues the Professor, "to us are of the greatest moment, since we have it in our power, by coupling and crossing well-known breeds, to lessen the number of animals predisposed to these diseases. Acting up to such ideas, our line of conduct is marked out. We must banish from our establishments, designed to improve the breed, such animals as show any signs of tuberculous disease, or any analogous affection. Above all, no stallion should be allowed to remain in a wet or cold situation, in consequence of the evils likely to result therefrom."

In consideration of the preference given to the stallion over the mare, in the propagation of racing-stock, may be quoted the following passage, from Part 3d of Percival's Lectures on the Veterinary Art (London 1826). "It might be supposed that the part the male takes in fecundation is comparatively a very unimportant one; it must be remembered, however, that the copulative act is the essential first cause, that therein the action of the organs is natural and sympathetic, and that the result is the generation of a new animal, bearing a likeness to one or both of the parents; from which it would appear, although the physical part of the male is simply to project the sperm into the female, who alone has the power of rendering it efficacious, that the influence of the sperm is much greater in the generative process than we seem to have any notion of, or at least than we have been able to reveal the nature of in physiology."[1]

Rearing of Young Racing Stock.

Under all circumstances, there is too much resemblance between the speculations of the Turf and a lottery; but, as the prizes it exhibits are valuable, the most effectual means of obtaining them should be adopted. It signifies little what care and circumspection have been exercised in the selection of stallions and mares, with a view of breeding racers; the prospect of success is very limited indeed at the present day, unless the produce be reared according to the improved system acted upon in our first-rate racing establishments. Such was the pertinacity of opinion, combined with long-established prejudices, and in direct opposition to the daily acknowledged fact, of dry and warm countries having been the first to produce the horse in perfection, that it is only within a very few years that young thorough-bred stock has been reared in the manner in which it should be reared. A thorough-bred colt may now be said to be in training from the day on which he is dropped, so great is the care taken to force him into shape and substance. Not only is he drawing from the teats of his dam the milk of a highly fed animal, and consequently, in itself highly nutritious, but, before he is twelve months old, he eats nearly two bushels of oats per week. The time for expansion of frame is youth, and, when we see a two year old at the post, with eight stone four pounds on his back, which is to be seen in every meeting at Newmarket, and looking like a horse able to carry a light man after hounds, we most cordially assent to the answer given by the most experienced Newmarket trainer of the present age to the question, What is the best method of rearing a racing colt? "First observe," said he, "that the blood, or cross, is good; secondly, breed him as you would a sheep, from a roomy dam; and thirdly, give him as little green meat as possible, and as much corn as he will eat." The trainer we allude to has now retired, but he had all the young stock of the Duke of Grafton, and many of the first and most successful sportsmen in England, through his hands, and the annual disbursements of his establishment exceeded ten thousand pounds. That dry and hard food, as it is called, is the natural food of the parent stock from which our race-horses are descended, is beyond all doubt; and that the firmness of their acting parts is attributable to that, and to the warmth and dryness of the climate, is also admitted. Is it, then, to be wondered at, that breeders of horses, and not only of race-horses, have at length found out that dry food and warmth have the same effect in the Temperate as they have had, and now have, in the Torrid Zone? that they have discovered that, when colts are bred on rich succulent food, and subject to a humid atmosphere, the bulk of the body increases out of proportion to the strength of the bones; and to these predisposing causes are to be attributed most of the false points which we find in horses, such as fleshy shoulders, deficiency of muscle, weak pasterns, and flat feet? Virgil discovered this nearly two thousand years ago, and, when speaking in praise of Epirus, as suitable to the breeding of horses, emphatically observes:—

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[1] See Lecture 59, On the Physiology of the organs of Generation, Male and Female, page 94.

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> "Continuo has leges æternaque fœdera *certis,*
> *Imposuit natura locis.*" *Georg.* 1, l. 60.

So careful, however, now are some of our principal and most successful breeders of race-horses to avoid these evils, that not only is a thorough-bred colt eating grass *ad libitum* become a rare sight, but he is not suffered to be exposed to rain, even in the midst of summer, no, not even to a temporary shower. The effect of rain upon horses' backs, is found to produce the worst of diseases—glanders, for instance, as is well known to all cavalry officers who have been on service with their regiments; and it cannot be innocuous to the highly-bred foal, or colt. That he should be sheltered from the cold of winter, need scarcely be insisted upon here, although we are rather inclined to think, that, in the generality of breeding establishments, he is more exposed to weather in the winter than he ought to be. There is no objection to a *moderate* allowance of carrots, and a little green food; but according to the old Greek proverb, Αλλος βιος αλλα διαιτα, *another life, another diet*, we must hear no more of the "natural food" of an animal insisted upon by many, who is so far called upon to outstrip the laws of nature as to begin to work at fourteen months old, and to appear at the starting-post at two years old, displaying the form, character, and strength of one nearly arrived at maturity. Neither is the land on which a racing-stud is situated oftentimes sufficiently considered; but a want of such consideration has been the source of great loss. It is in vain to expect success unless upon that which is dry, and consequently of sound subsoil; and what is termed "upland ground" is most favourable. Walls, independently of security, are preferable to hedges, for inclosures to breeding paddocks, as the latter harbour flies, which are very injurious to young stock, and also to their dams, in hot weather; but the present small dimensions of breeding paddocks, not exceeding a quarter of an acre, and many still less, preclude the use of hedges.

Racing colts are physicked when foals, and periodically afterwards; their hoofs, also, are pared with a drawing-knife, that, by shortening the toe, the heel may have liberty to expand. Physic, in this case, may be termed the safety valve, and such it is in reality, for this system of forcing nature cannot be free from danger. It is found, however, materially to promote growth, as indeed does the work that our racing-colts perform at such a very early age. Muscular action produces muscular strength, and growth will be the result. We have seen a colt that measured upwards of fifteen hands in height on the day twelvemonth which he had been weaned from his dam.

Racing colts can scarcely be handled too soon:—

> "Dum faciles animi juvenum, dum mobilis ætas,"

as Virgil says of the bulls; and Horace illustrates the necessity of early erudition of the human species by the excellence of horses which have been well broken in when young. The first breaking in of colts is also alluded to by Ovid, who, like Horace, is in favour of very *careful* treatment of them, and reminds us of the necessity of it in the following beautiful line:—

> "Frænaque vix patitur de grege captus equus."

The system of breaking colts, however, is not only thoroughly well understood in our racing establishments, but is accomplished with much less severity than it formerly was, and consequently with less danger to the animal.

The time of foaling is one of great interest to owners of valuable brood mares, and particularly so when the produce is engaged, perhaps heavily, or when they are of what is termed a running family. The attention of the stud-groom is directed by sundry forewarnings, the most palpable of which is what is called "waxing of the udder," and appearance of milk, which generally precede parturition two or three days, but in some instances more. As the mare brings forth on her legs, there is little fear of the foal being overlaid by the mother; but the less she is disturbed the better, lest she should trample on its legs. Her treatment afterwards is now so well understood, that nothing requires to be said about it; but a bran mash, with from four to six ounces of nitre dissolved in it, given as soon as she has brought forth, keeps off fever. The great preventive of accidents to foals, is the simple contrivance of rollers on the sides of the door-frames, which secure them from being injured as they rush out of the hovel or shed by the side of their dams, especially in cases of alarm.

Some persons prefer purchasing to breeding young racing stock, and it is difficult to determine between the advantages and disadvantages of the systems. It is true that, in the first case, the purchaser has a certainty of some return for his money, inasmuch as he gets his colt or filly, which the breeder may never get, after incurring a great expense on the mare. The price of a promising yearling, from three to five hundred guineas, is a large sum to begin with; and we cannot, in this instance, say with Varro, that "a good horse is known from the first." If purchased after he has appeared in public, at two years old, of fashionable blood, and having run in front, he is not to be purchased much under a thousand guineas, which is a large sum to realize, when added to concomitant expenses. Nothing but the immense amount of stakes for young racing-stock can justify such a speculation. For example, in 1824, a filly of the Duke of Grafton's won four thousand four hundred and fifty guineas, public money, by only starting twice.

One of the principal drawbacks from the prospects of success in a racing establishment, is a complaint called the Distemper, a sort of catarrhal fever, the cause of which is generally attributed to atmospheric influence, and also to any other which may produce what is termed a cold. Unlike common catarrhs, however, the distemper will run through a whole stud of horses; and if it do not, as it frequently does, end in an affection of the lungs, it leaves a lassitude behind it, which requires some time to remove. As a hot sun, with cold winds in spring, and the humid air of the autumn, are the chief predisposing causes of this complaint, an even temperature in the stable, and warm clothing when out of it, together with avoiding exposure to extremes of heat and cold, are the best safeguards against its attacks. It may be compared to a frost over the blossoms, which in one night blasts all former hopes of a crop.

A most interesting event to a breeder of thorough-bred stock is the trial of their racing powers, which at once decides the question of their being worth the expense of training to run, or not. There is a great deal of judgment necessary in the act of trying even old horses, but still more is required to form a just estimate of a young one, from the difficulty of knowing when he is quite up to the mark, as well as of keeping him there till it may be convenient to try him;—and it is not always so, owing to bad weather, the trial of young things being generally very early in the year. This subject, however, coming more properly under the head of Training the Race-horse, will be treated of at a future time.

But we have not yet spoken of the form of the race-horse, which we will now describe; and as nothing can be considered characteristic of a species, but what is perfect of its sort, we will so far endeavour to make the pen perform the task of the pencil, as to portray his cardinal points, as nearly perfect as such means will admit of. Nature herself, perhaps, rarely exhibits perfect models in the animal world, leaving the completion of her skill to human sagacity; neither is undeviating symmetry absolutely necessary in a race-horse. In every composite, however, beauty consists in the apt connexion of its parts with each other; and just proportions in the limbs and moving levers, coupled

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with that elegance of form *in which there is no unnecessary weight to oppress the muscles*, so peculiar to the highly bred race-horse, is all that need be insisted upon in a racer. It is nevertheless hard to say what horse will make a racer; and also what will not, until put to the test; for, how many horses have appeared, which the eye of the sportsman would not wish to study, and yet have proved themselves very capital runners? This excellence, however, in those "cross-made horses," as they are termed, not misshapen ones, arises, as has been before observed, from their possessing parts conducive to speed and action, not, perhaps, very strikingly displayed, but, by means of greater length and depth, and a peculiar manner of setting on of the acting parts, enabling them to excel others, much handsomer to the eye, but wanting in either proper declivity, length, or, what is still more probable, in circular extent of those parts. Thus, as the wise man, according to the Stoics, alone is beautiful, so is a race-horse to be admired solely for those points which make him a good race-horse.

Although symmetry and proportion form a perfect figure, and they become deformities when any of the component parts exceed or fall short of their due proportions, yet it is not always necessary to measure by the standard of perfection. Suffice it, then, to state the generally approved points of the English race-horse.

We commence with the head, not merely because it has always been considered as the most honourable member in the human frame, but as it is one of the leading characteristics of the thorough-bred horse. His broad, angular forehead, gives him that beautiful expression of countenance which no other breed possesses; and the tapering of the face from the forehead to the muzzle, forms a striking contrast with the large face of the cart-horse, and the forehead scarcely wider than the face. The race-horse should have a black, lively, and rather prominent eye, which denotes a sound constitution; and as horses do not breathe through the mouth, but only through the nose, the nostrils should be rather expanded and flexible, that they may accommodate themselves to quickened respiration, as the speed of the animal increases. But they should not be over large. "Naribus *non angustis*," says Varro, and he is right. Beauty in the head of the race-horse, however, is only a secondary consideration to the manner in which it should form a junction with the neck, as on that, in a great measure, depends the goodness of his wind in a race. His jaws should not only be thin, and not approach too near together at the throat, but they should not extend too high towards the onset, or they will impede his freedom of breathing. The neck of all horses should be muscular; but what is called a loose neck in a race-horse, is not so objectionable as in a hunter, and is considered as indicative of speed. But as the head of a horse may be called the helm which guides his course, changes, and directs his motions, it is not only desirable that, as he cannot move his head, but with the muscles of his neck, those muscles should be pliant, but that he should also have what is termed a good mouth. It is asserted that the weight of the head and neck, the effect increasing with their distance from the trunk, adds to the speed of the horse, by throwing his weight forward; but this is no argument for *additional* weight or length in those parts, which ought to be duly proportioned to the trunk. The neck of the race-horse should be in no extreme, but rather long than otherwise, and not too much arched.

As horses are said to go with their shoulders, these may be considered as highly important points. They vary in form more than any other part of the horse's frame. Those of Flying Childers rose very high and fine towards the withers; whereas, a firkin of butter is said to have rested, unsupported, on the withers of Eclipse, when in covering condition. Upright shoulders, however, being an impediment to speed, obliquity of the scapula is absolutely necessary, but we do not insist upon their running fine at the withers. We consider the shoulders of Eclipse to have resembled those of the greyhound, wide at the upper part, and nearly on a line with the back. Large, or even what are called coarse shoulders, contribute greatly to strength, and are no impediment to speed, if there is proper declivity of the scapula, or shoulder-bone. The withers, when high, or thin, should enlarge gradually downwards, and there should be four or five inches between the fore-thighs, but less between the feet.

The true position of the limbs is a most material point in the race-horse, as it causes him to stand over more ground than one which is otherwise formed, although possessing a more extended frame. One of these essential points is, the setting on of, and length in, the fore-arm, or part from shoulder to knee in the fore-leg; and, another, is the declension of the haunch to the hock in the hind leg, which is termed "well let down in the thigh." It is from having those points in excess, that enables *the hare* to describe a far greater circle, and cover more ground at one stroke, than any other animal nearly double her size. In fact, the arm should be set on at the extreme point of the shoulder, which insures this act of extension, and also adds to the declivity of the shoulder. The knee should be broad and flat, and if appearing somewhat prominent, the better. All the Herod legs had prominent knees (and no legs stood work better than they did), concussion in galloping being diminished in legs so formed. The cannon, or shank, from knee to fetlock, should be of moderate length in the race-horse (longer than in the hunter), and, above all, the leg should appear flat, not round, with sinews and bones distinct; and the former appearing to be very firmly braced. The pastern of the race-horse should be long, lax, and rather small than otherwise; length and laxness serving as springs, and smallness contributing to agility, and consequently to perseverance or bottom. Some comparison will hold good between this point in a horse, and the "small of the leg," as it is called, of a man, in contradistinction to the calf. Under the pressure of fatigue, no man complains of the "*small* of his leg" giving him uneasiness, but his calves often give him notice that he has done too much. The hoof of the race-horse should be of moderate size in proportion with the leg above.

We have already alluded to the bone of the thorough-bred horse, which much exceeds that of any other variety of this animal, in its compactness and solidity; which qualities, as the span in the gallop must give a shock in proportion to its length, are admirably adapted to the race-horse. We cannot say of him, what Job said of the behemoth, that "his bones are like bars of iron;" yet, as in proportion to the muscular power of the animal, is the dense quality of the bone, that of the race-horse need not, nor should not, be large. Experience teaches us, that bones very rarely break; fractures, when they do occur in racing, being almost invariably in the joints; and rather small bone in the leg of a race-horse, supported by broad and well-braced sinews and tendons, placed distinct from the bone, and forming what is called a flat and wiry leg, is most desirable, and found to be indicative not only of speed and endurance, but likewise of soundness in severe work. It is only those who are ignorant of the anatomical structure of animals, that fix the basis of strength in the bony substances alone, not considering the muscular appendages, which constitute the main-spring of strength and action.

As the strongest bodies owe their vigour to the milk they receive in their infancy, our recommendation to keep brood mares well will not be considered as unsuitable; but the connexion between milk and bone is also deserving of a remark. When animal bones are divested of their oil and jelly, the earth which remains is chiefly lime, united with phosphoric acid. It is worthy of notice, that phosphate of lime is found in abundance in milk. This seems to indicate, that Nature thought fit to place, in the first nourishment of animals, a quantity of osseous matter, with a view to the necessary celerity of the formation and growth of the bones in the earliest stage of their lives. This is one of the numerous instances of the beneficence of the Creator, exemplified by the science of chemistry, and shews the advantages to be expected from a good flow of milk in a mare that is well fed; and it is a remarkable fact, that the nearer the female approaches to the period of parturition, the more is the milk charged with this calcareous phosphate. Nor is it until the digestive organs of the foot are sufficiently strengthened, to answer the purposes and work of animalization, that this earthy salt disappears.

But to proceed with the form of a race-horse. The race-horse should have length, but the length should be in his shoulders and in the *quarters;* that is, the part posterior to the hips, and not in his back. To give him that elegance of form for which he is so conspicuous, there should be no acute angle or any straight line. His shoulders should go into his neck at the points, *unperceived,* and his back should sink *a little* behind the withers, which gives his rider a good seat, and does not in the least diminish his strength. On the contrary, horses with very straight backs are generally deficient in their fore-quarters, as well as in their action; and we have known some very good racers even what is termed hollow-backed. There should be a little rise in the loins, just behind the saddle; but the race-horse should not be too closely ribbed up. The ribs should stand out from the spine, producing what is called a round barrel, together with depth of carcass, a formation which not only gives strength of body and constitution, but, by admitting the intestines to be comfortably lodged within the ribs, imparts freedom of breathing, activity and beauty to the whole frame of the horse, other parts being proportional. These useful points, however, must not be carried to an extreme, or the horse may be what is termed "too heavy for his legs;" and we know that light-bodied horses save their legs much in their gallops, which accounts for mares and geldings standing the severity of training to a later period of life than stallions, by reason of the former requiring less work, from not generally carrying so much flesh as the latter.

There is no part, excepting the head, so truly characteristic of high breeding in the horse, as his haunch. If a little of the elegance of the parts, however, is diminished by the width of the hips, it will be recompensed by increased strength in the animal, as is the case with broad-shouldered men; and when accompanied with good loins, these protuberances of the ilium can scarcely be too great for the purposes of power and action. We next come to the thigh, the form and substance of which is most material to the race-horse; for although horses are said to go with their shoulders, the power to give the impetus in progressive motion comes from behind. With all animals endowed with, and requiring extreme rapidity of, motion, the thigh is furnished with extraordinary powers and length: the hare, for example, whose thighs are let down to a great extent for their size, and the lower part of the hinder leg placed under them, as that of the racer should be, from a proper curve of the hock. The speed of the ostrich arises from the power of the muscles from the pelvis to the foot; and the thigh of the fighting cock is a point much considered by breeders. It is not necessary that a race-horse's thigh should be very large, but it should exhibit well developed muscle. Descending lower in the limb, we arrive at the hock, a very complicated joint, but the form of which is most important in the race-horse. It should be large and lean, and the point of it projecting behind the body, which greatly increases the power of the lever in action, as will presently be most satisfactorily shewn.

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Size.

The point of perfection in most things lies at a middle distance between two extremes, and such is the case here. The medium height, about fifteen hands two inches, four inches to a hand, is the best for a race-horse. As the long beam breaks by its own weight, so large animals have rarely strength in proportion to their size. In fact, if there were any land animals larger than those we know, they would hardly be able to move at all. On the English Turf, however, the very large horses that have appeared at various periods of its existence, have, with a very few exceptions, not been found so good under high weights, as those of a medium height; and several instances are on record (Meteora, Whalebone, and others, for example) of the best horse of his year being very nearly the lowest.

The following are amongst the principal and essential points of a race-horse, pointed out by Mr Darvill in the second volume of his "Treatise on the Care, Treatment, and Training of the English Race-horse," London, 1834.

"His head should be small and lean; his ears small and picked; his eyes brilliantly large; his forehead broad and flat. . . . . . His throat should be clean, and fine from the butt of the ear down to its centre, with a good wide space between the jaw-bones, which latter should be thin. . . . The neck should be moderate in length. I prefer its being wide; I mean its width should be formed by the substance of muscles which pass along each side of the top part of it; from the withers to the head it may gradually rise a little in its centre, but by no means to any extreme, as I have a great aversion to a high-crested race-horse. Indeed, I would prefer that his neck should be as I have described his face, rather of the ewe or deer-like shape, than that it should be loaded on top, which I will by-and-by explain. As to the lower part of the neck, I have no very particular remarks to make, further than the trachea or windpipe should be spacious and loosely attached to the neck on its way to the lungs.

"The withers may be moderately high, and, if the reader like, they may also be moderately thin; but, with respect to this latter point, I am not so very particular, provided the shoulders lay well back. From the withers the back commences. I confess, that appearance may be in favour of a horse that has his back a little low or hollow. As a saddle-horse this may be all very well, but for a race-horse, to have strength and liberty of stride, his back should be straight and moderately long, with the shoulders and loins running well in at each end. The loins should have great breadth and muscular substance, so much so as for them to have the appearance of being raised as it were on their surface; and those muscles posterior to the loins should fill up level the top part of the quarters to the setting on of the tail, which latter should be set on pretty high up."

After describing the fundament, which, if small, close, and tight, and rather projecting than otherwise, Mr Darvill considers as a good constitutional point, he thus proceeds:—"I now come to speak of the body, or what is by some people commonly called the 'middle piece' of the horse, and which is divided, internally, into two cavities by a muscular substance called the 'diaphragm.' The anterior cavity, the chest, contains the lungs, the heart, &c. The posterior one, the abdomen, contains the stomach, intestines, liver, kidneys, &c. Now, with respect to the external form of the body, which contains and protects all those numerous organs so important to life, I shall first make my observations on the chest. To use a common phrase, and somewhat an expressive one, a horse in this part should be what is called 'well over the heart,' that is, he should be deep in his girth, round or well arched in his ribs. I mean by this, that a rider on the back of a race-horse (as they are generally better about the chest than horses in common use), should feel he has some breadth or substance between his legs; and there should be a good swell of muscle before his knees, or the centre of the flaps of the saddle. The chest, thus spaciously formed, gives room for respiration, so that, in training, the horse's wind can be brought to the greatest perfection, which enables him to run on in long lengths. The next part to be treated of is the abdomen or belly, or what is usually called the carcass. It may perhaps appear a little strange, but I have a great aversion to what is commonly called a good carcassed horse, nor am I particularly partial to a large sheathed one. I like both these parts to be in the medium, as I do also that of his being well ribbed up. It is true that a horse being well ribbed up denotes strength, and a short close made race-horse is, in running, handy at his turns, and, as I have already noticed, he is generally a pretty good one under high weights over a small round cock-pit course; but this description of course and sort of running is not now so much practised as formerly, or rather it is a sort of racing that does not exactly suit long-striding horses, as most of those are that run in Newmarket. Another thing is, that horses with large carcasses are mostly great gluttons; they put up flesh very rapidly, and are very difficult and troublesome to train, in consequence of their constitutions being too strong, or proportionably too much for their feet and legs. Such horses not only seldom remain long in training, but they cannot remain long in condition without their becoming stale in themselves, as also on their legs, and those are my reasons for objecting to very large carcassed horses; yet I do not wish horses to be what is termed 'tucked up' or waspish in their carcasses. I like a horse's carcass to be in the medium; that is, it should be straight and handsome from behind the girths of his saddle; and what will make up sufficiently well, and give him sufficient strength of constitution, is the well formation of the parts already noticed, as the chest, the loins, and the fundament.

"To return to the fore-extremities. The shoulders commence from a little below the withers; they should lie most particularly well back, should be deep, broad, and muscularly strong; yet those muscular parts should appear to the eye as being moderately so, that is, not unproportionally loaded: These muscles should be distinctly seen, there should be no appearance of fat, or, as it is technically termed, 'adipose membrane.' The shoulders cannot well be too oblique in their descent to the front of the chest; here, on each side, a joint is formed by the lower part of the scapula or shoulder-blade being united with the upper part of the humerus or arm-bone. Those joints, thus formed, are usually called the points of the shoulders, which points should appear straight or level. There should be no coarse, projecting, or heavy, appearance about the points of the shoulders of such horses as are intended to race; nor indeed does this often occur, unless where it happens that the chest or counter of the horse is unproportionally wide. In taking a front view of the chest, it should appear moderate as to breadth; and if its prominency is at all to the extreme, it should be in consequence of the fulness or substance of those muscles covering the breast, which muscles should be lengthy, and their divisions distinctly to be observed. The fore-arm should be broad and long, and most particularly well furnished with muscles on its top parts, inside as well as out; I mean by this, that the muscles on the top and inside of the arm should here be so large as to leave but a moderate space between the fore-legs, immediately under the chest, and which muscles should appear, as those in front of the chest, distinctly divided. The posterior part of the top of the arm is called the 'elbow,' this should appear (the horse in condition) somewhat on a level with the body; if it at all deviates from this appearance, I would prefer its standing in, to that of its standing unproportionally out. The knee-joint should be large, broad, and flat in front; generally speaking, the larger and broader all joints are in reason the better and stronger they are; and the longer, coarser, and rougher, their projecting points or *processes* are, the greater and more secure will be the lever for the muscles or tendons to act upon, provided such projecting parts or joints (as the hocks and pasterns) do not amount to disease, as that of producing spavins and ring bones. The legs from the knee to the fetlock, cannot well be too short, neither can they well be too broad or too flat, nor their flexor tendon scarcely be too large or appearing too distinctly divided, as it were, from the leg. The fetlock-joint should also be large, and the pastern proportionally strong, but its length and obliquity should be in the medium. The wall or crust of the feet should also be moderately oblique, with the heels open, and frogs sound; this, indeed, is generally the state of racing-colts on first bearing their paddocks, if their feet have been paid proper attention to during the time they may have remained there. Yet, the feet of such of them as have been some time in work will occasionally get out of order; they grow upright and strong; the horn gets hard and brittle, and the heels more or less contracted, almost all of which defects are too often occasioned from the want of proper attention being paid to them at the time of shoeing, and of proper applications being applied to them in the stables. With regard to the structure of such horses feet, and the diseases of them, as also the method of shoeing and plating them, a description will be found in the different chapters on those subjects in the first volume. Previous to concluding my remarks on the fore extremities, it may not be amiss to observe to the reader, that, supposing him to stand opposite to those parts of the horse, if the animal is formed in them, as I have already described the centre of the top part of the fore-arm, to be well placed, ought to be nearly or quite in a parallel line with the top or fore-part of the horse's withers; and again, from the top part of the fore-arm down to the foot, for the horse to stand firm and well, and have the power of using his fore-legs well, he should stand perfectly straight on them; I mean by this, they are not to appear too much under him, or too much out or away from him. Suppose again, for example, a man standing in front of the horse, and here taking a view of the foot, the centre part of the wall or crust should be in or on a parallel line with that lower part or joint of the shoulder, commonly termed its point. A horse's feet, thus placed, will neither be too much out or too much in; but should his feet deviate from what I have here observed, by amounting to a fault, in turning too much out or too much in, I should prefer their being a little out, to that of the other extreme of turning in, and being what is called 'pigeon-toed.'

"I shall now proceed to describe the hind-quarters or posterior extremities. As may be supposed, the well formation of those parts is of the utmost importance to a race-horse in his running; it is, therefore, necessary that they should be, in breadth, substance, and length, of very superior dimensions. The hips should have a great breadth between them; and if they are a little coarse or projecting so much the better, provided such coarse projections are not in the extreme, or appear vulgar or unsightly. From the centre and posterior part of the loins to the top of the tail is called the 'croup,' and should be of great length; and, if it deviates from that of a straight line, it may be somewhat arched in the centre; the croup being thus formed gives great breadth to the top of the quarters, the length of which, from the croup down to the hock, cannot scarcely be of too great an extent, in order that there may be sufficient room here for the attachment of those broad, powerful, lengthy, and distinctly divided muscles on the outside of the quarters and thighs; and there should also be a similar portion of such muscles on the inside of the

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quarters and thighs; so that a man, who is a good judge, taking a posterior view, may observe how the horse is made. In this position he should be, as it were, struck by the appearance of the great breadth and length of the back part of the quarters, and as he moves his head to the right or left, the centre and outside of the quarters and thighs, and the swell of the muscles, should appear beyond a level with the hips. The upper part of the muscles on the inside of the quarters should appear quite close to each other, so that no vacant space should be visible between them, as that of an appearance of the horse being (if I may thus express myself) chucked up in the fork. Such should be the lengthy and muscular quarters of a well made race-horse.

"The stifle-joint should be in a direct line under the hip, and the length from this joint to that of the hock cannot reasonably be too long, and the farther out of the angular or oblique position of the thigh-bone the better, so as to admit of the back part or projecting point of the hock appearing some distance out beyond the top of the hind quarters; those parts being thus formed, admit of a very considerable lever for the main tendon here to act upon the tendon Achilles, which, like the flexor one of the leg, can scarcely be too large or too distinctly seen in its commencement, from the lower part of the quarter to its insertion into the posterior or projecting point of the hock, the os calcis. The hock should be broad and wide, with a clean lean appearance, and those soft parts which are occasionally the seat of through-pins and bog spavins, in a sound well formed hock, should appear more as cavities than as having the above-mentioned projections, and which are sometimes the cause of lameness. The hind-leg, like the fore one, should be short, broad, flat, and straight; the trifling angle formed by the hock should, together with the moderate obliquity of the pastern, bring the extremity of the toe nearly under the stifle-joint."

Action of the Race-Horse.

As amongst the Egyptians, the lion was the hieroglyphic of strength, so was the horse of agility; and truly nothing displays it more elegantly than he does, when gamboling in a state of liberty. In the race-horse, action, as in eloquence, is the next thing to substance; and *virtus in actione*, should be the horse-breeder's motto. But the action of the race-horse is of a nature peculiar to his calling. He must not only possess great stride in his gallop, the result of great proportion in his limbs and moving levers, but also a quickness in repeating that stride, or he would lose in time what he gains in space. It is then when stride and quickness are united, that the fleet racer is produced; and in his race with Diamond, Hambletonian is asserted to have covered twenty-one feet at a stroke at the finish of it; and Eclipse is generally believed to have covered eighty-three and a half feet of ground in a second, when going at the top of his speed, which, by a calculation by Monsieur Saintbel, amounted to about twenty-five feet of ground covered at a stroke.

The action most approved of in a racer, as describing the greatest extent, with the least fatigue to the animal, is what is termed on the Turf "round action;" that is, when, on a side view being taken of a horse in his gallop, his fore legs appear to form a wheel or circle. Different ground, however, requires different action; and the large, long striding horse may be beaten on a hilly, or turning course, by one of a smaller size, but with a shorter stride, which prevents the Newmarket courses being a certain criterion of a good runner at Epsom, which is very trying ground. The state of the ground, likewise, whether wet or dry, soft or hard tells so much in a race, as often to give it to a horse very little thought of at starting, as was the case with Tarrare, winner of the St Leger, at Doncaster, in 1826. The celebrated Euphrates, the winner of so many gold cups, and who ran till he was in his teens, was nearly a stone below his usual form, after even a hard shower of rain. This variation of fleetness corroborates our assertion, that the virtue of what is termed blood is mechanical, or, what is the same thing, that the excellence of all horses is mechanical, and that the smallest deviation from a true formation of the acting parts operates so powerfully as to render them, under certain exertions, nearly valueless.

Wind.

It is true, "speed wins the race;" but to make it available to the race-horse, it must be accompanied by endurance, or "bottom." A great promoter of this is clear wind, or freedom of respiration, the want of which makes the war-horse rebel in the manège, the hunter run into his fences, the draught-horse fall, as if he were shot, and the racer either stop, or bolt out of the course. In fact, when the organs of respiration are fatigued, all animals are nearly powerless. The cause of good wind may be distinguishable to the eye, and arises chiefly from depth in the fore-quarters, which implies a capacious thorax or chest. However wide a horse may be in his foreparts, he will not be good-winded unless he is, at the same time, deep. But still wind in the race-horse depends on something more, on the nature of his constituent and component parts, which, if in proper proportion, impart to him strength and agility, giving him that easy action which will not readily fatigue these organs of respiration; and so enable him to run on, when others, less gifted by nature than himself, are forced to slacken pace. The good effect of clear wind in a race-horse is in fact twofold; first, It gives him signal advantage in a race; and, secondly, Horses thus organized require less work to make them fit to start.

The following passage on this point is worthy of remark: "When the animal powerfully exerts himself, a more ample supply of pure blood is required to sustain the energies of life, and the action of the muscles forces the blood more rapidly through the veins; hence the quick and deep breathing of a horse at speed; hence the necessity of a capacious chest, in order to yield an adequate supply, and the connexion of this capacity of the chest with the speed and the endurance of the horse; hence the wonderful relief which the mere loosening of the girths affords to a horse blown and distressed, enabling the chest to expand, and to contract to a greater extent, in order to yield more purified blood; and hence the relief afforded by even a short period of rest, during which this expenditure is not required, and the almost exhausted energies of these organs have time to recover. Hence, likewise, appears the necessity of an ample chest for the accumulation of much flesh and fat; for, if a considerable portion of the blood be employed in the growth of the animal, and it be thus rapidly changed, there must be provision for its rapid purification; and that can only be effected by the increased bulk of the lungs, and the corresponding largeness of the chest to contain them."[1]

Certain thorough-bred horses would deceive an inexperienced observer as to the real state of their organs of respiration, by an appearance of difficulty of breathing, which, in reality, they do not possess. The term for this apparent defect is, in one instance, hard breathing, or high-blowing, and in another "cracking the nostrils." Of the first description was the celebrated Eclipse, whose breathing in

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[1] *Farmers' Series*, "The Horse," Part VI. p. 182.

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his gallop could be heard at a considerable distance; and of the latter (still more common) may be reckoned many of the best racers of past and present days. Indeed, a race-horse cracking his nostrils in his exercise, and snorting well afterwards, are considered indicative of good-windedness. On the other hand, when a race-horse becomes a roarer, which is a common effect of a severe attack of the epizootie, called the Distemper, he is rarely able to struggle in a race, although there have been several instances of winners under such very unfavourable circumstances.

Temper is a property of much importance to the race-horse, subject as he is to its influence under more trying circumstances than most other descriptions of horses. In the first place, his fine and nearly hairless skin, softened and cleansed as it is by frequent copious perspiration, is so highly sensible to the friction of the wisp and brush, as to induce him to try to rid himself of his tormentor, by attacking the person who is dressing him, and thus becomes vicious in the stable. It will also be recollected that he is at this time, perhaps, in the very highest state of condition and good keep of which his nature is susceptible. On the race-course, again, he has often to encounter the (to him) unnatural sound of music, and many strange objects; perhaps two or three false starts before he gets into a race; and too often, when doing his best in a race, very severe punishment both by whip and spur. It is in his race, however, and chiefly in the last struggle for it, that the temper of the race-horse is most put to the test; and, if really bad, he either runs out of the course, to the great danger of his rider, and to the inevitable loss of his owner and those who have betted on his winning, or he "shuts himself up," as the term is, and will not head his horses, although in his power to do so. It is evident, then, that breeders should not send mares to stallions of known bad temper, as nearly all those propensities are found to be hereditary; and we could name one or two of the best horses of the present day, who are generally rejected as stallions to breed racers from, by reason of these propensities.

It would be absurd to draw a comparison between the English race-horse in training, and the horse of the Desert, "educated," as Mr Gibbon eloquently says of him, "in the tents, among the children of the Arabs, with a tender familiarity, which trains him in the habits of gentleness and attachment." Nevertheless, we are inclined to believe that the tempers of many naturally quiet horses are made uncertain, and oftentimes decidedly vicious, by want of proper judgment, as well as good temper, in those also who have the management of them. Brutes, like men, demand a peculiar mode of treatment, when we require them to do their utmost for us; and it is certain that this principle holds good in regard to both, namely, *that, in general, kindness gains its point, cruelty provokes resistance, and a proper degree of severity produces obedience.* The panther in the fable knew who fed her with bread, and who pelted her with stones; and we may be assured, that so noble and high-spirited an animal as the horse feels with acuteness sensations of pleasure and pain.

We often hear it asserted that the British thorough-bred horse has degenerated within the last few years, and is no longer the stout and long-enduring animal that he was in the bygone century, particularly during the last twenty years of it. We are inclined to believe that there is some truth in this. We do not think we have such good four-mile horses, as they are termed, as formerly, which we consider easily accounted for. They are not wanted, very few four-mile races being now run, even at Newmarket or in the country, and, therefore, a different kind of race-horse is sought for. It may, however, be true, that the inducement to train colts and fillies, at a very early period of their lives, for these short races, has had an injurious effect on their stamina, and, consequently, on the stock bred from them. Formerly a horse was wanted for a lifetime, now he is cut up in his youth to answer the purposes of perhaps but one day;—a system, we admit, quite at variance with the original object of horse-racing, which was intended to benefit the community, by being the means of producing, as well as displaying, the constitutional strength of the horse in its very highest perfection. Another cause may have operated in rendering thorough-bred horses less powerful than they were, or less capable of enduring severe fatigue. During the period of high weights and long courses, horses and mares were kept on in training until after they had arrived at the age of maturity, neither did they begin to work so soon; whereas now, no sooner have they won, or run well for some of our great three year-old stakes, than they are put into the stud to produce racing stock, which is perhaps to be used much in the same manner as they themselves have been used, or, we should have rather said, abused.

But, admitting this alleged falling off in the powers and performances of the British thorough-bred horse, it may be the result of causes unconnected with those already noticed. Although there may be no era of greater intellectual brightness than another in the history of any animal but man, yet, as is signified by Plato in the eighth book of his Republic, there have always been periods of fertility and sterility of men, animals, and plants; and that, in fertile periods, mankind, as well as animals, will not only be both more numerous, but superior in bodily endowments, to those of a barren period. This theory is supported by the relations of ancient historians, in the accounts they give of animals which no where exist at present, and in the properties they ascribe to some of those which now do exist.

But to return to the alleged alteration for the worse in the British race-horse. We admit the fact, that he is not so good at high weight over the Beacon at Newmarket, or any other four-mile course, as his predecessors were, whose descent was closer than his is to the blood of Herod and Eclipse, and the descendants of that cross, said to be the stoutest of any. Nevertheless he is, in his present form, more generally adapted to the purposes to which the horse is applied. He has a shorter, but more active, stroke in his gallop than his predecessors had, which is more available to him in the short races of the present time than the deep rate of the four-milers of old times; and as he is now required to start quickly, and to be on his legs, as the term is, in a few hundred yards, he is altogether a more lively active animal than formerly; and, as such, a useful animal for more ends than one. In former days, not one trained thorough-bred horse in fifty made a hunter. Indeed few sportsmen had the courage to try the experiment of making him one. He went more upon his shoulders, as well as with a straighter knee, than the modern race-horse does, and required much greater exertion in the rider to pull him together in his gallop. All those sportsmen, however, who remember such horses as the late Earl Grosvenor's, John Bull, and Alexander, must admit, that, in form and substance, they were equal to carrying the heaviest weight across a country, and the last mentioned horse was the sire of several very powerful, at the same time very brilliant hunters. But as it is action after all that carries weight, the thorough-bred horses of this day are not deficient in that respect, unless undersized; and there are more thorough-bred hunters at this period, and have been more for the last thirty years, than were ever known before. This improvement in action also qualifies the full-bred horse for the road, whereas formerly not one in a hundred was fit to ride off turf. Indeed daisy-cutters and thorough-bred horses were nearly synonymous terms; but at present a young lady on a bit of blood is an every day sight; and a young gentleman on any thing else in the parks, or on his road to hounds, is become rather a rare one. This is a very saving clause to breeders of race-horses, as a market is now generally found for such as are undersized, or tried to be deficient in speed for racing; whereas in former days, a bad race-horse was, like Rosinante, neither saleable nor pawnable.

Speed of the Race-Horse.

All animals in a state of domestication exhibit powers far beyond those that are natural to them in their wild state, and writers on the horse have advanced to the utmost verge of possibility, in recording the maximum speed of the English race-horse. Most of the instances stated by them, such as Flying Childers having run a mile in a minute, are unsupported by authority, and therefore not worthy of regard. That the horse, however, has ever been considered the swiftest beast of the forest, may be gathered from the frequent allusions to his fleetness by inspired as well as by heathen writers. Thus, the chariot-horses of Oenomaus, King of Elis, were said to be begotten by the winds, emblematical of their prodigious swiftness; and Homer represents the steeds of Achilles to be the produce of Zephyrus (the west wind, said to be the swiftest of any), and Podarge, whose name signifies speed. Nor is Virgil far behind the rest in his encomium on the fleetness of his colt, which he makes to challenge the very whirlwind itself. As it is speed, however, that wins the race, it is most essential to the race-horse, provided it be accompanied by stoutness; and unless we wish to fly through the air like Pacolet on his wooden horse, we may be contented with the speed of the present English race-horse. Perhaps the following is a fair specimen, and, as it is of so late a date, the same uncertainty does not attach to it that hangs over the unsupported traditions of our earlier racing days. In 1832, Theodore, the property of the Honourable Edward Petre, and winner of the Doncaster St Leger stakes, ran the distance, being one mile six furlongs and one hundred and thirty-two yards, in three minutes and twenty-three seconds, carrying 8 stone 6 lb. He was trained and tamed by the late Mr Croft, who also trained the second and third horses in the same race.

Expenses of a Breeding Racing-Stud.

Some persons must be breeders of race-horses, but whether to profit or loss, depends on various circumstances. Amongst them may be reckoned the following:—Judgment in selecting the parent stock or blood; conveniences for keeping the produce well and warm, and on land suitable to breeding; and plenty of money at command, to enable a breeder to purchase mares of the very best racing families, and to put them to the best of stallions. When this is the case, we think breeding (we mean quite distinct from risk in racing) would seldom fail to pay, if the foals were sold off at weaning time, or even at a year old. A few years back, eight of the Earl of Durham's *foals* realized L. 200 a-piece; and, still later, several of Mr Nowell's (of Underley Hall, Westmoreland) yearlings fetched the enormous sum of L. 500. No doubt, in all studs, great loss is sustained by a certain proportion of the young stock which promise to be small and not worth training; but here breeders are often deceived. For example, the late Lord Grosvenor sent Meteora, the best mare in England of her day, to Chester Fair, when two years old, to be sold for L. 16, because she was considered as too small; and he also suffered Violante, the best four-mile racer of her day, to be sold, *untried*, for L. 50, but fortunately purchased her again. The great prices, however, occasionally paid to breeders for some horses (4000 guineas, for example, to the Earl of Jersey for Mameluke, and 3000 guineas a-piece have lately been given for other three year-old colts) make up for the loss inseparable from such as, by misshape, diminutive size, and casualties, are culled out, and sold for what they will fetch, which seldom amounts to much.

Value of Stakes and Prizes.

Agamemnon is made to say, that that man would be rich who had treasures equal to the value of the prizes the horses had won, which he offers to Achilles. We are inclined to think, that if this king of Argos could come amongst us now, he would find prizes more valuable than any contended for in his time; and that sterling cash, and not "the bubble honour," is the main object of the British sportsman on the Turf. But here is the inducement to the great expenses of a racing breeding-stud: It is possible that a three-year-old *colt* might win, at three starts, the enormous sum of 8350 guineas; and a three-year-old *filly* might win the still greater amount of L. 11,100.[1]

Colour of the Thorough-bred Horse.

The beauty of forms observable in the animal system is subordinate to their general utility, and they please us in proportion to their aptitude to unite these two objects. We admire the elegant make of a swan, but the pleasure is doubled when we behold the ease and dignity of its motion. The colours, however, which Nature has bestowed with such profusion upon the surface of some of these animals, birds in particular, exhibit beauties independent of aptitude, and could only have been intended for their adornment. The prevailing colour of the thorough-bred horse is peculiarly elegant and chaste, being a bright bay, with black mane and tail, and black legs to correspond, although occasionally relieved with a small white star on the forehead, or a white heel of the leg. It is remarkable, that what may be termed vulgar colours, such as light sorrel, or dun, or brown with mealy muzzle, are very seldom met with in the thorough-bred horse; and we know but one instance of the pie-bald, and very few roans.[2] Black is not common, nor approved of, although several of our best racers, almost all the Trumpator blood, have been of that colour. The real chestnut prevails a good deal, and is quite equal to the bay in the richness and brightness of its hues. Such was the colour of Eclipse, and, as is the case with game-fowls, in the breeding of which there are instances of a reversion to the original colour, after fifteen descents, it is not uncommon for thorough-bred stock to be chestnuts, although got by a bay stallion out of a bay mare, or from sire and dam of any other colour, provided the blood runs back to his, Eclipse's, source. Indeed, a small dark spot which that celebrated horse had on his quarter, has been frequently found in his descendants in the fifth or sixth generation.

It is an old and trite saying, that "a good horse cannot be of a bad colour;" nevertheless, colours of horses are, to a certain extent, indices of their physical powers. Such has proved to be the case with men; and it was found in the ill-fated Russian campaign, that men of dark complexions and black hair bore the severity of the climate better than men of an opposite appearance to them. It is, however, rather a remarkable fact, that by far the greater number of eminent English prize-fighters have been men of light, not dark, complexion. The ancients reckoned thirteen colours of horses, giving the preference to bay (badices).

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[1] *Vide Racing Calendar*, 1834, for amount of the twentieth Riddlesworth stakes, at Newmarket; the Derby and Oaks, at Epsom; and the St Leger stakes, at Doncaster.

[2] See "*The Cocker*," by W. Sketchley, Gent. London, 1814.

Race-Horse.

A second-rate description of racer has lately been very prevalent in England, Newmarket excepted, known by the term "cock-tail," or *half-bred* horse, as he is called, but improperly so termed, because the stain in him is generally very slight indeed, and too often difficult to be traced. Many objections are raised by sportsmen, who are thorough racing men, and who wish well to the Turf, against the cock-tail racer, and for very good reasons. In the first place, if really half-bred, he resembles the royal stamp upon base metal, for no half-bred horse is deserving the name of racer, nor will he stand the necessary preparation. Secondly, what are called half-bred stakes, some of which are very good, have been the cause of a great many frauds being committed, by bringing horses to run for them under false pedigrees, which will ever be the case, from the great difficulty of proving a horse to be thorough-bred, whose dam may have been purchased by accident, or in some clandestine way, and still perhaps of pure racing blood. Again, as there is no scale by which the degree of impure blood, which qualifies a horse for those stakes, can be measured, the breeder of the cock-tail, of course, avails himself of the parent stock in which the slightest possible stain can be shewn, which indeed has been attempted to be shewn in some of the best race-horses of later times. In this case, an animal is produced against which no half-bred horse, in the proper acceptation of the term, has a chance, and he sweeps the country of all the good stakes; and some such horses, (Habberley, for example) have proved themselves superior to many of the thorough-bred racers of their year. But the breeding of horses for these stakes is any thing but beneficial to the country, the great object of racing. It encourages a spurious race of animals, often possessing the faults of the blood horse without the strength and activity of the hunter, and it was for the latter description of horse that this stake was first intended. *Bona fide* hunters' stakes would be advantageous, if *open to all horses* bringing certificates of their having been regularly hunted throughout a season, but not merely ridden by a boy to see a fox found; and giving no allowance to the horse called "half-bred." Let the best hunter win, which would encourage the breeding of strong thorough-bred horses, which make the best hunters of any;—a fact no one who has ridden many of them will deny.

Weatherby's General Stud Book.

To assist in the detection of spurious blood, and the correction of inaccurate pedigrees, is the chief purpose of this excellent publication, now increased to a third volume, and forming a part of every sportsman's library. Some attempts have been made by Mr John Laurence, a voluminous, but by no means a correct, writer on the Horse, to disturb the pedigrees of several of the first stallions of their time, and from which several of the distinguished racers of the present day are descended; and all upon hearsay evidence, without being able to substantiate one single fact in proof of his vague assertions. He has doubted the pedigree of Eclipse, put the blood of Sampson into Highflyer, where it never existed, and has thought proper to pronounce Sampson to have been a low-bred horse, on the authority of some old Yorkshireman he picked up on the road, although in his last work on the Horse he admits him to have been one of "the truest four-mile horses that our Turf has produced; was but once beaten, and also proved a capital stallion, as sire of Bay Mollon, Engineer," &c. Such matters as this would be scarcely worthy of notice, were it not with a view of cautioning the public, foreigners in particular, from being led into errors respecting the purity of our racing blood. Sampson was an animal of immense power, so were John Bull and Alexander; he might have had coarse points, so have the stock of Partisan and Blacklock, two of the best stallions of the present day; but who would deny their purity of blood on that account? Mr Laurence has been often called to account for these and similar misstatements, but he is inaccessible to correction. *Sic accepi*, Anglice, "As I have heard," is the main foundation of many of his assertions; and he claims the woman's privilege of having the last word.

THE HUNTER.

There is no description of horse which could be applied to so many purposes, racing excepted, as the powerful English Hunter. Setting aside his own peculiar services in the field, he is fit to carry a man on the road, in the field of battle, and he answers for every kind of draught. Indeed, we are inclined to believe no horse would equal him in ploughing; and as for road-work on harness, either slow or fast, nothing could touch him, in a carriage properly suited to his powers. It is, however, no less true than singular, that out of a hundred sportsmen assembled at the meeting of a pack of fox-hounds, not half-a-dozen would be found mounted on horses which they themselves had bred. This arises from two causes: First, the greater part of them have not patience to await the arrival of a young horse at his best, and consequently sell the few they do breed, without giving them a fair trial; and, secondly, such has, of late years, been the prejudice against riding mares in the hunting field, that they have been chiefly left in the hands of farmers and yeomen, who are become the principal breeders of English hunters. Neither do hunters find their road direct from the breeder to the studs of noblemen or gentlemen. They generally go through the hands of an inferior country dealer, from whom they are bought by the principal London and country dealers, and sold by them to the sportsmen of the various hunts. There are, of course, exceptions to this proceeding. A great proportion of English yeomen and farmers are very excellent horsemen, and, as such, having the capability of making their young horses into hunters, and, distinguishing them by riding them afterwards with hounds, obtain now and then as high a price for them as they fetch after having passed through the hands we have described. It is, however, to be lamented that the last-mentioned description of persons, the breeders and trainers of young hunters, do not, for the most part, realize such large prices as the first, although fully entitled to it, as a reward for their trouble and skill.

It is impossible to lay down any precise rules for breeding hunters, so many collateral circumstances being necessary to be taken into consideration. For example, Pennant, in his Zoology, says, "Our race-horses are descended from Arabian stallions, and the genealogy faintly extends to the hunter." From this we learn the interesting fact, that a wonderful change, within the last sixty or seventy years, has taken place in the form and character of this sort of horse, inasmuch as, in the opinion of some of the first of our English sportsmen, and such as put the powers of the horse to the most severe test, the hunter of the present day is not in his perfect form unless quite thorough-bred. This part of the subject we shall discuss hereafter; but as there are several of our hunting counties not at all suited to this description of horse, the thorough-bred hunter, and a large portion of our sportsmen who, some by reason of their weight, and others from prejudice against them, neither can nor will ride them, we may safely assert, that not more than a twentieth part of English hunters are at this time of quite pure blood. We will, however, set forth what we consider the best properties of the full-bred and the half-bred hunter, as he is called, as also the most probable means of breeding each kind to advantage; at the same time venturing an opinion, that, when their individual capabilities are put into the scale of excellence, the balance will incline to the former.

One great obstacle to the general success in breeding hunters is, not so much the difficulty of access to good stallions, but of making breeders believe that it would be their interest to send their mares to such as are good, although at an extra expense. Most rural districts, in other respects favourable to horse-breeding, swarm with covering stallions, the greater part of which have proved very bad racers; but which, falling into the hands of persons who are popular characters in their neighbourhood, and covering at a low price, get most of the farmers' brood mares sent to them, their owners never reflecting, as they gaze upon these misshapen animals, that Nature will not go out of her course to oblige them, but that, in the animal creation, "like begets like." Neither does the evil stop here. So much is this made a matter of chance instead of one of judgment, should the produce of a mare sent to one of these bad stallions be a filly foal, and she proves so defective in shape and action as to be unsaleable at a remunerating price, she remains the property of her breeder, and in time becomes herself a brood-mare. What, then, can be expected from such produce? Why, unless chance steps in and supplies the defect of judgment, in the first instance, admitting that she is sent to a better stallion than her sire was, by the procreative powers of the male so far exceeding those of the female, as to produce a foal free from the defects of the dam, another shapeless, unprofitable animal is produced. Nevertheless, in the course of time, perhaps this produce, if a female, however bad she may prove, is also bred from, and thus a succession of shapeless horses is produced, to the certain loss of the breeder, and much to the injury of the community. Under the most favourable circumstances, and with the aid of good judgment, we cannot consider horse-breeding to be a certain source of gain: yet there are many inducements to try it as one branch of rural economics. The money goes out a little at a time, or by degrees, and therefore it is suitable to such occupiers of land as cannot embark in more extensive speculations, and it returns in a lump, oftentimes at a most welcome moment, and, in many instances, of sufficient amount to render the average of former less profitable years sufficient to cover expenses, if not to leave a profit. There is likewise another inducement to breeding horses; we mean the interest inseparable from all human speculations, from which more than an ordinary return may be looked for, which is the case here; added to the nearly universal interest attached to the breeding and rearing of every species of domestic animals.

With respect to brood-mares designed for breeding hunters, we admit that circumstances, not always within control, have their weight. An occupier of land is possessed of a mare or two which he thinks *may* breed hunters, and having them, it may not be convenient to him to replace them by those which might be more likely to breed good ones. But the choice of a stallion is always within his control, and he should not spare trouble, and moderately increased price, in his selection. It is well known to all hunting men, that the stock of certain horses have been remarkable for making good hunters (we could name many of present and past times), and that there are such horses always to be found, on seeking for them. A few pounds extra, laid out by the breeder in putting his mares to such horses, are sure to be amply repaid; for the produce would be generally sought after and purchased, even previously to their being tried. Englishmen know of no such restrictions, nor do we wish they ever should; but the interference of the governments of several European states as to stallions for the use of their respective countries, reads us a useful lesson on this head; for it is well known, on the other hand, that a great number of stallions to which English hunting mares have been put, have been equally remarkable for begetting soft infirm stock, quite unequal to endure, for any length of time, the severe work of a hunter. It should also be borne in mind, that even a first-rate racer may not be a propagator of first-rate hunters. The former is called upon to exert his powers on very different ground, and under very different weight to the latter, and the action which may suit one may not suit the other. This accounts for the stock of certain thorough-bred horses, which were very indifferent racers, proving very excellent hunters. We have already given it as our opinion, that a cross of Arabian blood is a great desideratum in that of an English hunter, and we need not urge this point farther; but if breeders would reflect, that the expenses of rearing a bad colt equal those of rearing a good one, they would attend more than they do to the following nearly unerring directions.

First, Observe similarity of shape in horse and mare. As length of frame is indispensable in a hunter, if the mare be short, seek for a stallion likely to give her length. Again, if the mare be high on her legs, put her to a short-legged stallion, and *vice versa;* for it is possible that even a hunter's legs may be too short, a racer's certainly may be. In fact, to form a complete hunter, it is necessary he should be more perfect in his shape than a racer, which will admit of imperfections that would quite disqualify the other.

Secondly, Look to constitution. As no description of horse endures the long-continued exertion that a hunter does, this is a point to be attended to. But it may be overdone. Horses of a very hard nature, very closely ribbed up, consequently great feeders, with large carcasses, seldom make the sort of brilliant hunter now the fashion in England. Besides, one of this description requires so much work to keep him in place and in wind, that his legs must suffer, and often give way when his constitution is just in its prime. Horses with moderately sized carcasses last longest; and, provided they are good feeders, will come out quite as often as they ought to do, and are invariably good winded and brilliant, if well-bred and of good form, with a few other requisites. We never saw a very closely-ribbed, large carcassed horse, brilliant as a hunter, and we know such form is not approved of in the race-horse.

Thirdly, and lastly, Let the breeder of any kind of horse be careful in avoiding either sire or dam that has proved constitutionally infirm. As has been already shown on very high authority, perfect or defective conformation is not more likely to be the result of a proper selection of horse and mare, than disease to be inherited from parents that have been constitutionally diseased. We could name stallions whose stock have been blind; others afflicted with splents, curbs, and spavins, and a mare which produced three roarers by three different sires. But it may be said, that splents, curbs, and spavins, are the result of malconformation of the parts. Granted; but avoid all such malformation which is quite apparent to the eye in a breeding stud. It may perhaps be carrying this objection too far, were we to say, we would not breed from a mare or horse, which had become groggy or lame in the feet, from diseased navicular joints. Had the feet been more vigorously constituted, perhaps such lameness might not have occurred; yet it is but too probable that here the predisposing cause may be traced to over-severe treatment, and not to constitutional defect.

We have already expressed a regret at the prevailing prejudice against mares as hunters, admitting, however, that they are not to be so much depended upon at certain periods as the other sex. Nevertheless, no year passes over our heads that we do not hear of mares eminently distinguishing themselves on the race-course, in the hunting field, and on the road. Indeed, the majority of the extraordinary feats performed on the road have been performed

Hunter.

by mares. As relates to breeding hunters, however, this prejudice against them is most injurious in two ways. First, it takes off so much from the value of a filly, as in few cases to leave the mere cost of breeding and rearing her; and, next, many a mare, which would have proved a capital hunter, had she been tried, and, as is reasonable to suppose, a capital brood mare as well, is lost to the hunting world by being sold for harness purposes; and then, if good, so ruined in constitution as to be totally unfit to breed from. On the other hand, were mares more generally used as hunters, all such as proved themselves good, that is, were they stout, and had the peculiar kind of action that enabled them to go well on deep ground, over ridge and furrow, and were good leapers, they might for the most part be relied upon for producing good ones to succeed them. It may likewise be observed that, as in this case, the risk would be diminished, more people would breed hunters than do at present; and it is very generally admitted, that, at this time, so great is the scarcity of young horses likely to make hunters, were it not for those annually imported from Ireland, the demand would far exceed the supply.

Next in importance to the judicious selection of sire and dam, is the rearing of the colt, which it is intended should make a hunter. It was the remark of a gentleman, who kept fox-hounds more than half a century, that " great part of the goodness of a horse goes in at his mouth," and nothing is more true. Nimrod, in his Letters on the Condition of Hunters (p. 223, first edition), says, " It is my confirmed opinion, that unless a colt be what is called ' deformed,' it is in the power of good keep, exercise, and physic, to make him what is termed ' a fine horse,' and one which will sell for a large price, either for harness or the saddle. No one who has not witnessed it, is aware of the improvement in shoulders, thighs, gaskins, &c. from good old oats, accompanied by regular work and proper riding." Breeders of hunters may be assured that such is the case; and that it is of little use to breed colts with the expectation of their making first-rate horses, unless they keep them *very well* in their colthood. They should also be treated *as horses* at a very early age. They should be ridden gently, and by a light man, or boy, with good hands, at three years old, across rough ground, and over small fences; and at four they should be shewn hounds; but they should only follow them at a distance, and after the fences are broken down; for, if put to take large leaps at that tender age, they are apt to get alarmed, and never make first-rate fencers afterwards. Above all things, avoid getting them into boggy ditches, or riding them at brooks; but they should be practised at leaping small ditches, if with water in them the better, in the middle of a field, the rider putting them at them in rather a brisk gallop. This gives them confidence, and, the natural result, courage. With respect to the use of the bar, and teaching colts to leap standing over it, the practice is now condemned, and the system of letting them become timber jumpers, by taking it, as it comes, in crossing a country, is preferred, the present rate of hounds not admitting of the time occupied in a standing leap.

Some sportsmen adopt, and we believe with good effect, what is termed the " circular bar." Every description of fence that a hunter is likely to meet with, is placed within a prescribed circle of ground, and in this is the colt lodged, the man who holds him standing upon a stage in the centre. As another man follows him with a whip, he is forced to take his fences at a certain pace; and, in a very short time, a good tempered colt will take them with apparent pleasure.

At five years old it is customary to consider a horse as a hunter; but we are inclined to demur here. It is true, that if a colt has been very well kept, on the hard meat system, he is enabled to go through a good day's work with hounds at five years old, being quite equal to a six-year old, which has been kept on soft food, and not sufficiently forced by corn; yet it is always attended with danger of injury to his joints and sinews, if not to his general constitution; and we cannot pronounce a horse to be a hunter until he has passed his fifth year. As muscular action, however, produces muscular growth, he should not be kept in idleness during his fifth year, but should be ridden to cover, or with harriers, before Christmas; and when the ground gets dry and light in the spring, a good burst with fox-hounds may not do him harm. We do not, however, consider any five-year old horse fitting or safe to carry a gentleman over a country, as he cannot be sufficiently experienced to take a straight line.

We have known some masters of fox-hounds who have preferred purchasing yearling colts, or weanlings, at Michaelmas, to breeding them for their own use. The classical reader cannot fail calling to his recollection here the practical lesson which Virgil, in his third Georgic, imparts on this head; neither can the purchaser of such animals do better than follow it to the very letter. Should he fix upon the one which, as he describes him,—

> " Primus et ire viam, et fluvios tentare menaces
> Audet, et ignoto sese committere ponti,"

he would be pretty certain of having in due time a first-rate hunter, that would turn his tail to nothing. Nor should the breeder overlook the poet's advice to keep his young stock well, if he wishes to have them in the high form (and can any thing be finer?) in which the one of his own choice is presented to us in this most splendid passage.

There are undoubtedly certain advantages attending purchasing yearling colts, with the view of making hunters of them. Such only may be selected as appear calculated for the country they are intended to cross, and the weights they will be called upon to carry; whereas, were the master of hounds to depend on the produce of his own mares, he might be disappointed in being able to select the number he would require to replace, in due time, the vacancies which occurred annually in his stud. We should consider the sum of thirty-five or forty guineas for a good colt, at weaning time, a fair remuneration to the breeder, and well laid out by the purchaser.

Previously to giving directions for the purchase of a full-grown hunter, we shall proceed to exhibit him in his highest form, although we are aware of the difficulty, on certain subjects, of conveying, clearly, an idea from our own mind to that of another. We shall, however, endeavour to make ourselves understood by describing each individual point. As to the form and shape of a hunter's head, as we do not ride upon it, it is not of much consequence, provided it be well hung on, and that is of the very highest importance, not only, as we have shewn in the race-horse, on account of his respiration or wind, but unless it be so, he cannot be pleasant to ride. Not only must his jaws be wide, but when we consider that the head of a horse hangs in a slanting position from the extremity of the neck, and that the neck itself projects a considerable distance from the chest, on the muscular strength and proper formation of the neck must also depend whether a horse be light or heavy in hand, and consequently pleasant or unpleasant to ride. A weak or loose neck may not be so material, as we have before observed, to the race-horse; he is generally ridden in a martingal, and in that case always; add to which, his race is soon run. Nevertheless, we like to see the neck of the race-horse rise out of the shoulder with a tapering curve, in which case he is pleasant to ride in his gallop, and, if a hard puller, his jockey has much more power over him than if his neck were loose and low. But, in a hunter, the proper position of his head is a *point of the greatest moment*, as without it his rider cannot handle him properly

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at his fences; and if he be not a regular star-gazer, he is always dangerous to ride over a country. The proper junction of the head with the neck, and the carrying of it well or ill, depend chiefly on two particular muscles contained in the neck. The most important of these is called the splenius muscle, which constitutes the principal bulk of the neck above, and its action is sufficiently evident, namely, very powerfully to elevate the head and neck. The principal beauty of the neck, indeed, as well as the carriage of the head, depends on this muscle; and its ample developement is a point the sportsman should attend to in the choice of horses that are to carry him with hounds. A certain degree of muscularity of the neck is absolutely necessary in a hunter, and it is greatly promoted by good keep in colthood; also by delaying the period of castration till the second year, which should invariably be done, when the want of this muscularity is apparent in the first. It must, however, be observed, that there is a medium in this muscularity of the neck, although excess is the better extreme of the two; for when the neck of a horse appears, like that of a sheep, to rise out of the chest, and so far from being arched above, and straight below, is hollowed above, and projects below, such a horse is nearly worthless for any pleasurable purpose, as his head cannot, by any means whatever, be got into a proper place.

It has been said, that a horse with a long neck will bear heavy on the hand. We do not believe that either the length of the neck, or even the bulk of the head, has any influence in causing this. They are both counterbalanced by the power of the ligament of the neck. The *setting on* of the head is most of all connected with heavy bearing on the hand; and a short-necked horse will bear heavily, because, from the thickness of the lower part of the neck consequent on its shortness, the head cannot be rightly placed. The head and neck, however, should be proportioned to each other. A short head on a long neck, or a long head on a short neck, would equally offend the eye.

Although length of neck in a hunter is not desirable, length of shoulder is indispensable. Horses have raced well with short upright shoulders; but it is impossible that one so formed, however good he may be in his nature, or even in his general action, can be a safe hunter, and for this reason: A hunter is constantly subject, by down-hill leaps, leaping into soft ground, and getting his fore-legs into grips, or unsound ground, to have the centre of gravity thrown forward beyond the base of his legs; and it is more or less recoverable according to the length or shortness of his shoulder. By length of shoulder is meant obliquity of the scapula, or shoulder-bone, by which the point of the shoulder is projected forward, and which, added to the obliquity of the scapula, enables the rider to sit considerably behind, instead of nearly over the fore-legs, or pillars of support, which, on a short and upright-shouldered horse, he must do. One remark, however, must be made respecting the oblique shoulder. It is sometimes not sufficiently supplied with muscle, with which the upright shoulder generally abounds. We therefore recommend purchasers of young horses for hunters, to give the preference to what may *appear* coarse shoulders, nay, even inclined to be somewhat round, or flat on the withers, provided they are accompanied by the necessary and absolutely essential obliquity of the shoulder-bones.

The setting on of the arm, which should be strong, muscular, and long, is of much importance to a hunter. By the length of this part in the hare, as we have already observed, added to the obliquity of her shoulder, she can extend her fore-parts further than any animal of her size: in fact she strikes nearly as far as the greyhound that pursues her, by the help of this lever. The proper position of the arm, however, is the result of an oblique shoulder. When issuing out of an upright shoulder, the elbow joint, the centre of motion here, will be inclined inward; the horse will be what is termed "pinn'd in his elbows," which causes his legs to fall powerless behind his body; and he is seldom able to go well in deep ground. There are exceptions, but they are rare. A full and swelling fore-arm is one of the most valuable points in a horse, for whatsoever purposes he may be required; and although we have occasionally seen hunters with light thighs carry weight well, we never have seen it so carried by horses deficient in their arms.

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If sportsmen were to see the knee of the horse dissected, they would pay more attention to the form and substance of it than they generally do. It is a very complicated joint, but so beautifully constructed that it is seldom subject to internal injury. Its width and breadth, however, when considerable, are great recommendations to hunters, as admitting space for the attachment of muscles, and for the accumulation of ligamentous expansions and bands, greatly conducive to strength. Below the knee is a point on which we will not say much here, as we have already alluded to it in our remarks on the race-horse. We mean the shank, or cannon bone, and its appendages. It can scarcely be too short in a horse that has to carry a heavy man; round legs are almost sure to fail; those of the hunter should be flat, with the back sinews strong and well braced. This constitutes what sportsmen call a "wiry leg."

The fetlock is also a complicated joint, and very liable to injury. In a hunter it should be large and strong. But as regards his action, the pastern is still more material, and also to his standing sound. Very few horses with short pasterns can go well in deep ground, and for this obvious reason: The action of the joint is destroyed by getting below the surface of the ground, and is of course sooner immersed than when it is longer. But a greater evil than this attends a short pastern. It is the predisposing cause of navicular lameness, particularly in horses carrying weight, owing to the foot being deprived of that elasticity which a longer pastern affords, and which consequently relieves the concussion on the foot coming to the ground in galloping and leaping, as well as on the hard road. Horses with short and, consequently, upright pasterns cannot be pleasant to ride, and they seldom stand many seasons' work. Excess in either should be avoided, but of the two, a hunter is less objectionable, from the extreme of length, than of shortness, in this most material part.

That the foot of the hunter should be wide, is also obvious to the meanest capacity, independent of its being the form most conducive to health. The nature of the ground he has to travel over requires at times the widest base he can present to it, as a foundation for his great bulk, and thus the farmer carries out his manure upon tender land, in a broad and not a narrow wheel cart. Xenophon relates, that certain people of Asia were accustomed, when snow lay deep on the ground, to draw socks over the feet of their horses, to prevent them sinking in it up to their bellies; and we know why an ox sinks less in soft ground than a horse does. It is because his foot enters it expanded, by means of the division of the claws, and when he draws it out it is contracted. The foot of the hunter, however, should not be too wide, or it may operate against his speed.

The position of the fore-legs of the hunter admits of more latitude than that of his hinder ones, or indeed of any other part of his frame. We have seen brilliant hunters standing in all positions and postures as regards their fore-legs. Some very much over the knees, that is, with the knees bent and projecting outward; many upon very twisted fetlocks, turning the toes out; and a few, though only a few, turning the toes in. In the human frame, a certain squareness in the position of the feet is consistent with strength, as we see in the statues of Hercules, but the

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lightness of a Mercury is indicated by the direction of the toe outwards. This is to a certain extent the case with the horse. Although, if measured by the standard of perfection, his toe is required to be in a direct line with the point of his shoulder, yet we have seen and heard of some of the speediest and best racers and hunters, the position of whose fore-feet have deviated considerably from this supposed essential line; but the inclination of the toe outwards is so common in horses used for these purposes, that it can scarcely be called a fault. Indeed, some persons argue, that a leg so placed affords a broader base to the superincumbent weight, than when quite in a line with the shoulder, that is, provided the twist arises from the fetlock, and not from the setting on of the arm. Be this as it may, we are well assured that, provided the hinder legs and quarters are good, a hunter will admit of a considerable deviation from the true line in the fore-legs, and carry his rider brilliantly. It is well known, that a much more twisted fore-legged horse could not well be seen, than the celebrated Clipper, the property of the equally celebrated Mr Lindow, for many years said to be the most brilliant hunter in Leicestershire.

But there is one portion of the fore-quarters of the hunter to which a rule must be applied, that will not admit of an exception. He must be deep in his chest or brisket, that is, from the top of the withers to the elbow. Numerous are the narrow, but deep horses, in their "girth," as the term is, that have carried heavy weights in the first style with hounds; but no matter how wide a horse may be, if he have not depth, he cannot carry weight, and is very seldom a good-winded horse, even under a light man. One of the greatest compliments, then, that can be paid to a hunter, at first sight, is, that he appears two inches lower than he really is. Such, however, is the case with horses whose growth has been forced in their bodies by good keep when young, and thus they come under the denomination of "short-legged horses," so much esteemed by hard riders. They are likewise, for the most part, better leapers than such as have less growth in the body, and stand upon longer legs.

We have before observed, when speaking of the race-horse, that large bone is not required in his cannon or shank (the part from knee to fetlock), neither is it in the hunter. The real power of all animals is in the muscles, sinews, and tendons; and the leg best calculated to carry weight and endure to a good old age, is that in which the bone is small, but of a dense and perfect texture, and in which three convexities can be very plainly distinguished, namely, the bone; the elastic ligament behind the bone, called the sinew; and, behind that, *the flexor tendons, large, round, and strong.* The rare combination of strength, with lightness, is here beautifully displayed, and is one of the many instances which might be produced, to show how Nature delights to work with the least possible expense of materials.

The hunter should have length in his shoulders and quarters, and, to a certain extent, also in his back. It is true that horses with short backs carry weight best up a steep hill, which, as that is the worst method in which this animal can employ his strength (in man it is the best), shows that heavy men should ride short-backed horses. For hunters, however, that are ridden in our best hunting countries, which, previously to being laid down in grass, were thrown up by the plough into high ridges, with deep furrows, must have *moderate* length of back, or they cannot go smoothly over such ground. Good loins, with width of haunch (the *vis a tergo* being so necessary in leaping, as well as gallopping on soft ground), need scarcely be insisted upon; and we now proceed to the hinder-legs, the proper or improper form of which makes the difference between a good or bad hunter, if a horse with badly formed hinder-legs can be called a hunter at all. But a horse with short, straight, and weak thighs, cannot make a *good* hunter. Even admitting that they are not weak, but short and straight, yet the objection remains, because he cannot, in the latter case, be pulled together in his gallop, nor have his stride collected to enable him to take his fences properly; and, what is not generally known, he is almost certain to be a hard puller. Indeed, some good judges go so far as to assert, that horses with straight hinder legs, never have good mouths, and there is much truth in the remark, as their form will not admit of their being "pulled together," as the horseman's term is, in their quick paces, and without it no horse is safe. A long and muscular thigh, then, with a clean well-placed hock, is one of the most material points in a hunter, and also one by which the duration of his services may very nearly be measured; as when much out of the true form, either inclining inwards, like the cow, or outwards, like the bandy-legged man, disease is almost certain to attack this very complicated but beautifully contrived joint, when put to severe exertion, especially in soft ground. The shank-bone of the hinder leg, below the hock, ought to be equally well supported by sinews and tendons with that of the fore-leg; and the pastern of the hind-leg should resemble that of the fore-leg, moderately long, strong, and oblique.

But such is the paramount importance of the hock in the hunter, that we transcribe the following admirable description of one most material point in it, (from Part IX. of "The Horse," Farmer's Series, p. 272.) "The most powerful of the flexor or bending muscles are inserted into the point of the hock, or the extremity of the os calcis; and in proportion to the projection of the hock, or, in other words, the length of this bone, will two purposes be effected. The line of direction will be more advantageous, for it will be nearer to a perpendicular; and the arm of the lever to which the power is applied will be lengthened, and mechanical advantage will be gained to an almost incredible extent. Suppose this bone of the hock to be three inches in length, the joint formed by the tibia and the astragalus is evidently the centre of motion, and the weight concentrated about the middle of the shank is the obstacle to be overcome. If the weight be four times as far from the centre of motion as the power, a force equal to four times the weight would raise it. It is, however, here to be remembered, that it is not merely the weight of the leg which is to be raised, but the weight of the horse, for the time resting upon the leg, and that weight to be propelled or driven forward. At what shall we calculate this? We may fairly suppose that the muscles, whose tendons are inserted into the point of the hock, exert an energy equal to 4000 lb. Let us further suppose, that an inch is added to the point of the hock, which will be an addition of one-third to its length: a muscular power of less than 3000 lb., will now effect the same purpose. The slightest lengthening, therefore, of the point of the hock will make an exceedingly great difference in the muscular energy by which the joint is moved, and a difference that will wonderfully tell in a long day's work. On this account, the depth of the hock, or the length of the bone of which we are speaking, is a point of the greatest importance. There is, however, a limit to this. In proportion to the length of this bone, must be the space which it passes over, in order sufficiently to bend the limb; and in that proportion must be the contraction of the muscle, and consequently the length of the muscle, that it may be enabled thus to contract; and, therefore, if this bone were inordinately lengthened, there would require a depth of quarter which would amount to deformity. A hock of this advantageous length is, however, rarely or never met with, and it is received among the golden rules in judging of the horse, that this bone of the hock cannot be too long."

Hunters which carry very heavy men cannot excel in

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the field, unless they exhibit those just proportions in their limbs, and all the moving levers, necessary to produce full liberty of action, but not too long a stride. Well placed hinder legs, with wide hips, well spread gaskins, and great depth of chest, are essentials, and as much of the *vis a tergo*, as is consistent with a not unsightly back, commonly called "hog-backed." Well knit joints, short cannon bone, moderately oblique pasterns, with rather large feet, are not only points from which great physical powers may be expected, but they are necessary to the duration of them in the horse we are now alluding to. As, however, it is an axiom in the animal creation, that the parts which add to strength diminish swiftness, hunters to carry more than sixteen stones well with hounds, at the pace they now run, are always difficult to be procured, and ought to command good prices. The stamp of animal most approved of for this purpose, is the short-legged, thick, but well-bred horse, not exceeding sixteen hands in height, but appearing, to the eye, half a hand below that standard. As for his general appearance, it is "handsome is, that handsome does," in this case; and we must not look for beauty in all his points.

Having now described each individual external part of the horse essential to his being a good hunter, we shall, in a few words, exhibit him to the reader's view in what we consider his best form. He should have a light head, well put on, with a firm, but not a long neck; lengthy, and consequently oblique, shoulders, with very capacious chest, and great depth of girth; a long, muscular fore-arm, coming well out of the shoulder, the elbow parallel with the body, neither inclining inward nor outward; a short cannon or shank, with large tendons and sinews, forming a flat, not round leg; an oblique pastern, rather long than short, and an open circular foot; the back of moderate length, with well developed loins and fillets, and deep ribs, making what is termed by sportsmen a good "spur-place." From the loins to the setting on of the tail, the line should be carried on almost straight, or rounded only in a very slight degree. Thus the haunch will be most oblique, and will produce a corresponding obliquity in the thigh-bone, which formation is peculiarly characteristic of the well bred horse. The dock of the tail should be large, the buttocks close together, and the fundament small, and somewhat resembling the front or eye of the pippin apple. The thighs should be muscular and long, rather inclining inwards, with large lean hocks, the points appearing to stand somewhat behind the body, which will bring the lower part of the hind-leg, or shank, under it. The shank, fetlock, and pastern of the hinder-leg, should exactly resemble those of the fore-leg, as also should the foot. The legs should appear short, from the great depth of chest, and well-proportioned substance of the body, or middle-piece.

The stature of the horse is no more absolutely fixed than that of the human body, but a medium height is considered as best for a hunter, say fifteen hands, two or three inches. For one good horse over this height, there are a hundred under it. In fact, there are, in the operations of nature as well as of art, limits which they cannot surpass in magnitude, and it is known that no very large animal has strength in proportion to its size. That the horse has not, the pony affords proof, if any other were wanting. Even the heaviest weights find horses about the height we have fixed upon best calculated to carry them. There have been many extraordinary instances of horses, little more than fourteen hands high, being equal to the speed of hounds over the strongest counties in England, for example, Mr William Coke's "Pony," as he was called, many years celebrated in Liecestershire; but they are not pleasant to ride, by reason of the fences, when high, appearing higher to the rider than when he is mounted on a taller horse.

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Temper and mouth are essential points in a hunter. The former adds much to his value, not only as it contributes to the pleasure and safety of his rider, but a horse of a placid temper saves himself much in a long day's work with hounds, and especially when there is much leaping. Indeed, fretful horses are proverbially soft, and not generally to be depended upon at a pinch, which caused Shakspeare to make them the symbol of false friends. Thus Julius Cæsar exclaims,

> "Hollow men, like horses, not at hand,
> Make gallant show, and *promise* of their mettle;
> But when they should endure the bloody spur,
> They fall their crest, and, like deceitful jades,
> Sink in the trial."

A hunter should have courage, but nothing more, to make him what he is required to be, namely, not afraid to leap at any fence his rider thinks proper to put him at. His mouth will depend upon two things; first, upon the judgment of the person who breaks him in, in his colthood, and, secondly, upon the position of his hinder legs, but chiefly upon the first. It ought to be endowed with so great sensibility, that the slightest motion of the bit should give him warning, and direct his course, which is significantly implied by Horace, when he said, "the ear of a horse lies in his bridle." It is true, that what we call the "mouth" of a horse, is an artificial feature, at all events, a figurative term for his being easily acted upon by the bridle; but it is a point of the utmost importance in a hunter. Without it, in short, he is absolutely dangerous to ride; for although the skill and power of his rider may prevent his running away, yet he is always in danger of being placed in some unpleasant situation or other by him. In the first place, he cannot be a large fencer, nor safe at all sorts of leaps, if he will not suffer his rider to pull him together, to collect him for the effort of rising at them. Secondly, he is as dangerous in going through gates, only partly opened. Thirdly, if the horse immediately before him should fall at a leap, he is very apt to leap upon him, or his rider; and, lastly, his strength is sooner exhausted than that of a horse, perhaps not naturally so good, which is going quietly, and within himself, by his side.

No doubt many of the ancient writers were good judges of horses, although they were deficient, compared with the moderns, in availing themselves of their highest capabilities. Were a purchaser of a hunter to look no further than the first chapter of Xenophon περι ἱππικης, he would find hints that would be well worthy his attention; and nothing can be more expressive of the evils attending a bad mouth, in a horse of this description, than the following sentence from Pliny, "Equi sine frænis deformis ipse cursus, rigida cervice, et extento capite, currentium," which may be thus translated: The career of a horse without a bridle is disagreeable, carrying his neck stiff, and his nose in the air. When we consider how often it is necessary to pull up, or to turn a horse very short in crossing enclosed countries, the value, even on the score of comfort, of a good mouth cannot be too highly appreciated by the sportsman.

We now come to the action of the hunter, which, after all, is the main consideration. He should have energy in all his paces, but he may have too much of what is generally called action. Nothing conveys to us a better idea of that which is adapted to his business, than the concluding sentence of a huntsman of former days, when describing to his master a capital run with his hounds. "The old mare," said he, "*carried me like oil.*" The action of the hunter should be *smooth*, or it will not last. His stride in his gallop should be rather long than otherwise, provided he brings his hinder legs well under his body; and the movement of the fore-legs should be round, but by no means high. Above all things, there should be no "*dwel-*

ling," as it is called, in the limb coming to the ground; a great obstacle to speed, but often the accompaniment of excessive action in the fore-legs. But the test of action in the hunter, is in what sportsmen call "dirt," that is, in soft, tender ground, or when passing over such as appears dry on the surface, but is not sufficiently so to bear his weight. It is not exactly in the power of the best judges to determine whence this peculiar excellence, which some horses possess over others apparently well-proportioned, arises, for which reason the eye should never be depended upon in the selection of horses for the field. Wisdom here can only be the produce of experience; and many sportsmen have paid dear for it on this particular point. In fact, nothing next to ascending steep hills under great weight, puts the physical powers of a horse to so severe a test as carrying a heavy man, at a quick rate, over a country that sinks under him at every step. Mere strength alone will not do it. It must be the result of a combination of strength with agility, good wind, and speed, to produce which, the most perfect arrangement of the acting parts, although the exact symmetry and proportion of them may not be exactly discernible to the eye, are requisite, and, we may be assured, are present. As the beauty of all forms is, in great part, subordinate to their utility, a horse of this description, that is, one which can carry sixteen stones well up to hounds in any or in all countries, at the rate they now run, not only, as has before been observed, commands a very high price, but, to a person who loves to study nature, presents a feast to the eye.

A hunter should be what is called very quick as well as very fast; by which is implied, that he should not only have great speed, but that he should be very quick in regaining his speed after taking his leap, or being pulled up from any other cause. One so gifted will cross a country, especially a close one, in less time than one that is more speedy, but not so "quick on his legs," as Jockies term it. It is also very agreeable that a hunter should be safe in his slow paces on the road; and, if a fast trotter, he relieves himself by changing the action of the muscles, when the pace of hounds so far abates as to allow him to break into a trot.

Leaping.

One of the greatest accomplishments in a hunter is being a perfect and safe leaper. The situation of a sportsman riding a horse that is "uncertain," as the term is, at his fences, may be compared with that of the philosopher which Cicero describes in his Tusculan Questions, (5. c. 21), as seated on the throne of Dionysius, gazing upon the wealth and splendour that surrounded him, with a naked sword suspended over his head by a single thread. But a horse following hounds often leaps under very great disadvantages, which accounts for the numerous falls sportsmen get. Putting aside the labour of rising from the ground, which, to the horse, with a weight on his back, must be great, from the earth's attraction and the body's gravity, he has often to take his spring without any fixed point for support; whereas, in most other cases, leaping takes place on a fixed surface, which possesses the power of resistance in consequence of its firmness. Nevertheless, although the surface yield to a certain degree, leaping can still be performed, notwithstanding the retrograde motion of the surface produces a great diminution in the velocity of the leap, compared with that which is made from firm ground; and the velocity is always greater in proportion as the resistance is perfect. Thus it is, that we find horses able to cover much greater obstacles in Leicestershire, and the other grass countries, where the taking off for the leap is generally good and sound, than they can cover in ploughed and marshy districts, where they have not that advantage, from the less firm state of the soil. We shall now endeavour to point out the form most likely to constitute a good leaper.

The very worm that crawls on the ground first carries its contraction from the hinder parts, in order to throw its fore parts forward; and it is chiefly from the *vis a tergo*, or strength of back, and hinder quarters, that the power of leaping in a horse is derived. It must, however, be admitted that oblique shoulders give him a great advantage, by enabling him to extend his fore quarters; but if his loins be loose and weak, and his hinder legs ill placed, with weak hocks, he cannot make, in any one's hands, a safe and perfect leaper. But the position of his head has something to do with it. A plank placed in equilibrio cannot rise at one end unless it sinks at the other; and although a horse in light harness cannot, for appearance' sake, carry his head too high, provided he be obedient to the rein, the hunter should carry his low. A colt, running wild, never raises his head when he leaps, but rather lowers it, and so should the hunter; and he is always less liable to fall in gallopping over a country when he carries his head low; likewise, in horses with lengthy shoulders, the seat of the rider is rather benefited than injured by it.

The sort of fence that stops hunters more than any other description of obstacle, is a wide brook; and, like all other wide places, it takes a good deal out of him, if he clears it. Lengthy horses are the best brook jumpers; but they require good loins and hinder quarters as well, and, above all things, *courage*. Unless a horse takes a wide brook in his stroke, he is almost sure to be in it; for which reason he is generally ridden fast at it, and, for the most part, not allowed to see it till he comes close to it. Immense space has been covered by horses when jumping brooks, particularly when there has been a difference of elevation of the banks in favour of the horse. We have heard of thirty feet and upwards from hind foot to hind foot; but half that space *in water* is considered a good brook, and even if the banks are sound, stops a great part of the field. When unsound, it requires a horse, coming under the denomination of a "good brook-jumper," to clear it without a fall, and particularly, if towards the end of a run.

To be a good timber leaper is a great desideratum in a hunter, although many horses are great timber leapers, but, from their form, can never make good hunters. It only requires a short backed, truss-horse for this purpose; and he can dispense with the general length so necessary to the complete hunter. Good and well-formed thighs, however, are necessary. For those hunting countries, such as Cheshire, where the hedge is generally placed on a bank or "cop," as it is there styled, rather a short but very active horse performs best. But he must be very good in his hinder legs, and very quick in the use of them. Wall jumpers come within the same class with timber jumpers as to make and shape.

There is one faculty in which the horse is wanting, that would, if he possessed it, give him a great advantage in leaping. In the human species, the power and influence of feeling are inherent, in a great degree, to the very tips of the fingers; but the horse has no proper organ of feeling or touch. When a man takes his spring for a leap, or leaps on the top of any substance, he has a distinct and certain sense or knowledge of the nature of the ground from which he has sprung, and of the substance on which he has alighted; but, from the insensible nature of the horse's hoof, such feeling is, in a great measure, denied to him, and indispensably so too. Still, however, there are a few instances upon record of horses going very well over a country even after having undergone the operation of neurotomy, by which all sensibility, from the fetlock downwards, has been destroyed.

Looking at the pace of hounds, and the manner of riding after them, which have so materially changed within the last half century, it is insisted upon by some that the hunter of the present day ought to be of full blood. Reasoning from analogy indeed, between the powers and capabilities of one and another, we are decidedly in favour of that breed which has the greatest share of strength within the smallest compass, and such is decidedly the character of the thorough-bred horse. Independently of this, the thorough-bred horse, when perfect, and with substance, is peculiarly fitted for what a hunter is called upon to perform; and those persons who assert to the contrary, can only do so in ignorance of the nature of his constituent parts. He has more depth and declivity in the shoulders than the lower bred horse has, and is consequently clearer in his wind. By these means, he can better extend and elevate his fore feet in going over rough ground, and at his leaps; and, by the curve or circular figure he makes with his hinder legs, he stands more secure on all kinds of ground, and, above all things, he bears being pressed better than any other description of horse; for, although blown, he soon recovers his wind. Having said this, it may scarcely be necessary to add, that several of our first-rate sportsmen of the present day will not ride any thing that is not of full blood; and such description of horse, when perfect in his work, as well as in his form, commands the highest price.

Nevertheless, the *necessity* for the thorough-bred horse in the field is belied, by the experience of all unprejudiced sportsmen, and even in Leicestershire, where the best studs are to be found, not a twentieth part of the hunters are of that description. But this perhaps arises from three causes. First, there is a difficulty in procuring full-bred horses to carry even moderate weights, and speed is but a second attribute to a hunter. He must have sundry other qualifications, and the most prevailing objections to the thorough-bred horse are generally these: He is apt to be deficient in substance to carry high weights over rough and deep countries, without trespassing too much on the virtue of his high descent. Secondly, he is inclined, and especially if he have been trained, to be shy of facing rough and thorny fences, by reason of the delicate nature of his skin, rendered so by repeated sweats in clothes, when in training. It often happens, indeed, that even the cheering influence of hounds, which has so much effect on other horses, will not induce him to take them. In fact, which may appear extraordinary, he does not appear to have in the field the courage of the half-bred horse. Lastly, his feet are apt to be small, in which case he sinks deeper in soft ground than does the lower-bred horse, whose feet are larger and wider, and thus suffers more than the latter does, in crossing a deep country. As for his powers of endurance under equal sufferings, they doubtless would exceed those of the cocktail, and being, by his nature what is termed a "better doer" in the stable, he is sooner at his work again than the other. Indeed, there is scarcely a limit to the work of full-bred hunters of good frame and constitution and temper.

A sportsman, partial to thorough-bred hunters, should either breed them, or purchase them, not exceeding two years old. If he breeds them, he should select large and bony mares, putting them to horses who have hunting action, such as Tramp had, and several more we could name; and, if he buy them, it will be his fault if he do not buy those of the right stamp. From their never having been trained, but ridden over rough ground in their colthood, they would have freer and higher action, and, when castrated at a proper age, would very rarely fail making first-rate hunters. But it may be asked, why subject them to the enervating operation of castration, which, as Perceval says, stamps their form and character with the seal of imbecility and pusillanimousness? Our answer here is, that we would not do it, if experience did not shew that by far the greater number of entire horses, used as hunters, are either dangerous in a crowd, and when pressed upon in gateways; or given to refuse their fences, when they feel themselves somewhat distressed; and, if once well tired, are not to be depended upon afterwards. When free from these defects, they are doubtless superior to either geldings or mares.

Purchase of a Hunter.

Although it may not be necessary that a person should be perfectly acquainted with the mechanical structure of the horse's frame, according to the laws of nature, to render him a good judge of a hunter, yet, fortunately for such as have them to sell, vast numbers of persons purchase hunters from very slight experience of them, regardless of the proverb of, "he hath a good judgment who doth not rely on his own." There is also another proverb, prevalent, we believe, in Spain, which well applies here:—"He that would buy a mule without a fault must not buy one at all;" and, although faultless hunters may be as rare as faultless riders of them, we will offer a few hints to a person in the act of purchasing one, addressing him in the colloquial style.

First, bear in mind the country you are about to hunt in, whether flat, hilly, firm, soft, open, or enclosed, and refer to the remarks we have made on the sort of horse we have adapted to each; only be assured that in an open country, especially if a hilly one, nothing has a chance with a thorough-bred horse, in good form, and not over-weighted. Secondly, consider well your weight, and be sure to have at least a stone to spare. A light man on a light horse throws away all the advantage of being light, and can go no faster, or leap larger fences, than a heavy man on a strong horse, *for strength will be served.* Until you try him, it is hard to say what horse will make a hunter, but the following indices may induce you to try him: If he appear well-bred, with a loose, bright skin, which may be called his complexion; observe that his hair does not stand hollow from the skin, particularly about the poll of his neck. If you find him standing over a good deal of ground, it is a sure sign that he has got length where it ought to be; not in the back, but from the obliquity of his shoulders, and the arm being set on at the extreme point of his shoulder, which so much contributes to the act of extension of the fore parts in gallopping, leaping, and clearing grips. Next examine minutely his thighs and hocks, being especially careful to observe the position of the point of the hock bone. Above all things, avoid a short, or an overtopped horse. The former will never carry you to your satisfaction, however good he may be in his nature; and the latter, from being too heavy for his legs, will seldom last many years. As for the minor points, common observation alone is wanting. Have his head placed in such a situation as will enable you to satisfy yourself that he has perfectly organized eyes, free from incipient cataract, sometimes rather difficult to be detected; and as for his age, there are but two ways of satisfying yourself on that point. By his teeth till about eight years old; afterwards by the state of his legs, which are, in fact, the best test of his value, the best proof of what he has done, and the sure source of speculation as to what he may hereafter be expected to do. Observe, also, his joints, that no material injury has been done to them by blow, &c., and that they are strong.

But the purchaser of a hunter must not trust to his eye. Neither must he be satisfied with him, how well soever he may gallop with him upon *sound* land. It is the peculiar excellence of "going well through dirt" that renders a horse valuable for all our best hunting countries; and no man can assure himself that a horse has this peculiar excellence, until he puts him to the test. The best method of doing it is this: The rider should put him along at a

Hackney.

good pace, with a slack rein, upon sound ground, letting him find himself all at once upon that which is soft and holding. If, on quitting the former, he cringes more than might be expected under the weight, and shortens his stroke much, he must not purchase him for a hunter. He may go well over a light, down country, but he will never distinguish himself over a heavy one, as he will be going in distress, when other horses are going comparatively at their ease. Horses possess gradations of excellence in this natural qualification, or gift, more than in any other, but in it consists the *summum bonum* in a hunter; inasmuch as, whatever may be his other good qualities, they are all useless, when the acting parts are, from this cause, deep ground, easily over-fatigued. With regard to his wind, he must not judge hastily of that, in a horse not in work. Should he not perceive any thing like whistling in his respiration, when he puts him along at a quick pace, and his chest is capacious and deep, and his head well set on, he is not to reject him, in case he appears blown by a short gallop. Condition and work will rectify that; but many a good hunter has been rejected on this account, by persons not taking into consideration the state of his bodily condition, in a trial of this nature.

The price of the hunter varies with the times, and, no doubt, is as much regulated by the price of wheat as the quartern loaf is. During the war prices, the sum of a thousand guineas was occasionally given, and that of five hundred guineas frequently. Half the last-mentioned sum now commands a first-rate hunter. But first-rate horses, in all ages of the world, have ever produced extravagant prices. It is recorded of Alexander the Great, that he gave four Roman talents for Bucephalus, which approaches near to the Melton Mowbray prices, and those, we may safely conclude, stand at the head of the list.

THE HACKNEY.

Under this term are comprised the following: The Cover Hack, the Park Hack, the Lady's Horse, the Roadster, the Cob, the Galloway, and the Pony.

The difficulty of procuring really good hacks is admitted by all persons who have kept them for the various purposes of either business or pleasure, and for the following obvious reasons. First, very few people try to breed hackneys, therefore, although we require them to be nearly perfect in shape and action (and perfect they should be to be "really good hacks"), they may be said to be failures in the breeding stud after all. Secondly, by reason of their appearing to be failures in their colthood, they are not forced into good shape, as more promising young horses are, by high keep and care. Lastly, If a man has a really good hack, he is unwilling to dispose of it at the price generally given for such animals. But a question arises, What is a good hack? It cannot be answered but with reference to another question, namely, What description of person is he to carry? The horse that a sober citizen of London or Edinburgh would call a perfect hackney to carry him to his country seat, would not be worth five shillings to a Newmarket or a country jockey, or as a cover hack to a Leicestershire or Warwickshire sportsman. We will commence, then, with the cover hack, and describe the others in their turns.

The Cover Hack of the present day is very difficult to be procured, because he must unite, with the good qualities of the roadster, the requisites and accomplishments of the hunter. In fact, he must be a hunter in miniature; and, after all, the form of the hunter is the best calculated for a roadster. He must be fast in all his paces, able to gallop well on deep or soft ground, and equal to carrying his rider over moderately-sized fences; and if taught to leap timber, standing, his value is proportionally increased. But, above all things, he must go from twelve to fifteen miles in the hour, when wanted, without showing any symptoms of distress; and he is too often unnecessarily called upon to perform much more than this, by his owner delaying the period of his leaving home in the morning, for the purpose of meeting hounds. It may also be observed, that it is not every sportsman who keeps two cover hacks, although he may keep six or eight hunters; and it often happens that the cover hack does more work than any horse in the stable, although in justice it should be stated, that the same care in the stable is now taken of him as of the best hunter in it.

Unless to carry a great weight, the cover hack should be all but thorough-bred, if he cannot be procured of quite full blood; with excellent legs and feet, lengthy and elevated shoulders, and with a susceptibility of mouth that will not only enable his rider to keep him well on his haunches, to guard against danger when going fast on all sorts of roads, but as tending to lessen the fatigue of riding him; and the strength of his rider should be reserved for his day's diversion after hounds. The chief pace of a cover hack should be the canter, and his temper should not be overlooked, for if fractious, and a puller, he will add much to the fatigue of a severe day's sport. A horse of this description, nearly fifteen hands high, young and sound, will command from sixty to a hundred pounds. The other points essential to a good road hackney, which will be noticed hereafter, apply equally to the cover hack.

The Park Hack of the present day is the race-horse in miniature. To be quite *à la mode*, he should be thorough-bred, with a very neat head, beautifully set on, and a switch tail; and so well bitted as to be ridden with a slack rein. He should have much liberty in his walk, which, and the canter, should be his chief paces. He must have great obliquity of shoulder, with a corresponding true formation of hinder quarters, and above all, the well-bent hinder legs; in which case, if the position of his fore-legs enable him to put his feet down properly, which will be explained in describing the general action of the hackney, he will be, if good tempered, and not given to fret, the perfect park hack.

The Lady's Horse is, after all, the most difficult to obtain, because he ought to approach very near to perfection. His paces, mouth, and temper, should each be proportioned to the power and capability of his rider; and he should be proof against alarm from either noises or sights, which otherwise might cause him to run away. This description of horse should likewise be well bred, as in that case his action will be easier, and his appearance and carriage more in character with the generally elegant appearance of his rider. His pace should be the canter; the trot causes an ungraceful movement in the person of a woman, to enable her to rise to it; and if she do not rise to it, she is much shaken in her seat. Neither is the form of the side-saddle fitted for the trot; and the canter of a well-bitted horse is more safe, because his haunches are more under him in that pace than they can be in the trot. A good, bold, walk, however, with the head in proper place, is essential to a horse that has to a carry a woman; and his action should be very true, that is, he should not "dish," or throw his legs outward, as the term is, in any of his paces, or he will cover the lower garments of his rider with mud when the roads are wet and dirty. To provide against the latter inconvenience, however, all horses intended for this purpose, should not be much under fifteen hands and a half in height, which size corresponds with the lengthened drapery of a lady's riding costume. As a preventive against accidents, ladies' horses, however well broken and bitted, should not be too highly fed; and, if at all above themselves, should be ridden by a careful servant, with good use of his hands, before ladies mount them. It is, however, an acknowledged fact, that horses go more quietly under women than they do under men, which is accounted for by the lightness of their hand, and the backward position of the body, in the saddle. We have, in fact, known several instances of horses being very hard pullers with men, standing up in their stirrups, and, consequently, inclining their bodies forward, but going perfectly temperate and at their ease under women.

The power and parts conducive to action in the roadster, or hackney, are derived much from the same shape and make as we have shewn to be best fitted for the hunter; but it is desirable that he should be more up in his forehand than the hunter is required to be, as such form gives confidence to the rider. *The most dangerous* form he can exhibit, if we may be allowed such a term, is, with his fore-legs standing too much behind the points of his shoulders, *and those points loaded.* Even with the best-formed hinder legs, the centre of gravity being thrown so far forward beyond the pillars of support, is, in this case, with great difficulty preserved on the horse making a stumble; but with straight hinder legs, a horse so formed in his forequarters is only fit for harness, where he can recover himself by the assistance of his collar, having no weight on his back. Provided a hackney do not cut his legs, by striking one against the other, which is oftener caused by imperfection in the upper than the lower extremity of the legs, he is not to be rejected because he may turn out his toes a little, some of the very best, fastest, and safest road-horses being so formed. Cutting the hinder legs is a worse failing than cutting the fore ones, as it is a certain sign of weakness; and although we may be told that shoeing will prevent it, we bring to our recollection the old adage, that "a goose always goes like a goose." What is called the "speedy cut" with the fore-legs, arises from excess of action, and is a great objection, by reason of the wound given to the leg, which is struck just under the knee. Many good hunters, especially when ridden in hilly countries, such as parts of Surrey, where they traverse the hills on loose and stony ground, are subject to this failing, which is remedied by a boot; and, after all, the danger attributed to speedy cut, in throwing horses down, is much overrated.

The size for a road hackney must be regulated by the size of the person to ride him; but, generally speaking, from fourteen hands to fourteen hands and a half, is the proper height. His strength must also be thus calculated, for a light man does not ride pleasantly on a horse equal to double his weight. But a road hackney should have strength of shoulder, with a round barrel, but not a large carcass, which only wears out his legs. His constitution and feeding can only be proved upon trial; but there are certain indices, such as deep ribs, hardy colour, brown muzzle, &c. which very rarely deceive us. As to the necessity of well-placed hinder legs, it is most clearly shewn by the answer given to the following question: If a horse make a serious blunder forward, and the centre of gravity of his body fall beyond the pillars of support, and is for a moment lost, what restores the equilibrium? Is it merely the chuck under the chin to an animal of his bulk and weight, and that "chuck" given perhaps by the weak, powerless wrist of a feeble old man, or delicate young lady? No: the main effect of the bit, or curb, in this case is, first, warning the horse of his danger; and, next, by the momentary raising of his head, he is better able to bring a hinder leg *instantly* to his assistance, by advancing it under his body, and thus restoring the equilibrium. In the walk, in fact, the horse actually begins to move by advancing the hinder-leg under the body, before the fore-leg quits the ground; and if he did not do so, there would be no equal support for the body, during the suspension of the fore-leg in the air; nor could the body be moved forwards, until the hinder leg had, by quitting its station, taken a new point of support. Seeing then, that in the walk, as in all other paces, the centre of gravity in the horse is maintained, as well as the body propelled, by the action of the hinder legs, the greatest attention should be paid to the position and action of them in the hackney, as the best safeguard against his falling. We should observe, then, when he is exhibited to our view, that, in his walk, the hinder foot oversteps the fore foot, at least a shoe's length, which a horse with straight, ill-formed hinder legs cannot do; and if such action be accompanied by generally good hind quarters, it is a great indication of safety, as far as one-half of the body of the horse is concerned. But as the false step is made, not with the hinder, but the fore leg, the chief safeguard against falling is to be found elsewhere, namely, first, in the length of the shoulder, which throws the centre of gravity further back than a short one; and, secondly, proceeding also from the free use of the shoulder, in the act of setting the fore-foot down on the ground. It is a general but very mistaken notion, that the safety of a roadster depends upon his lifting his fore-feet high from the ground, when he is said to "go well above his ground;" whereas it all depends on the manner in which he places them down upon it. Not only are the highest goers often the most unsafe to ride, for, when they do fall, they fall with a violence proportioned to the height of their action; but, although we do not advocate such extremes, there are thousands of instances of horses going *very near* to the ground, and never making a trip. It is, however, a well established fact, that if the form of a horse's shoulder, and the position of the fore-leg, enable him to put his foot to the ground *flat*, with the heel well down, his lifting up his foot high is not at all necessary; whereas, on the other hand, if, by an improper position of the leg, issuing out of a short, upright, ill-formed shoulder, the toe touches the ground first, and, as it were, digs into it; no matter how high such a horse may lift up his leg, in any of his paces, he will always be dangerous to ride. And this will be clearly shewn, if we consider the position of the fore-leg, when off the ground, or in action. It is bent in the form of a *C*, and the foot suspended in the air, turning inwards, with a curve towards the body. When in this state, were the foot to come in contact with a stone, or any other substance, it would pass over it without resistance, the limb being at that time in a flaccid state; but when it approaches the ground, the limb being extended, and having the whole weight of the fore-quarters about to be thrown upon it, if it strike against a stone, or any hard substance, then the case is greatly altered, and a stumble is the inevitable consequence. The base now requires to be firm and even, which it can only be by the foot being placed flat upon the ground. Man, in fact, walks very near the ground, but his toe rarely strikes it. If it did so frequently, he would soon become a cripple, putting falling out of the question. His action proceeds from his hips; that of the horse, as regards the fore-legs, from his shoulders; but the principle is the same with each; each is a piece of curiously-wrought mechanism, and according to the correctness of that mechanism is their action true. A wrong notion, however, prevails here, which may lead the purchaser of a hackney astray. It has been asserted by various writers, that, if the shoe of a roadster be found worn at the toe, it is a sure sign of his possessing the dangerous action to which we have alluded. This is false; many horses wear at the toe, solely by the act of picking up the foot, and quite independently of placing it down. That many hackneys, however, fall from their shoes being neglected and suffered to wear too much at the toes, we are well aware, as well as from their pressing upon the heels and quarters, from the want of being removed in proper time. When a horse is given to wear at the toe, the wearing part should be steeled.

The best method of ascertaining the manner of putting down the foot, on which we have shewn the safety of a hackney depends, is, to ride a horse with a slack rein, on a footpath, on which there are trifling undulations, scarcely perceptible, but sufficient for our purpose. If he walk smoothly over such ground, and do not strike it with his toe, we may be sure he puts his foot properly down, and will not, from that cause, be a tumble-down. But there are various ways in which horses fall on the road; bad shoeing, as we have already said, being one of them, and bad condition another. What is called a false step, very different from a stumble, may occur to any horse, and is occasioned by his accidentally putting his foot on a loose stone, that rolls away from under it, when, of course, his footing is lost. In this case, his chance of recovering himself is in his shoulders being oblique and lengthy (for upright shoulders are always short) and well placed hinder legs. Thrushes and corns are likewise the cause of stumbling; as likewise is starting, one of the worst failings a hackney can have. In some horses it is a nervous affection, rather difficult to account for in animals of such strength of frame; and often arises from imperfectly formed eyes, such as flatness of the cornea, or outward surface of the eye, generally a small one, causing short-sightedness. In the latter case, this fault in a hackney may be guarded against, by employing a veterinary surgeon to inspect him previous to purchase.

The old adage of "No foot, no horse," applies particularly to the road-horse. The hunter can cross a country upon feet that are very far from good; and by the help of bar-shoes, the coach-horse, with no weight on his back, and with the support the harness gives him, gets pretty comfortably over his stage on unsound feet; but the road-horse must have sound feet. Previously to the use of horse-shoes, the value of a solid hoof was so great as to have been made the image by which the Prophet Isaiah set forth the strength and excellence of the Babylonish cavalry, "whose hoofs," says he, "shall be counted as flints." Both Homer and Virgil mention it as an indispensable requisite in a good horse, the latter making it to resound as it strikes the ground,

> " ——— et solido graviter sonat ungula cornu."

We are not going here to enter on a long discussion upon the foot, but only to observe, that the wide hoof and expanded heel of the hunter is not so essential to the road-horse as many persons suppose. Indeed the hoof that has been found to stand *severe* road-work best, is one rather high at the heel, and not very wide, provided the pastern above do not approach too near the perpendicular; forming what is called "an upright pastern," which, by the jar the foot receives from it, when it comes to the ground, is nearly certain to produce disease. The strong foot, however, of which we are speaking, is one that requires care, by being frequently drawn out with the knife, to prevent its becoming too strong; and by giving moderate pressure to the frogs, to prevent the heels getting nearer together than we find them, and they already approximate to contraction in a foot of this description. The just form of the hoof in front, upon which mainly depends its form behind, is said by Clarke to be at an elevation from the ground of thirty-three degrees,[1] and we are inclined to think, that a much greater elevation than this would approach too near the perpendicular, for any kind of foot. As the inner heel or quarter has more weight thrown upon it than the outer, it is the principal seat of corns and sandcracks, for which reason great care should be taken that an even bearing to the whole of the crust be given by the smith to the foot of the hackney, previously to his setting on the shoe, the inner heel being given to wear away more than the outer on that account.

In the action of the hackney consists his chief merit. It should be smooth, and with not too long a step, or stride, or he will tire. He should also go straight on his legs, as the term is; for although horses that dish their legs may be, and commonly are, safe goers, yet they are disagreeable to ride in wet roads, as they cover the rider with mud. As we have already observed, the action of a hackney should not be high, as that tends to fatigue the rider and destroy himself; and if he puts his foot well down on the ground, he will never fall by reason of his action being low, and he will last the longer for its being low.

The paces of the hackney are in a great measure dependent on the will of his owner. The walk and the canter are most essential to what may be called the pleasure hackney; but for general purposes, the trot is the most useful and available pace in a roadster, and one in which he will continue longer, according to the rate he is going at, than in the canter. There are instances, however, and here is perfection in a hackney, of horses with very oblique shoulders, and excellent hinder legs, being able to carry their riders in a canter, over every variation of road, down-hill, as well as uphill, without offering to break into a trot, for a great distance of ground; and, although not *appearing* to go more than at the rate of nine miles in the hour, are really going twelve. This is the result of the perfection of the points to which we have alluded, and can never be looked for in horses of a contrary make, whose shoulders are short and stiff, and their hinder legs straight. Above all things, what is called "fighting action" in a hackney should be avoided; neither ought the fore leg to be thrown out with a dart, as it is always attended with a dwelling, or temporary suspension of the foot, previously to its reaching the ground.

Most horses have some peculiarities about them, if not absolute "tricks," as vicious practices in horses are designated. Starting has already been noticed; but plunging is still more dangerous, as in that case, a horse seldom stops until he have unseated his rider, at least made many attempts to do so, or thrown himself upon the ground. This latter trick often proceeds, not from sheer vice, but from a sense of pain in the horse, from being too tightly girthed; or from the, to him, very unpleasant sensation of a cold saddle, with a weight upon it, being pressed to his back; and having once taken a dislike to it, he is very apt to continue it. Against each of these evils, it is in our power to provide. Against the first, by not girthing the horse tightly, for the doing of which there is no good reason; and against the second, by having the saddle put on an hour before the horse is wanted, in which time it will become warm, and not disagreeable to the skin of his back, which, in some horses, we know to be extremely susceptible. It is upon this principle that the collars are left day and night upon such road coach-horses as are given to "jib" at starting, the consequence of tender shoulders. But there is one failing to which hackneys are subject, not proceeding from vice, but still attended with danger, as it is often the cause of their falling; and we will endeavour to exhibit this failing. We need scarcely insist upon a good mouth, with neck and head in good place, in the best description of road-horse; nevertheless, if he will not suffer his rider to avail himself of those advantages, they are useless to him. Such, however, is the case when a hackney, as he is going along in his fast paces, throws his head backwards, which he has always the power to do, his rider being unable to prevent him. Twofold danger attends this fault. First, when in the act of doing it, he sees not where he places his feet;

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[1] White says forty-five.

secondly, his rider loses his mouth for the moment, and in that moment he may fall. Independently of this, it gives the rider the idea that the horse is becoming fatigued, and doubtless it is an indication to that effect. Our idea, then, of a *perfect* hackney to carry a gentleman, is this: A well-bred, short-legged, lengthy horse, with *very good legs and feet*, not under fourteen nor above fifteen hands high, that will walk four miles in the hour, trot eleven or twelve, and, if wanted, will go fifteen in that time in a canter or hand-gallop, *without once throwing up his head*, or requiring to be pulled up. We are, of course, supposing him to be in good condition, and in strong work, or it would not be fair to exact so much from him. But it is only in cases of necessity that any horse should be made to perform the latter task; for we are averse to trespassing unnecessarily upon the powers and capabilities of so noble an animal. On the contrary, we recommend every indulgence that can be granted to him on a journey, and especially in hot weather. At all times, indeed, it is our interest to do so; but, in very hot weather, a few sips of soft water, often given, keep off fever, and replenish the loss he sustains by exhaustion from excessive perspiration.

One word more respecting action. We are no advocates for *very fast trotting*. It forces the animal to the very extent of his powers, which, of course, wears him out; it induces his owner either to be constantly displaying these powers in private, or matching him against time in public. Add to this, fast trotting is not a gentlemanlike pace; that is, it has not a gentlemanlike appearance, neither is it agreeable to the rider. This is apparent at first sight, when we follow two horsemen on a road, one on a fast trotter, and the other on a good canterer; although going at the same rate, the cantering horse and his rider are both much more at their ease. With the ancient Romans, indeed, a trotting horse was called a tormentor. Nevertheless, we admit that fast trotting is a proof of action, in excess, but of a peculiar nature, and is, perhaps more than any other, transmitted from sire to son, as the produce of the various Norfolk and American trotters have shewn. The amble is a pace very little known in England, although very general on the Continent, where the act of rising in the stirrups by the horseman, in the trot, is not practised. We wonder, however, that horses are not oftener broken to this pace than they are, for the use of women, or of men unequal to fatigue. Although the amble is not allowed to be a pace in the manège, the walk, trot, and gallop being all, it is said to be the first pace of the horse when a foal, but when he has strength to trot, he quits it. Another peculiarity attends it. A horse, we know, can be put from a trot to a gallop without stopping, but he cannot be forced from an amble to a gallop without a halt.

The Pack-Horse. This description of horse is not now in use. His capabilities were prodigious in carrying weight, but were abused by being trespassed upon. When crossed with the heavy cart-horse, a most useful breed for draught was produced, as also what was called the farmer's hackney, that is, a sturdy animal between the cart-horse and the hackney, useful for all purposes of agriculture, as well as for carrying his owner, and always ready to give help, upon a pinch, either in the plough, the harrow, or the harvest-cart.

The Cob. The word cob is one of new mintage in the sporting world, signifying a powerful, short-legged horse, about fourteen hands high, without any pretensions to blood, but able to carry a great weight, at a certain pace, on the road. He is generally the produce of a light, active cart-mare, and either a thorough-bred or half-bred stallion; and, failing to grow in height, often increases in lateral growth to substance equal to that of the old pack, or miller's horse, of former days. When gifted with action, combined with good shape and appearance, this description of horse is much sought after in London, as also in the country, and often sells for a hundred pounds, to carry heavy elderly gentlemen. The attempt to breed him, however, is a hazardous one, as in case of fault in his action for the saddle, he is not suitable to the coach-horse market, the present rate of travelling requiring more lofty as well as higher bred cattle.

The term *Galloway* now applies to any horse not exceeding fourteen hands in height, although it originated with a breed peculiar to a province of Scotland known by that name. In the early days of English racing, there were several capital thorough-bred galloways in training, at the head of which was the Bald Galloway, sire of Cartouch, and also of the Carlisle Gelding, who, as the Stud-Book informs us, "was remarkable for having supported the fatigue of running as a trial horse in private, and with success in public, till the age of eighteen, at which period, after winning a heat at Sawtry, in Huntingdonshire (1731), he broke his leg, and died." The celebrated Mixbury Galloway, of the middle of last century, was only thirteen hands two inches in height.

Previously to the improved system of coaching, and the cheapness and expedition of that mode of travelling, the well-bred galloway was the favourite hackney of jockies, graziers, horse dealers, and cattle jobbers, and in fact of all light weights who had occasion to travel long distances on the road, in a short space of time; and no description of horse is better adapted to the purpose. Some years since, there was a little entire horse in Devonshire, called Katterfelto, the sire of many most extraordinary galloways, to whose labours on the road, indeed, there appeared scarcely to be any limit.

The Pony. A horse is called a pony when under the height of thirteen hands, four inches to the hand. It is difficult to account for this diminutive breed, unless we believe it to have been imported from countries farther north than Great Britain, which appears probable from the fact of ponies being found in greater abundance in Scotland and Wales than in any other part of the island; the effect, no doubt, of climate. In Ireland they are very rare.

There is no animal that improves in form and character so much as the pony does from the effect of good grooming and high keep. A real Welsh mountain pony, in very good condition, especially if not castrated, is a perfect war-horse in miniature, uniting almost every good property his species possesses. As a proof of one essential quality, we can state upon authority, that the Earl of Oxford had a mare pony, got by the Clive Arabian, her dam by the same horse, out of a Welsh mare pony, which could beat any of his racers four miles at a feather weight. Whether Welsh, Scotch, or Hampshire (New Forest), ponies have properties belonging to them, which should attract the notice of the hippopathologist, among the most prominent of which are the following: They are never lame in the feet, or become roarers. A broken winded pony is a very rare sight, and they live to the extreme of old age, if not unfairly treated. They are also very little susceptible of disease, in comparison with other horses; and as for their powers of endurance, they stagger belief. A rare instance of the latter excellence may be produced, from the well-known fact of the pony, Sir Teddy, only twelve hands high, accompanying the royal mail from London to Exeter, and arriving in that city fifty-nine minutes before it, distance 172 miles, in twenty-three hours and twenty minutes. It may scarcely be necessary to state that he carried no weight, being led between two horses all the way; nevertheless it was a task that we think no full-grown horse would have performed. A correct likeness of this pony was painted by the elder Marshall, of Newmarket. In 1784, a Shetland pony, eleven hands and a half high, carried a rider weighing five stones from Norwich to Yarmouth, and back, forty-four miles, in three hours and forty-five minutes. As a proof, also, of their powers in crossing a country, the fact may be stated of the late Sir Charles Turner riding a pony ten miles in forty-seven minutes, and taking thirty leaps in his course, for a wager of 1000 guineas with the late Duke of Queensberry, then Earl March. During the drawing of the Irish lottery, the expresses from Holyhead to London were chiefly conveyed by ponies, at the rate of nearly twenty miles in the hour.

The only bad use to which the pony is applied, is in what is called the "pony chaise," or phaeton. The carriage itself is dangerous, by reason of its extreme lightness and shortness, by which it is so easily overturned; and the lowness of the driver's seat prevents proper command over the animal drawing it. It is too often the case, also, that "the pony" is a pet, and for that reason pampered in the stable, and not much worked. On the least alarm, then, such as any unusual noise, horses gallopping past him, or, as there have been too many fatal instances, some part of the fore-carriage touching his hocks in descending a hill, away he goes, gallopping and kicking until he has rid himself of his load. The safest way of using ponies in harness, is in pairs, in double harness, with the pole of the carriage raised a little at the futchels, to prevent their kicking over it in their play.

THE CHARGER.

No kind of horse, no animal, indeed, of any sort, makes so prominent a figure in history, sacred or profane, as "the goodly horse of the battle," or war-horse. The description of him by Job is admitted to exceed the powers of human eloquence; "and," as M. Rollin says of it, "every word would bear an explication to display its merits." The *Guardian* (No. 86) has a very ingenious critique upon it; and Bochart devotes seventeen pages to this, and all the other passages in Scripture in which the horse is mentioned. Virgil's representation of him, in his third Georgic, is considered as the nearest approach to that of the sacred writer; and the speech, in the tenth Æneid, of the hero Mezentius to his favourite charger, when on the point of sallying forth to avenge the death of his son, is not exceeded, in the pathetic, by any other passage in the poem. Homer is blamed for his too frequent allusions to the horse; but the history of all wars produces materials for panegyrics on this noble animal. The far-famed Bucephalus is said to have preserved the life of Alexander, by carrying him out of reach of the enemy, although he had received his mortal wound, and dropped down dead immediately on his (Alexander's) alighting from his back. In the battle which was to decide the fate of Persia, on the ground upon which the great Nineveh once stood, the merit of the victory was chiefly ascribed, by the Byzantine historians, not to the military conduct, but to the personal valour of their favourite hero, in which his horse bore his share. "On this memorable day," says the eloquent Gibbon, "Heraclius, on his horse Phallas, surpassed the bravest of his warriors. His lip was pierced with a spear, the steed was wounded in the thigh, but he carried his master safe and victorious through the triple phalanx of the barbarians." How many British soldiers have owed the preservation of their lives to the courage and docility of their horses.

The movement of turning being the most difficult with the horse, by reason of the inflexible nature of his backbone, the one selected for a charger should have great freedom of action, having his hinder legs well bent under his body, so that he may be easily thrown upon his haunches; also much liberty in his shoulders, and pliancy in the muscles of the neck; in which case he will seldom fail in having the proper requisites for his calling. The position of his hinder legs, however, is most particularly insisted upon, because, should they be straight, that is, not inclining inwards from the hock, after the form of the ostrich's leg, he will with great difficulty be made the supple, short-turning, handy animal that he ought to be, to render him perfectly available to his rider, at the head of his regiment, or in the ranks. Perhaps those horses which were destined to mount our ancient nobility, or courteous knights of old, for feats of chivalry, and gained them the palm in that field of romantic honour, were more highly "dressed", as the term is, in the manège, than an officer's charger of these days should be; nevertheless, as Colonel Peters observes, in his Treatise on Equitation (London, 1835), "Although it might spoil a good horse for military purposes, to form him perfectly after the higher manège principles, yet he would be equally unfit for that duty, if he were left in a raw and ignorant state."

Amongst the ancient Greeks, all horses, as well as all men, were strictly examined before they were admitted into the cavalry; and the precedent cannot be too closely followed. It is well known, that in the various campaigns of the last war, several British officers lost their lives, in consequence of being mounted on chargers not equal to their weight over every description of ground. In one particular instance, a colonel of a light dragoon regiment was cut down in retreating, by reason of his handsome, but powerless charger, being unable to gallop with him over a deeply-ploughed field. At the battle of Waterloo, the ground became excessively wet and soft, owing to continued rain; and, in consequence of it, the Duke of Wellington gave a large price to an officer on his staff for a fine, powerful mare, which had been purchased out of an English fox-hunting stud. In fact, the sort of horse best fitted for an officer's charger, is one which possesses most of the essential qualifications, as well as accomplishments, of a hunter, as his rider, when on service, knows not how soon they may be called for. He should, however, be of airy form, with light action, and well-bred, or he will not look in character with the smart costume of his rider; but to his appearance there must not be sacrificed those essential points, substance and strength, which will enable him to struggle through difficulties, in which a weaker, though more highly-bred, animal might sink. But a trifling deviation in form in the charger, from the points insisted upon in the hunter, may be admitted. For example, the shortness of leg, that is, in the cannon or shank bone, is not exactly desirable in the charger, as his action is required to be of a grander and more showy appearance than we wish to see in the hunter. A moderate length of leg, then, is favourable to such action, and gives lightness, as well as gracefulness, to his movements.

We cannot imagine any brute animal more likely to insure the gratitude of man, than the horse which has borne him in safety throughout even a single campaign; and it is not to be wondered at its having been made a subject for rebuke to Cato, that he left his charger in Spain, to avoid the expense of bringing him home; or that it should be recorded in praise of Andromache, that she fed the horses of Hector with her own hand. A case parallel with the first, we would not produce if we could; but without having recourse to history beyond the period of our own time, we may set forth a flattering resemblance to the second. The late Duchess of Wellington, during her Grace's residence at Strathfieldsaye, in Hampshire, seldom omitted, for a day, feeding, with her own hands, the favourite charger of her gallant husband.

The height of a charger should not exceed fifteen hands and a half, horses of that size being more easily set upon their haunches, and also made to turn more readily than taller ones. His colour must depend upon circumstances;

but next to the silver gray, which best displays his trappings, and which, we may presume, was the colour of the celebrated Phallas (the Greeks called a gray horse φαλιος), bay, black, and chestnut, are the best.

THE TROOP-HORSE.

A change for the worse has taken place in this description of horse, in several British light dragoon regiments, the effect of which was apparent in the late war. It originated in a wish to imitate the style and character of the Hussar, without taking into consideration the fact, that that description of cavalry was intended more for out-parties and skirmishing, than for coming in contact with the body of an enemy; and that consequently, the slender sort of horse on which the English light dragoon has of late been mounted, has not been found efficient, under the immense weight he carries when in marching order, or even in battle, which averages at least sixteen stones. The heavy dragoon horse is, indeed, very little more powerful now than that of the light dragoon was, thirty or forty years back.

The horse best calculated for a light dragoon trooper, is something between the modern coach-horse and the hackney; upon short legs, with good bone, and with much substance in the body. His back should be short, and well ribbed up, his barrel round and large, to allow plenty of room for food, as he is often a long time without it; and hardiness of constitution is a very material point in a soldier's horse. When we look at dragoon regiments, however, the heavy horse regiments, in particular, our surprise is excited at the fine appearance the horses make, contrasting it with the price allowed by government for the purchase of them. It is true they are purchased when young, many of those for the household troops, at three years old; and their good keep, upon hard food of the best quality, forces them into shape, and makes them what we see them.

THE COACH-HORSE.

If it cannot be absolutely asserted that the first use of the horse was in harness, it is quite certain that the chariot-horse was held in high estimation in very early times, and is alluded to by poets and historians of all nations and in all languages. Homer says that Diomed, an Asiatic prince, had ten chariots, with a particular sort of horses for each; and he also makes Nestor, at the funeral games of Patroclus, harness the horses for his son with his own hands; and, by his skill in directing him in the race, he wins it. But the Grecian bard goes still further into minutiæ. He even represents Menelaus, on the same occasion, using Œthe, one of the horses of Agamemnon, with one of his own; and Priam is found harnessing his favourite steeds to the car, in which he returns, with the dead body of his father, from Achilles's camp, on the plains of Troy. It would be endless to turn to other writers, to shew the estimation in which the chariot-horse has been held.

In its present acceptation, the term "coach-horse" includes two varieties; namely, the horse that draws the gentleman's carriage, and the one that is employed in those public conveyances, called "stage-coaches." As regards the former animals, we believe a similar alteration has taken place in the form, appearance, and breeding of them, as has been seen in the English hunter, within the last half century. The Flanders mares, so highly esteemed, and seen only in the carriages of families of distinction; the well buckled-up, long-tailed blacks and roans, have all disappeared, and we find, in their stead, the sort of horse nearly approaching to the one which was formerly considered quite well-bred enough for the chase. But the fact is, such is the present rage for rapid travelling, both in private and public carriages, that nothing but well-bred horses have a chance to stand what is called harness-work on our roads. Those used also for "town-work," as the term is, are of a superior description, amongst which hundreds of good hunters might be selected; but such have been the high prices given for them by the dealers, at an age which would not admit of their being tried in the field, they have found their way into harness, and, when once there, they remain in it.

Coach-Horse.

The form, however, of what may be termed a splendid town coach-horse, need not be, by any means, perfect; and were a judge to examine minutely the points of vast numbers of those handsome horses seen in the carriages in London, or other large towns, he would find them very deficient in several points, essential to any purpose but harness, shoulders and hinder legs especially. But it is fortunate for breeders of horses, that it does not require true symmetry and action to form a grand coach-horse. His false points are, for the most part, concealed by his trappings; and if he be any thing near the following form, he will make an excellent appearance in harness. His head is not so material, as the bridle covers so much of it; but his neck should rise well out of his shoulders, as the higher he carries his head the better, provided the form of his neck admits of its being drawn inward by the bearing rein, when only moderately tight, in which case he will be easily acted upon by the driving rein. The back of the coach-horse is a material point, as, without an easy slope behind the withers, his fore-hand will not appear grand, nor will the pad sit well upon him. His hinder quarters should be straight and blood-like; his gaskins well spread; and his tail should be set on, high. His action should not be too short for town-work, but the knee should be thrown well up in the trot, to give him a grand appearance. This peculiar action, the result of strong flexor tendons, suited nearly to this purpose only, is observable in colthood, but is increased afterwards by the horse being thrown more upon his haunches by the bit; and the act of drawing is not unfavourable to it. Light work in harness, indeed, is favourable to all action, that of gallopping excepted.

The county of York may be called the modern Epirus, as in that and Lincolnshire are the greater part of the London coach-horses bred. The most usual cross is between the thorough-bred horse and the Cleveland-bay mare; but the appearance of too many of them incline us to believe, that, losing sight of their own interest, breeders have recourse, oftener than they should, to the half-bred horse, as well as to the half-bred mare. This, added to the rich grass land they are bred upon, accounts for the coarse, ill-placed shoulders and flat, fleshy feet that so many of the London coach-horses exhibit. For road-work, in noblemen and gentlemen's carriages, horses cannot be too nearly full blood, provided they have strength equal to their work. Here, as over a country, "it is the pace that kills;" and as, in considerable velocity, the power of a horse is nearly exhausted in moving his own body, he needs every advantage we can give him.

The colour of the gentleman's coach-horse is, for the most part, bay; but by far the most imposing in harness is the silver-gray, with black mane and tail. This colour was held sacred by the ancients; and Camillus is said to have given great offence to the Romans by being drawn through Rome, in his triumph, by four gray horses, no general having before ventured to do so. Gray coach-horses, however, require the nicest grooming, and the best appointed harness, otherwise all the good effect is lost. The piebald look conspicuous, and commands a high price, as no doubt he always did. Virgil was partial to the piebald, or party-coloured breed, and mounts young Priam upon one of them in the fifth, and Turrus in the ninth, Æneid, both Thracian horses.

Coach-Horse.

The stage coach-horse has undergone a still greater change in the last half century, and particularly the last twenty years. In fact, his physical condition may now be said to be better than that of the man who lives by the sweat of his brow, for he works but one hour in twenty-four, whereas the man works twelve. The coach-horse also lives on the best fare, which cannot be said of the labouring man. As all kinds of horses of a light description find their way into coaches, it is useless to attempt to fix a standard by which they should be measured, as to height, length, width, or strength. But as all horses draw by their weight, and not by the force of their muscles, which could not act against a load for any length of time, the object of the breeder or purchaser of the road coach-horse should be, to have as much power in as small a compass as may be possible, combined with good action. Substance is a *sine qua non* on roads that are heavy or hilly; for, as before observed, it is the weight of the animal which produces the draught, whilst the play and force of its muscles serve to continue it.

There are, however, a few points very necessary to be observed in the purchase of the road coach-horse. As in drawing, the force applied proceeds from the fulcrum formed by the hinder feet, well spread gaskins and thighs form a main excellence. His fore-legs also should be good to make him a safe wheel-horse, nor can he throw his whole weight into his collar, unless he be sound in his feet. But alas, how many are thus deprived of their natural powers, by being worked upon unsound feet, and expected to exert themselves to the utmost.

There is no truth so easily proved, or so painfully felt by the post-master, at least in his pocket, as that, *it is the pace that kills.* A horse at a dead pull, or at the beginning of his pull, is enabled, by the force of his muscles, to throw a certain weight into the collar. If he walk four miles in the hour, some part of that muscular energy must be expended in the act of walking; and, consequently, the power of drawing must be proportionally diminished. If he trot eight miles in the hour, more animal power is expended in the trot, and less remains for the draught; but the draught continues the same, and, to enable him to accomplish his work, he must tax his energies to a degree that is cruel in itself, and that must speedily wear him out.

Let it be supposed, what every horse cannot accomplish, that he shall be able, by fair exertion and without distress, to throw, at a dead pull, a weight into his collar, or exert a force equal to 216 lb.; or, in other words, let him be able to draw a load which requires a force of 216 lb. to move. Let him next walk at the rate of four miles in an hour; what force will he then be able to employ? We have taken away some to assist him in walking, and we have left him only 96 lb., being not half of that which he could exert when he began his pull. He shall quicken his pace to six miles an hour, more energy must be exerted to carry him over this additional ground. How much has he remaining to apply to the weight behind him? 54 lb. only. We will make the six miles an hour ten; for it seems now to be the fashion for the fast coach, and for almost every coach, and every vehicle, to attempt this pace. How stands the account with the poor beast? We have left him a power equal to 32 lb. only to be employed for the purpose of draught.

The load which a horse can draw is about fifteen times greater than the power exerted, supposing the road to be hard and level, and the carriage to run with little friction; and the horse which, at starting, can throw into the collar a weight or force equal to 216 lb., will draw a load of 3200. Let him, however, be urged on at the rate of ten miles in the hour; deduct the power used in swiftness of pace from the sum-total of that which he possesses, and what remains? not a sixth part, not that which is equal to a quarter of a ton, or, if it be a stage-coach, the energy exerted in draught by the four horses will not be equal to a ton.

The coach, and its passengers, and its luggage, weigh more than this, and the whole is still drawn on, and must be so. Whence comes the power? from the overstrained exertion, the injury, the torture, the destruction of the horse. That which is true of the coach-rose, is equally true of every other. Let each reader apply it to his own animal, and act as humanity and interest dictate.

It would be in vain to attempt any standard for road coach-horses. They must be picked up where they can be found, and, if possessed of action, the rest must be left to chance. A good constitution is desirable, for many die in the "seasoning," as it is called, on the road, and a young, green horse cuts a poor figure in a fast coach. Coach-masters are too much given to purchase infirm horses, by which they incur loss, for, if quite sound, it is as much as can be expected that they remain so for any moderate length of time; and we believe the average duration of horses in fast work is not more than four years, if purchased sound. Unsound horses, then, cannot be supposed to last nearly so long, independently of the cruelty of driving them. The most likely horse, however, to stand sound, and do his work well in a fast coach, is one, that, with sufficient strength, and a good set of limbs, has action sufficiently speedy to admit of his keeping time without going at the top of his pace. When this is the case, he runs his stage, from end to end, within himself, and is as good at the last as he was at the first; but when he cannot *command* the pace, he soon becomes distressed, and is weak at the end of his stage. This accounts for sundry accidents having occurred by wheel-horses being unable to hold back a loaded coach down hill, at the end of the stage, although they would have been more than equal to it at the beginning of it. In fact, many coach-horses are very good for eight miles, but very bad for ten, so nicely are their powers measured in harness. Above all things, we recommend good legs and feet in working horses, if they are to be had; and an extra price is well laid out in procuring them. Whether they are strong in their harness, in very fast work, cannot be discovered until they are tried; but well bred ones, having substance, are most likely to prove so.

Dr Johnson, in his Rasselas, makes the Artist of the Happy Valley tell the prince, he had long been of opinion that, instead of the tardy conveyances of ships and chariots, man might use the swifter migration of wings. There appears something prophetic here, when we read of the contemplated transmission, by all-powerful steam, of a man's person from London to Liverpool in two hours, which would be at a rate that the very "wings of the winds" never yet equalled. But surely our coaches now travel sufficiently fast, and we should be sorry to see their speed increased beyond what it now is, in consideration for the sufferings of the horses employed in them. Were they not always *running home* (for each end of the stage is their home), they would not perform their tasks so well as they now perform them; and it is owing to that circumstance that the accidents in fast coaches are not so numerous as might be expected, night work, and many other things being taken into account.

Coach-horses are subject to many accidents, and some diseases nearly peculiar to themselves. Amongst the former is the fracture of a leg, or the coffin-bone of the foot, occasioned generally, it is supposed, by treading on a stone, or any other uneven surface, when the limb is strained in draught. It, however, sometimes happens when the horse is trotting along on very fair ground, and in such cases the accident is rather difficult to account for. In very heavy draught, when the foot is much overcharged with the weight and pressure of the body, a fracture will sometimes take place at the first step the horse takes. Perhaps these accidents may be independent of what is called shape and make, but coach proprietors would do well to purchase their horses with good legs and feet, and then they are less liable to these accidents, and, with good care and good shoeing, may last many years in very quick work.

The diseases peculiar to coach-horses are, the megrims, and the lick. The former attacks the head, and is caused by irregular motion of the fluids within the vessels of the brain, stopping, for a time, all voluntary motion. The horse in consequence staggers and falls, if not immediately pulled up, and that does not always prevent him. This species of vertigo is generally produced by the effect of a hot sun, especially if the horse be running in the face of it, for which reason horses subject to megrims are generally worked at night. In fact, many coach-horses are good horses by night, although they cannot keep their time by day, in the summer, particularly thick-winded horses. Blind horses also do not like sun, but "as healthy as a blind horse in the winter" is a proverb.

The lick can scarcely be called a disease, but it greatly injures the condition and appearance of coach horses. When under its influence, they are almost constantly, when not feeding, licking each other's skins, or else the rack or manger. It proceeds from a heated state of the stomach, from the excitement of high food, and almost daily profuse sweating, and is invariably removed by alterative medicines or physic.

A great mistake is made by too many coach-masters in being *under* instead of *over* horsed for their ground. Instead of keeping five horses to work a certain length of ground, and feeding them very high to perform it, it would answer them better to keep six horses on the same allowance of corn that the five horses are eating. The stock would last longer, and the money they cost be "kept together," as the term is, longer, by such means. Each horse would then rest two days out of six, when they were all fit for work, which would keep him very fresh in condition; and there would always be one spare horse left, in case either of the six wanting physic or rest. It is the almost every-day excitement that breaks down the constitution of coach-horses.

THE GIG-HORSE.

A few years back, a country parson and his wife, or a wealthy old farmer, were the only persons seen in England in two-wheeled carriages, then called Whiskies. They were useful though far from ornamental vehicles, having what is termed "a head" to protect the inmates from weather, and, with a very quiet horse, were considered as nearly equal in security to close four-wheeled carriages. In the character and appellations of these carriages, however, a wonderful alteration has taken place within the last fifty years, and even royalty itself has been seen seated in gigs, cabriolets, Stanhopes, and Tilburies; the two last taking their names from the inventors of their peculiar forms. The build of these two-wheeled carriages has reached the very summit of perfection, not only as regards their firmness but their elegance; and it is scarcely necessary to add, that the horses driven in them, as likewise their harness, have equally altered their character. From two to three hundred guineas (and, in one instance, seven hundred guineas were paid) have been no uncommon prices given for gig and cabriolet horses; and for gentleman's work we might put sixty as the average of the last forty years.

The choice of a gig-horse (for we confine ourselves to that term for the present) must be regulated by local circumstances. If for London streets, his action should be rather lofty or "grand," as the term is, than fast; that is to say, he should step with his knee much elevated, which of course is unfavourable to speed. His appearance also should be of the first order of his species, not under fifteen hands two inches in height; and if of a fancy colour, the more money will he fetch in the market. He must be well bitted, carrying his head high, and very quick in getting into his trot, or "upon his legs," as coachmen say, to enable his driver to make his way in crowded streets. We should also add, that this quickness in his motions should be accompanied by perfectly good temper, and freedom from all vice; in which case he is always worth one hundred guineas, or more, if in the prime of life and sound.

For the country a different sort of gig-horse is required. In drawing a gig on a soft or newly-gravelled road, the resistance is much the same as a continual hill; and therefore a horse with a quick, short step is best calculated for the road, as such action fatigues less than that which we have recommended for London. For all purposes, however, a horse in single harness, to be safe, should be well up before; that is to say, he should go with his fore quarters high up, and not boring on his shoulders. In this case, if he have well-placed shoulders, good legs, and sound feet, free from corns and thrushes; good natural courage to induce him to "run up to his bit," and a good mouth, there will be very little danger of his falling down in a gig; but accidents from vice must depend upon other circumstances. These accidents, however, are often the result not of real vice, or even of ill temper, but of want of knowledge in his owner of putting him properly into his harness, as well as of driving him afterwards.

Innumerable accidents to horses in gigs arise from some part of the harness pinching him, particularly about his withers or back, when he will endeavour to kick himself out of it, to rid himself of the torment. Indeed we have more than once seen a road coach-horse, in regular work, set a-kicking merely from a twisted trace, rubbing edgeways against the outside of his thigh.

We consider mares objectionable in single harness, for reasons which are obvious; and few of them are to be trusted at certain periods of the year, particularly in the case of a rein getting under the tail. When driven, the precaution of the safety rein should not be omitted. We are also of opinion that numerous accidents from gigs would be prevented, if horses intended for them were to be broken in to them, in bridles without winkers, as a great portion of the horses on the Continent are driven. The not knowing what they have behind them is a natural cause of alarm, and would by this means be obviated.

Post-Horse.

THE POST-HORSE.

This description of horse is one of the most useful we have, and is of very ancient date. He is spoken of by Xenophon, in allusion to the posts instituted by the first Cyrus, and as the most expeditious method of travelling by land (*Cyropædia*, l. viii. p. 496, edit. Hutchinson); although, perhaps, he was chiefly made use of to forward public despatches. Augustus was the first to introduce post-houses, and consequently post-horses and post-chaises, amongst the Romans, disposed at convenient distances (Suet. *in vit. Aug.* vi. 49), but these were chiefly for the purpose of political intelligence. Thus, in a letter from Pliny to Trajan, we find him informing the emperor of his having granted a courier a warrant to make use of the public posts, as he wished him to be quickly in possession of some important facts, communicated to him by the King of Sardinia; and he subsequently (Letter cxxi.) apologizes to his royal master for having ventured, on his own responsibility, to grant an order for his wife to be forwarded by post-chaises, on occasion of a domestic affliction. His letter produced a kind answer from the emperor, approving, *in this peculiar instance*, of the use of the warrants which he had entrusted to his care.

Cart-Horse.

A most material and agreeable change has taken place in the character and appearance of this class of horse, who may truly be said to have marched with the times. Up to the end of the last century the post-horse was, except in a few instances, an object of commiseration with travellers. With galled sides and sore shoulders, and scarcely a sound limb, he would not go without the lash or spur, whereas he now comes out of his stable in high condition, and runs his ten miles' stage in an hour, with a carriage of the average weight, and twelve, if required, with a light one. He is also seen to perform either of these tasks without being distressed, unless in immoderately hot weather, when humane persons would check his speed. Montaigne says, "there is a certain general claim of kindness and benevolence which every creature has a right to from man," a sentiment in which we heartily concur; for although man may be considered as the delegate of Heaven over inferior animals, he has no right to go to the very extremity of his authority. It is, however, much to be feared, that a thoughtless indifference to the sufferings of the post-horse is too frequently to be laid to travellers in our own country, who, without any sufficient reason, urge him to a rate of speed which cannot be unattended with suffering.

The form of the post-horse should resemble that of the hunter which is generally ridden in the deep and close hunting countries of Great Britain; that is, with as much blood as can be got, in conjunction with good bone and strength. The riding horse of the pair must have sound legs and feet; but if a little the worse for wear, an old hunter makes an excellent hand-horse, and innkeepers generally avail themselves of the saving occasioned by putting horses of a less price in that place than the one which carries the driver. Notwithstanding this, the average purchase money of a useful pair of post-horses cannot be estimated at less than from L. 40 to L. 60.

THE CART-HORSE.

Errors detected by experience are allowed to be equal to demonstration; but this truism is not admitted by a vast majority of English farmers, who persevere in the use of the heavy black horse for agricultural purposes, for which, solely, he is by no means fitted, from the slowness of his step (independently of his weight), unless very highly fed. As long, however, as the ponderous vehicles made use of in London and elsewhere, for the transmission of heavy goods, are persevered in, this equally ponderous animal may be necessary; but it is certain that lighter horses, in lighter vehicles, would do the business better, that is, more speedily, and at less cost. Notwithstanding the objections to him, the heavy black cart-horse pays well for rearing; for being always saleable at two years old, a certain profit is insured, as, for the first year, the expense of keeping him is trifling. If on a large scale, and promising to be fit for the London market, or the best-conducted road waggons, he commands a price that leaves a handsome surplus to the breeder

The chief desiderata in the cart-horse are substance and action. If possessed of the latter, his shoulders and fore quarters can scarcely be too coarse and heavy; for drawing being an effort of the animal to preserve himself from the tendency which his weight gives him to the centre of gravity when he inclines forward, so the more weighty he is before, and the nearer he approximates this centre, the more advantageously will he apply his powers. Notwithstanding this, we are not advocates of heavy horses for farmer's work, much less on the road. The lighter horse gets over in eight hours what would take the heavy one ten; and the great improvement in the present mode of culture, and the implements used for agricultural purposes, do not require more weight or strength than what the Suffolk, Clydesdale, Cleveland-bay, and other lighter breeds, are masters of. Besides, there are periods of the year when despatch of business is of great moment to the farmer, which he cannot command in those mountains of horse-flesh which we see labouring in most of the finest districts in England, tiring themselves by their own weight.

Travellers on the Continent, occupying land in England, should carry in their eye the form and action of the horses which draw the public carriages, particularly those bred in Picardy, in France. The prevailing colour is *iron* roan, and their nature appears to sympathise with that colour; for, speaking figuratively, they are as hard as iron itself. It is not unusual to find four or five of them drawing those cumbrous diligences, weighing perhaps six or seven tons, a twenty-mile stage, at the rate of six miles an hour, preserving up their condition to the highest pitch; and this with hay and corn very inferior in quality to that grown in England. To keep up the condition of the English black cart-horse, requires him to consume nearly as much as his labour is worth; and unless he lives well, he is only half alive, which his sluggish action denotes. In fact, his chief fault lies in his having too great a body, and too little spirit, consequently he exhausts himself in the mere act of carrying that body. The nimbleness of the smaller kinds of cart-horses to which we have alluded, is owing to their moderate size; and their immense powers in lifting weight (with the Suffolk, Punch, and Clydesdale breeds, in particular) to the same cause, combined with the low position of the shoulder, which occasions weight to be acted upon in a just and horizontal direction. The Welsh cart-horses, especially those in use in the counties of Denbigh, Merionith, and Montgomery, are eminently adapted to all agricultural purposes, combining much strength with a great share of activity; and the general criteria of wide breast, with low shoulders, good carcass, and small head, indicate their being good workers, with hardihood of constitution. Their height is about fifteen hands two inches; and their colour black or brown.

THE IRISH HORSE.

The Irish hackney may be reckoned amongst the indigenæ of his country, a *sui generis* animal, not mixed, as the English hackney is, with the black cart-horse, originally brought from Flanders, of which sort Ireland has none. He is remarkable for the general soundness of his feet, which are stronger in the heels than those of English horses, and he stands his work well, if not too much abused in his youth. Almost all Irish horses coming under this description have been broken in to the plough and the car, so they, for the most part, go in harness; but the worst fault they have is not having been properly broken in, and bitted, which is the cause of many of them being restive.

The Irish hunter is a very different animal from what he was half a century back. He was always celebrated for leaping, but until lately the want of breeding rendered him nearly useless as a hunter, in the countries which require speed, as well as the accomplishment of leaping. At the present time great numbers of excellent well-bred Irish hunters are annually imported into England, and being found to answer well, fetch good prices. This is the result of horse-breeders in Ireland seeing the necessity of putting their hunting mares to thorough-bred stallions, and not, as before, to the slow, *great-jumping* hunter, no matter how low his breed. The improved cross, being again put to the thorough-bred stallion, of course has produced a still better kind of animal, and thus are Irish hunters "progressing" towards perfection.

The method of leaping of the native Irish horse is peculiarly suited to some of our English counties, Cheshire and Lancashire, for example, and likewise to those inclosed with walls both in England and Scotland. To use an expressive Irish phrase, "they have always a leg to spare," implying that they have a ready use of their hinder legs; which is the fact, in tipping or touching walls or banks, with one or both, which gives them a fresh fulcrum, from which they can extend their leap, in case of their finding an unforeseen difficulty or obstacle on the landing side. In the wall counties of Ireland, indeed, the horses are taught to alight on their hinder legs upon the summit of the wall, after the manner of the dog when he leaps a gate, which, if the wall be broad and firm, adds to the facility of the exertion, as also to the safety of the rider. Irish hunters are generally good brook jumpers, being educated, indeed bred, amongst drains; but field gates, or stiles, being of rare occurrence in the pastoral districts of Ireland, they are not to be relied upon as timber leapers, until they have been initiated to that description of fence.

Persons who have had experience in Irish hunters have found them very shy of having a whip, with a thong to it, made use of by the rider, either for the purpose of smacking it, or to strike an unruly hound. This we fear proceeds from unnecessary severity in the exercise of the whip in breaking, but which would be obviated if breeders were aware of the inconvenience it occasions to servants, who are called upon to ride Irish horses with hounds, in the capacity of huntsmen or whippers-in. We have seen a few of these horses nearly useless from this cause, as servants' horses; although well suited in every other respect, to this peculiar purpose, from their style of fencing and hardiness.

The Irish race-horse was formerly far behind the English, neither is it probable that he will ever be his equal, from circumstances unnecessary to detail. Some horses, however, coming under the denomination of good runners, have been imported from Ireland within the last twenty years; for which we are principally indebted to Lords Sligo and Rossmore, and to the late Mr Bowes Daly, who was esteemed the best judge of breeding racers that Ireland ever could boast of. It must, however, be admitted, that horses bred and trained in one country, and running in another, meet their rivals under disadvantageous circumstances.

THE SCOTCH HORSE.

Like all cold countries, Scotland is unfavourable to breeding the race-horse in his best form; and the only prospect of rearing him to any thing approaching perfection, is to shelter him with unusual care from the weather, when either cold or wet, and to force him with the highest keep. Scottish-bred hunters, however, are esteemed in the hunting world as a stout, hardy race, and they, like the Irish, are now well enough bred to live with hounds at the present speedy rate at which those animals run, according to the fashion of the present day. Of the native Highland pony, it is unnecessary to say much, its merits being so well known; and the Scotch cart-horses are decidedly the best in Great Britain. The peculiar variety known as Clydesdale horses, stand first in repute. Of the origin of this race, various accounts have been given, but none of them so clear or so well authenticated, as to merit much notice. They acquired their appellation, not because they are peculiar to Clydesdale, as the same description of horses are bred in the other western counties of Scotland, and over all that tract which lies between the Clyde and the Forth, but because the principal markets at which they are sold, namely, Lanark, Carnwath, Rutherglen, and Glasgow, are situated in that district, where they are also preserved in a state of greater purity than in most other parts. They are rather larger than the Suffolk-punch, and the neck is somewhat longer; their colour is black, brown, or grey; all the essential points for heavy draught are very conspicuously developed; and they are extremely docile withal, and excellent at what is called a dead pull. Some magnificent specimens of this breed are to be seen in the streets of Glasgow, in the service of the merchants and carriers; and a beautiful plate of an entire one forms one of the illustrations of the article AGRICULTURE in the present Work (Plate XIII.) We have reason to believe, that, if tried by a dynamometer, the Clydesdale horse would exceed any other of his inches and weight in his powers of draught; and his quick step adds much to his value.

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GENERAL TREATMENT OF HORSES.

Humanity and mercy are esteemed the choicest characteristics of man; and there is hardly a greater instance of ill-nature, or a more certain token of a cruel disposition, than the abuse of dumb animals, especially of those who contribute to our convenience and pleasures. Judge Hale beautifully expresses himself on this subject in his Contemplations: "There is a degree of justice," says he, "due from man to the creatures, as from man to man; and an excessive use of the creatures' labour, is an injustice for which he must account. I have therefore always esteemed it a part of my duty to be merciful to my beasts." But we might as well expect mercy from the hyæna, as compassion for the sufferings of horses in the possession of a certain portion of the community, who purchase them when nearly worn out, and work them till nature sinks. We know of no remedy for this; but it is pleasing to reflect, that, in the better classes of society, so noble, generous, and useful an animal as the horse, is now freed from many evils to which he was formerly subjected. The short-docking of the cart-horse, the effect of prejudice and ignorance, it being supposed to add strength to his back, is very generally discontinued, and he is allowed the use of a full tail, the only natural defence against the torment of flies in the summer. Those barbarous operations, nicking the tail, and cropping the ears of pleasure horses, are very seldom had recourse to; neither is firing the limbs nearly so frequent a remedy as it was, veterinary science having substituted other equally efficacious, but less painful means. And, though last, not least, the improved condition, and the effect of better stable management, of all horses employed in fast work, whether on the race-course, in the field, or on the road, has very considerably lessened their sufferings. On this subject we offer the following remarks:—

Condition or Stable Management of the Horse.

Nothing has more largely contributed towards the celebrity of the horses of Great Britain, than the superior management of them in the stable, or what is termed their "condition." Every species of horse has experienced the benefit of it, and we have reason to believe it has attained perfection, under the improved system adapted to each variety of the animal. The training of the race-horse is brought to such a nicety, that his running can be calculated nearly to a certainty by his work, that is, by the number of sweats and gallops he has had before his race; and the stage-coach and post-horse now come forth from their stalls in all the pride of health and spirits, instead of being the pitiable objects they were not fifty years back. Not only the hackney, but the agricultural horse, has partaken of this advantageous addition to natural powers, and which, if not unnecessarily trespassed upon, very considerably diminishes the severity of his daily labour. But the greatest change for the better has been effected in the physical condition of the hunter, who now appears at the cover side in the vigorous state of the race-horse; in a state, in fact, in which he ought to appear, inasmuch as he is called upon to go at a racing pace and yet, if fairly ridden throughout the chase, he is by thi means rendered nearly superior to fatigue. How all this ha

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been accomplished, we will endeavour to shew; and at the same time to make it apparent, that although Nature never presents us with animals in what we call condition (a state altogether artificial), yet she is ever ready and desirous to meet the demands of Art, when scientifically and judiciously made upon her.

The improvement in training the race-horse has been the result of two distinct causes, each equally likely to produce the desired effect. First, practical experience, an excellent schoolmaster in such matters; and, secondly, both breeders and trainers of this animal now look into books, not only reading them, but reflecting upon what they read. Having been told, on indisputable authority, that the highly rarefied air and arid soil of Arabia produce muscular power and firmly condensed bone in the horse, not to be found elsewhere, and that the antelope, the fleetest animal in the world, is fleeter there than in any other part of the globe, they have naturally been led to the conclusion, that the opposite agents of humid atmosphere and succulent food have a directly opposite effect; that by increasing flesh and humours, they tend in proportion to diminish muscular firmness, solidity of bone, and, consequently, elasticity of action, the main-spring of both speed and endurance; in short, to alter, if not to destroy, all those points which are so peculiarly characteristic of the animal in which they themselves are interested. They have at length found out, that the race-horse should have not an ounce of unnecessary bulk in his frame; on the contrary, that he should have as much power as can possibly be produced in a given space; and that all this can only be effected here by something approaching to the means by which it is effected elsewhere. A knowledge of these facts, then, has produced a substitute for the natural advantages of the horse of the Desert, in warm sheds, very small and dry paddocks, and hard, dry food, for our racing colts, instead of large paddocks, plentifully clothed with grass, often of the coarsest description, imperfectly formed sheds, and not more than half the corn eaten by them at present. As we have already observed, a racing-colt may now be said to be in training, if not from the day on which he is foaled, from that on which he is weaned; for his condition, at least the foundation of it, is from that period in progress. Again, the early period of his going into work, compared with what it formerly was, but now become so general, has not been without its effect. It has called forth additional exercise of the trainer's professional skill; for it may easily be imagined, that, bringing very young horses to the post, in the perfect state of condition, and full development of muscular power, in which we now-a-days see them at every race-meeting in our island, is a very difficult task, and that it is a still more difficult one to preserve them in that state, even for a few days. Both constitution and temper being to be consulted, the very refinement of the art is called for; in fact, the trainer must act upon principle, and very cautiously too, in his efforts to forestal nature. Inasmuch, however, as muscular action produces muscular strength, the racer of the present day, reared as he is reared, and consequently in a more condensed form, does not, with few exceptions, require the very severe work which it was formerly necessary to give him, to increase his muscular powers, as well as to rid him of the bulk of flesh and humours he acquired in his colthood, under the old system of rearing him. A sight of our two-year olds at the starting-post, is the best demonstration of what is here stated. They exhibit a development of muscle in their forced and early maturity almost equal to that of the adult horse, and carry eight stones and upwards, at a racing pace; a weight unheard of upon so young an animal in former times. How far, however, this forced maturity and its consequences, namely, severe work, and the excitement of high keep, at so tender an age, are favourable to him or to his produce in after life, is another question; but the use of a system should never be estimated by the abuse of it. If our race-horses are not, and we believe they are not, so stout in their running as formerly, that is to say, twenty years back, the cause may fairly be traced to the great value of produce stakes and others, which bring them to the post at so early an age; so much so, that, in the language of the Turf, a four-year-old colt of the present day is called "*the old horse.*"

But a still more material alteration for the better has taken place within the last few years in the stable management and condition of the British hunter, arising principally from a different treatment of him in the non-hunting months. It had, from time immemorial, been the usual remark of the sportsman, on his hunters being turned out of their stable in the spring, for the *supposed* necessary advantage of the "summer's run at grass," that it was to be lamented that the hunting season was concluded, as the condition of his stud was so perfect. The fact was, that until then, or nearly till then, they had not been in condition at all; and, how strange soever it may appear to any one reflecting upon the subject, by the act of turning them to grass for this "summer's run," he was about to undo all that his groom and himself had been doing during the nine preceding months, namely, to destroy the perfect state of condition which he was at that time lamenting over. Still more strange, however, is the fact, that although the evils of this out-of-door system for three months in the year, to an animal who lived the other nine in warm stables and well clothed, were hinted at by Mr Beckford, in his celebrated *Letters upon Hunting*, and abandoned by a few of our first-rate sportsmen of, and subsequent to, his day, and particularly about the commencement of the present century, by the example of the Earl of Sefton, when he was owner of the Quorndon hounds, in Leicestershire, still the ruinous system of the three, and generally four months' run at grass (viz. from 1st of May to the 12th or 20th of August) continued to be practised, until these evils were exposed in all their appalling deformity, and the advantages of an opposite system made manifest, in a series of letters in the *Old Sporting Magazine*, under the signature of "Nimrod," which have since been published in a separate form, and very widely circulated. We may also add, that the effect of this exposure has been nearly a general abandonment of the grazing system in the studs of all men who mean to ride near hounds.

Previously to our enumerating the real advantages of the modern system of "summering the hunter," we will state the imaginary ones of the old one, and which, as may be supposed, are still held to be such, by those who reluctantly acquiesce in any kind of reform. First, the purging by spring grass is insisted upon. Secondly, a relaxation of the muscles, and what is called a letting down of the whole system to its natural state. Thirdly, the benefit the feet receive from the dews of the evening, and coming in contact with the cool earth. Fourthly, the saving of expenses. Fifthly, a kind feeling towards the animal, who, they say, is entitled to his liberty for a certain period of the year, also to the free enjoyment of his natural state. And, lastly, the absolute necessity of rest to the limbs, after the labours of the preceding season. We will now make our own comment on each of these presumed facts.

And, first, we admit there is a laxative, and therefore a cooling, property in early spring grass, but as a purgative it is insufficient, which is admitted by the fact of its having been generally considered necessary to give two dozes of physic to hunters previously to their being turned abroad for the summer (thus administering the antidote, as it were, before the poison), and to physic them immediately when taken up. Here, then, is at once an answer to the first objection to the improved system of in-door treatment in the summer; even supposing that spring grass could not be given to a horse in a loose box, whereas it is evident that it can.

Secondly, the entire letting down of the system, by a

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sudden change of food from that which is highly invigorating to that which is only succulent and relaxing, is neither called for, nor can it be wholesome. It is never had recourse to with the race-horse during his period of inactivity, and why should it be with the hunter? We would ask the owner of a horse so treated, how he thinks it would agree with his own constitution and his *digestion*, to be suddenly taken from beef and port-wine to a purely vegetable diet; and the analogy holds good.[1]

Thirdly, a great mistake has prevailed on this point, the preservation of the feet. A certain degree of moisture is beneficial to the foot of the horse, a continued exposure to wet most injurious to it, as the certain cause of thrushes, and in time total destruction of the frogs. Thus, history informs us that the horses in Hannibal's army were rendered unserviceable by travelling many days in succession in very wet ground. But we have better authority here than that of Livy, because it applies to horses which wore shoes, whereas Hannibal's wore none. Mr Goodwin senior, late veterinary surgeon to his Majesty George IV., in his work on the Diseases of the Feet (p. 209, 1st edit.), has the following passage, in allusion to the evils of having the feet of horses saturated, as they must be during a summer, with wet at one time, and then suddenly exposed to a hot sun and a drying wind at another. "I have invariably observed," says Mr Goodwin, "where horses are turned out to grass during the dry and hot summer months, that on bringing them up to be put into stable condition, their feet are in a much worse state than they were when they went out, dried up, and so hard and brittle, that, on the application of a tool to bring them into a form to receive a shoe, the horn breaks like a piece of glass, and all the naturally tough and elastic property is lost, so that it requires some months to remove the bad effects. If it is necessary that a horse should be put out of work during the hot and dry weather, I prefer a large box or shed, and soiling with green food; by which means two objects are gained, viz. all the *injurious* effects of a drying wind or a meridian sun on the hoof are avoided, which create such an excessive evaporation of the natural moisture absorbed into the horn from within, that it not only becomes dry, hard, and brittle, but the whole horny box tightens on the sensible parts, and frequently produces great mischief. But in a loose place, moisture may be applied in any desirable way." In addition to the above, Mr Goodwin says, "Horses at grass are much inclined to thrushes;" which renders it unnecessary for us to say more on this subject at present, although we shall by-and-bye offer the result of our own experience in the treatment of horses' feet in the summer.

Fourthly, a saving in expense. This is an objection too trifling to be admitted in opposition to any real advantages. It was calculated by Nimrod,[2] allowing only four shillings per week to have been the charge for each horse, supposing him to have been summered at grass, that the extra expense of his six hunters summered after his system, which we shall further explain, amounted to only L. 13, 18s. The mere chance in favour of exemption from accidents to which horses abroad are liable, is worth more than this inconsiderable sum to the man who keeps six hunters in his stable; but twice its amount would be realized in the sale of any of the six, if offered at the hammer in November, beyond the sum he would have produced had he been summered solely in the fields.

Fifthly, we would go any length in advocating the extreme of kind treatment to so noble an animal as the horse; but experience has taught us, that neither the open field, nor the shade, is a bed of roses, in the summer months, to the well-bred, and naturally thin-skinned hunter; for the œstrum, or blood-sucker, pursues him in each; and the desperate attempts he often makes to avoid them, shews the horror he has of their attacks. But, unluckily for the advocates of this system, one of the greatest evils of the out-of-door system here stares us in the face. If the horse cannot get away from this host of tormentors, his only remedy against them is, galloping from one end of his pasture to the other, or else stamping with his feet against the hard ground, and often against the roots of trees, to scare them from one part of his body, only to settle upon another. The injury to both feet and legs from a daily succession of these operations, may be left to the imagination of the reader; but against the charge of cruelty, we quote the following remark from *Nimrod's Letters* (p. 268, first edition): "In the very hot weather," (he is speaking of the summer of 1825, which was remarkable for the intenseness of its heat), "I made a few observations, which are not irrelevant to my present purpose, particularly as to the charge of cruelty in keeping hunters in the house, in the summer. On the 29th of July, one of the hottest days, the thermometer was one degree higher, at two o'clock at noon, in my two four-stall stables, in each of which three horses had stood for sixteen days and nights, than it was in the entrance-hall of my house, which is twenty-three feet high, and contains three large windows and six doors, and the aspect due east. Now, will any one tell me, that the most tender animal could be injured by breathing such an atmosphere as this? But all is not yet told. I removed the thermometer on the same day, and at the same hour, into the shade, and there it was *four degrees higher than in my two four-stall stables.* Here, then, the objection to horses standing 'sweating in the stables in the summer time,' returns to its real insignificance."

Lastly, upon the subject of rest, and the means of procuring the advantages of it to the hunter by a summer's run in the fields, we cannot do better than quote from the same author. "When discussing the subject," says he, (p. 262), "of summering hunters with a friend, who is an advocate for the grazing system, he made use of the following expression: 'I dare say it may be all very well to keep them in the house in the summer, but then they have not the benefit of *the rest* which they get when at grass.' I could not help smiling at this strange perversion of facts; and ventured to ask him, Whether, if he were examined in natural philosophy, and asked, *what is rest*, he would answer, *motion?* and that would not be a whit less

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[1] In No. 59, vol. v. p. 645, of the *Veterinarian*, we find the Editor coinciding with Nimrod on this point, in his second review of his Letters on Condition. "These pithy and valuable extracts," says he, "at the same time that they serve to expose our author's views in regard to summering the hunter, demonstrate a sagacity and experience on the subject, no less worthy of the admiration of the professional man, than of the sportsman himself. The leading consideration in summering the hunter is to maintain his condition, or rather, we should say, to guard against his losing that which we know, both by education as medical men, and experience as sportsmen, once lost, will require much time and pains to be re-acquired. Change of food is necessarily productive, in the animal constitution, of alteration of structure; though parts cannot be said to change their nature under their influence, yet they do become greatly altered both in texture and in tone."

[2]

Two tons five hundred-weights of hay, at L.4 per ton,	L.9	0	0
Seventy-one bushels of oats, at 4s. 6d. per bushel,	14	4	0
Beans,	1	10	0
	L.24	14	0
Six horses at grass nine weeks, at 4s. per week,	10	16	0
	L.13	18	0

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absurd. If rest be desirable, as we know it is, for a hunter's legs, after the labours of a winter, surely he must obtain it more effectually in a small confined place, than when suffered to run over a large tract of land, and to stamp the ground with his feet for so many hours each day." Neither does the labour to the legs end here. All persons who have ridden horses, whose growth has been forced in their bodies, as that of most hunters has been, must have perceived that, when letting them drink in shallow water, their fore-legs totter under them, in the attempt to reach the water with their mouth. Such is the case with the hunter, at least with the properly formed one, when in the act of grazing (for the horse prefers a short bite); and the tremour in his legs shews the stress that is laid upon them, to enable him to reach his food. In fact, many horses (and we could name some well known hunters) cannot reach the ground at all with their mouths, unless it be by the painful position of placing one fore-foot close to their mouth, and the other even with the hinder legs; and consequently their owners have not been able to turn them out, had they been inclined to do so.

It is now our turn to be heard on this important subject to all owners of hunters; and we proceed to state, that the principal objection to summering a horse abroad, consists in the danger we expose him to by the violent change from a stable at the temperature of 63° (the common one of hunting stables), and the addition of warm clothing, to a bed upon the cold ground on a wet night; or, which often happens in the month of May, to the influence of sharp frost; all this, also, when the animal has scarcely any coat on his back to provide against the effects of bad weather; and with a skin highly porous, from long continued friction in the stable. As well might we expect to find animals and plants that can sustain the heat of the torrid, and the cold of the frigid zone, as horses to bear those extremes with impunity! On the contrary, it is the confirmed opinion of most veterinary surgeons, that more hunters have been ruined by becoming roarers, broken-winded, or blind, from this cause, than from any other to which they are subjected; and they are backed in their opinion by reason. For it is not necessary that the newly-turned-out hunter should be exposed to either a wet or a frosty night, to produce disordered functions; the common exhalations from the ground in the evening, are sufficient to produce them, by a sudden constriction of the pores, opened as they have been by the effect of a hot sun during the day. "Heat and cold, moisture and dryness," says Mr Percival, veterinary surgeon to the First Life Guards, and author of the *Anatomy of the Horse*, in his last work on the Horse (p. 64), when treating on the theory of inflammation, "all in their turn become excitants of inflammation; their mischievous agency residing more in the vicissitudes from one state to its opposite, than in any obnoxiousness in our climate, from their excess or continuance. They may operate either directly as excitants, or indirectly, simply as predisposing causes." Few veterinarians, indeed, as Mr Percival expresses himself, now-a-days, feel inclined to deny the uncongeniality of cold and wet, to the constitutions of horses, or to maintain, that they do not very often, in such situations, contract the foundations for disease, which, at some future time, is apt to break out, and prove fatal to them. Nor are the remarks of this scientific practitioner and most perspicuous writer, less to our purpose, when speaking of the horse that is turned out of his stable in the winter. "Take a horse," says he, in his chapter on 'Hide-bound,' (p. 296), "fat and sleek in condition, out of a warm stable, where he has been well clothed and fed, turn him, during the cold and wet of winter into a straw-yard, and go and look at him three months afterwards, and you will hardly recognise your own horse. You will find him with a long, shaggy, staring coat; a belly double the size it was when in condition; and a skin sticking close and fast to his ribs, which may now be readily counted with the hand, if not with the eye." But here the analogy between the horse turned out to grass in the summer, and the horse sent to a straw-yard in the winter, ceases. The latter loses flesh, and becomes hide-bound, both of which will find a remedy in a return to more generous food in the stable, with the assistance of alterative medicine; and he will speedily resume his condition. But it will not be so with the grass-fed hunter. He has accumulated a load of soft, unhealthy flesh, which must be got rid of at the expense of his legs and feet; or, in the language of grooms, "it must be exchanged for better flesh, the produce of hay and corn." By feeding *ad libitum*, however, he has so plethorized his system, and trespassed upon his digestive organs, that this is become not merely a work of labour and time, but one of no small risk to the general soundness of his constitution. Nor is even this the extent of the mischief. Under the most favourable circumstances, it is not in the power of a groom, how good soever he may be, to bring the grass-fed hunter into the field, fit to be ridden, with hounds, until the hunting season is half expired. For proof of this assertion, we need only go to the race-horse, who cannot be made fit to run under, at least, six months' preparation, although he has not been at grass since he was six months old. Nature will not be put out of her course by violence; and horses can only be got into good condition by degrees, by long continued slow work at first, increasing in pace as their condition increases; and it has been the attempt to get the grass-fed hunter into something approaching to condition, by hurrying him in his work, under a load of flesh, and with his muscles in a relaxed state, that has ruined thousands of good horses, by the injury done to their legs especially; and will ruin thousands more, if persevered in. The change of food, again, has been the cause of more broken-winded horses than any thing else that can be named. "It must dispose," says Mr Percival, "from its being the chief cause of plethora, to general diathesis of the system; and so far it contributes to the production of pneumonia, or any other inflammatory affection." To this we may add blindness, the natural consequence of the dependent posture of the head when feeding, in an animal in the plethoric state that a previously highly-fed hunter must fall into, after being some weeks at grass; and likewise of constant irritation from flies and sun. Neither should the following remark of Mr Percival's be forgotten by gentlemen who turn out their hunters during a wet summer. "Cold," says he, "abstractedly from wet, even although it be alternated with heat, is not found to be near so prejudicial as when moisture is present too; hence we are in the habit of viewing frosty weather as a season of health among horses; and hence it is, that the spring and autumnal months are the most unhealthy, the weather being then moist and variable, and the wind generally in a cold quarter." Again, "Two undomesticated horses," says he, "out of three, under five years old, that are taken from cold situations, and kept in warm stables, will receive catarrh. But even domesticated horses that are advanced in years, and that have been accustomed to such changes, do not always escape, unless some precautionary measures be taken; for hunters taken up from grass in August, unless due attention be paid to the temperature of the stable, are often the subjects of catarrhal attacks."

Perhaps the summer of 1835 may be produced in proof of the danger of subjecting stabled horses to atmospherical changes. In the first week of June, 78, 80, 82, and 84 degrees of heat were marked by the thermometer. On the 13th, the maximum of heat was 15 degrees less than that of the preceding day; and on the 23d, the thermometer fell to 47 degrees, succeeded by four days' rain, with wind veering to south-east, back to west, then to north and north-east, at times furiously high!

We must be allowed two more remarks on the evils of the out-of-door system. Amongst the physical changes which the body is capable of receiving, none is so visibly effected as in the diminished, or increased, size of the belly; and the latter alternation of form is speedily effected by a horse eating grass, and nothing but grass. When a man goes into training for a match against time, or a prize-fight, the first act of his trainer is, to reduce the size of his belly; for, until that is done, his respiration is not free enough to enable him to make such bodily exertions as are essential to augment his natural vigour, and put him into the best possible condition; and this exactly applies to the grass-fed hunter taken up in August. He has exchanged an active untiring frame, for a bloated and breathless carcass; and nothing can be done with him until, by purging and *severe work, when he is not in a fit state to endure it with impunity,* the nature of his frame is altered from weakness to vigorous health. But this must be the work of time, for, although Nature will admit of improvement, she will not allow herself to be hurried by the unreasonable innovations of man.

Our next remarks relate to bodily infirmities and local diseases, to which the horse, by the severity of his labours, is always more or less subject. Several of these, such as splents, spavins, curbs, and ring-bones, are easily checked, if discovered in their incipient state; but when, by being undiscovered for only a short time, a certain progress is made in them, the cure is far from certain, at all events, more difficult. Now, under the old system of the summer's run abroad, this was most frequently the case. Horses, when taken up, were found to have thrown out those excrescences unperceived, which, as soon as they began to work, caused lameness and disappointment; whereas, under the improved system of summering the hunter, they could not have escaped the constant inspection of the groom, and an immediate check would have been given to them. The short-cough, vulgarly and stupidly called a "grass cough," also too often swelled the catalogue of disasters; and, in six cases out of ten, ended in broken wind or roaring. But it may not here be amiss to address ourselves to owners of hunters, who may adopt either one system or the other of treating them in the summer months; we mean, as regards their legs, the treatment of which now forms a conspicuous feature in the science of the stable, particularly the racing stable. Many valuable animals are ruined in consequence of their owners and their grooms not knowing, perhaps not wishing to know, when their legs are going amiss, and consequently stopping them in their work, before the evil gets a-head. It is irksome, no doubt, to give up the use of a hunter, especially if a favourite one, and in blooming condition; but it is only by such prudent conduct, that we can expect a lengthened enjoyment of his services. It is a lamentable fact that, generally speaking, good-constitutioned horses would wear out two sets of legs and feet, which shews the urgent necessity of taking care of them.

We now take our leave of the old, and, we may add, ruinous system of treating hunters in the summer, and proceed to state how, in our opinion (the result of much experience) they ought to be treated in the non-hunting months; as also to offer a few directions for the management of them when in work. To begin, we are far from averse to resting the hunter in the summer, although we cannot shut our eyes to the fact of horses working hard for a great many years in succession, without experiencing what is here meant by "*rest*," (namely, not having a saddle on their backs for three or four months), and remaining sound and healthy to the end of a long life. Our great object is, to give the hunter fair play, by preserving, instead of destroying, his condition at the same time that we rest him; and in this we think, that, by preventing exhaustion in his work when he returns to it, we offer him much more than an equivalent for the fancied enjoyment of his "snuffing the air in his native liberty," and "making his bed on the cool ground," so stoutly insisted upon by many of the old school, who will not march with the times, and who cannot divest themselves of prejudices, how dear soever they may cost them.

The period of "turning *up*," not "*out*," hunters towards the close of the season should depend on circumstances. Those whose legs may be doubtful, should be the first thrown out of work; and after them old ones, who, how well soever they may go over a country when it is soft, are in danger of breaking down when it becomes hard, as it always does in March, particularly in ploughed countries.

The first act of a groom, when his horses have done their work for the season, is to give them two doses of mild physic, which, by their effect on their legs, will greatly assist him in discovering the amount, if any, of the injury that may have been done to them. Should anything serious exhibit itself, we recommend him (unless he be a first-rate professor of his art) to avail himself of the advice of a veterinary surgeon, as to the steps proper to be taken; and the sooner those steps are taken, the better will it be for his horses. The barbarous, the senseless, practice of blistering, generally the two fore-legs, and often the hinder ones also, previously to turning out, under the old system, is now, we are glad to say, abandoned, not only on account of its inutility, but, by the spread of veterinary science, sportsmen have found out that the application of blisters to healthy legs is injurious. The merely irritating the surface of the skin cannot be productive of advantage; on the contrary, it often rouses the sleeping lion, which it is afterwards difficult to pacify. As counteractors of internal inflammation, or as counter-irritants, as they are called, blisters are highly useful; likewise to all bony excrescences, such as splents, spavins, or ring-bones, when in an incipient state; but, in order to render them efficacious, they should be repeated till healthy pus is obtained. If judiciously applied in strains, they are also not unserviceable, as they help to unload the vessels near the affected part. Supposing, then, no serious mischief has been done to the legs of a hunter during the season, we thus proceed in our course of treatment of him:—

Previously to stripping him of his clothes, he should go through his second dose of physic, and be treated exactly as if he were in work for at least a fortnight afterwards, with the exception of his having only walking exercise, a diminished allowance of corn, and the wisp, without the brush, applied to his body. We now arrive at a point on which there is some difference of opinion, at all events, one which must be left to the option of the owner; namely, whether, as is the practice in the stables of some of our first-rate sportsmen, the hunter is to be kept in gentle work throughout the summer, or to be thrown entirely aside for a certain number of weeks, varying from nine to twelve? We will, however, state the best method of proceeding under each of these systems.

The horse kept in work (we should rather have said exercise) during the summer, should be exercised very early in the morning on soft, but not wet ground (a low meadow, or rather a marshy common, for example), that his feet may have the advantage of moisture, and also that he may not be tormented by flies, or exposed to a hot sun. Two hours will be sufficient, the pace to be varied alternately from the walk to the jog-trot. It is desirable that a horse thus treated should not be tied up in a stall, but have the enjoyment of a large loose-house. Of course, attention should be paid to his feet, removing his shoes every third or fourth week; and they should be stopped with wet tow every second night. To those who object to this in-door treatment of the hunter on the score of danger to his feet, we can only say, from our own experience, that their fears are groundless; and we also refer them to the first cavalry barrack they pass by, or even to the stables of our innkeepers on the road, in which they will find feet in the highest state of preservation, that have been subject to in-door treatment for many years. We prefer damp tow to any other sort of stopping for horses' feet, because, exclusive of the moisture, it affords a uniform pressure to the frog and outer sole of the foot, which is favourable to their healthy state. Indeed, to some of the finely-formed, open feet which we see on first-rate hunters, the soles of which are apt to be thin, this pressure is most advantageous in preventing a disposition in them to become flat or convex, instead of moderately concave; and for this purpose was the "horse-pad," or "elastic stopping," invented by Mr Cherry, veterinary surgeon of London, which may be preferable to the tow, but not always at hand. When the latter is used, it should be forced into the foot with all the strength of a man's fingers or thumb.

The food of hunters thus summered should be regulated by circumstances. Good flesh, we know, is strength; but that which is generated in comparative idleness only contributes to weakness. Our object, then, should be to prevent a horse, treated in the manner we now allude to, from throwing up much flesh, and we must therefore feed accordingly, and also study constitution. At all events, three small feeds of oats (we do not feel ourselves justified in recommending beans, although we know some sportsmen give them; except in very peculiar cases, such as extreme delicacy of constitution, a disposition to scour, or throw off food) per day are sufficient for any horse, with the addition of a large, sloppy, bran mash twice a-week. As to green food, we recommend that with caution. We approve of its being given occasionally for three or four days in succession, merely as soiling, to attenuate the blood, not to produce flesh; and this repeated now and then at intervals, whilst the green meat (be it what it may) is young, but by no means afterwards. Many grooms mix hay with green food, which, after the first two or three times of giving it, we think a judicious plan. But, be it observed, for reasons we have already given, we object to a hunter acquiring a load of flesh in the summer, the produce of succulent food. A moderate use of alteratives is beneficial throughout the summer to horses which live well, but do not work, as, by their mild and gradual impression, a healthy action of the bowels is kept up, as well as insensible perspiration increased.

The horse *not kept in work* should be thus treated in the summer: He should run loose in the bay of a barn, or any large covered place where he gets exercise, and breathes fresh air, without exposure to the sun. His physic, food, &c. should be as before directed; but as he is now unshod, and consequently cannot have his hoofs filled with any thing which can impart moisture to them, he should be made to stand two hours every day, under cover, in wetted clay. Unless after firing, or severe blistering, when the sedative powers of cold air are efficacious in checking local inflammation, we prefer the hunter being housed throughout the night, to his lying out even in a paddock, as he is less liable to disease and accidents; but we admit that the danger of exposure to night air is greatly diminished by his having been kept cool throughout the day, by which he is less susceptible of atmospheric influence, or the alternation from warmth to cold, than if his arterial system had been acted upon by exposure to a mid-day sun. The sticklers, then, for the "dews of heaven," and the "bed upon the cool earth," may here indulge their predilections; but, for our own part, we give the preference to the house at night with horses free from disease.

The state of the horses, summered as we have now described, will in great measure resemble each other, although, as may be supposed, the one which has been kept on in his exercise will be most forward in condition. Neither of them, however, will have lost much of their proper form; but a distinction must be made in our proceedings with them, when preparing them for the forthcoming season. "Suffer a horse to be idle," says Mr Perceval (*Hippopathology*, p. 14), "to do little or no work, and feed him well during the time, and the redundant nourishment floating in his blood will be laid up in the form of fat; put the same animal to work, and that blood, which otherwise would have been turned into fat, will now be transformed into materials of strength." Here, then, it is evident that the horse which has been kept in exercise will require somewhat of a different preparation to the one which has remained unshod, and consequently idle. The first will require very little alteration in his proceedings until nearly the approach of the hunting season, as he will soon be prepared for quick work; but it will be by long-continued slow work, increasing in pace as his condition increases, that the second will be quite himself again, from the relaxed state of his muscles, somewhat redundant flesh, as well as his distended belly. In either case, however, there will be no occasion for all that physicking, galloping, and sweating, to get rid of bad, superfluous flesh, that the grass-fed hunter has been subjected to; for if the groom has done his duty by them, neither of these horses will have accumulated much more flesh than we like to see on hunters when they first begin to work, and when that flesh is good. We would have our second horse, the unshod one, taken into his stable early in August; and during the latter end of that month and the next, in addition to his daily exercise, he should, about three times in a fortnight, have a gentle sweat in clothes, which is best effected in a trot, in a large fallow field that has been lately harrowed down, and which is firm, not soft, to the tread.

But we fancy we hear the question asked, Is it not necessary to give physic to all hunters when the summer is past, and previously to their taking the field again in the winter? We answer, *No*. The principal end of physicking hunters is to allay excitement, occasioned by severe work and high keep; and the next, for the benefit of their legs. Thus, for example, as the first-named horse (the one that has been in gentle work throughout the summer), will not sweat so easily as the unshod one, a light dose or two of physic may be serviceable to him during his first preparation for the field, say in August or September, as the means of saving his legs, should he be a strong-constitutioned horse, and have thrown up too múch flesh. But there is no absolute necessity for physic at this period to horses that have been properly treated throughout the summer, and not suffered to get foul or fat; and it will be given with more advantage to them after they have been some time at work, or nearer to the commencement of the hunting season, which, after the manner of the racing stable, may be termed a second preparation. We think, however, we cannot do better here than to quote the following passage on this subject from the April Number, 1835, of the *New Sporting Magazine* (vol. viii. p. 353), as the ideas exactly correspond with our own.

"To horses summered in the house, physic is now only administered when it is wanted, as is the case with the race-horse; and the groom or his master ought to be able to say *when*. There are many directing symptoms with horses in work, which cannot escape an observant eye; and we do not, as formerly, wait for the swollen leg or the running sore. The barbarous practice, also, of three doses in succession (as was the practice with the grass-fed hunter on being stabled), 'the first to stir up the humours, and the last to carry them off,' with two strong urine balls to wind up, by way of a remedy for consequent debility, is also happily exploded. The strength of the dose is likewise greatly diminished, and consequently all danger is avoided. We take upon ourselves to say, there is no more risk attending administering physic to a horse, than there is in giving him a pailful of cold water, perhaps not so much;

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that is, provided the drugs are good, and well put together. We, however, strongly recommend all sportsmen and others to obtain physic from the profession, as veterinarians bestow much attention on the making of it up, and obtaining the best aloes, in which there is much difference. The sooner it passes off the better; and this will be much expedited by three loose bran mashes on the day preceding the dose, and exercise previously to its working. Recollect there is no virtue in this case in the aloes, beyond doing its duty in clearing and cleansing the bowels. Calomel, when administered to the horse, should not be hurried, as it is intended to act upon the system, and should therefore be given twelve hours previous to giving the purge. Horses whose bowels are difficult to be moved, should be kept short of hay a day or two before they are physicked, with an additional allowance of bran mashes, and encouraged to drink before they experience nausea."

It may, perhaps, be well to state the "directing symptoms" for administering physic to the hunter, which are thus detailed by Nimrod. (*Condition of Hunters*, p. 173.) "Among the distinguishing symptoms of foulness in a hunter, are these:—He appears unwell, without any specific disease: his mouth is hot, his eyes look dull, and sometimes yellow: his coat loses some of its usual gloss, and stares between the hip-bones, and on the poll of the neck: his appetite frequently remains good, but he is more than usually anxious for water: his heels are scurfy, and sometimes crack: he stales often, but a little at a time: his urine is highly-coloured, and his excrements hard, and often covered with a slimy fluid: he is dull when at exercise, and frequently coughs without any appearance of having taken cold: he loses flesh, and looks dry in his skin: his legs and ears are often cold, the latter frequently wet after exercise, and sometimes deprived of part of their natural covering: his crest falls; the whole tone of his system appears relaxed; and, without his groom exactly knowing why, he is not the horse he was a week ago." To this we have nothing to add, unless it be to congratulate owners of horses on the terrors of physicking them having vanished with the present improved method of administering the doses; and on the fact, that only a few days' cessation from labour is now required to afford them this relief. We should say, that a hunter is never more fit to go through a sharp run, than on the tenth day after his physic has "set."

But we do not consider that we can close this part of our subject, without a few words on the treatment of the grass-fed hunter, as there are still some who yet abandon him to shift for himself in the summer, and are content to see him return to his stall in August, the very reverse of what he was when he left it in May. Nor is this the worst of it. He cannot be reinstated in the condition in which he was when he went out in May, until hunting is three parts over the following season. However, we will lay down what we consider the most likely plan to pursue, to fit him for the work he is intended for:—

From the redundancy of blood and humours, and distension of bowels beyond their proper size, which the grass-fed hunter acquires, all violent exertion must be avoided, until such obstructions are removed, which must be the work of time. It is in vain to attempt to hurry a horse in this state into condition, but the first step taken should be to have him clipped, for reasons which we shall presently give. Long-continued slow exercise is the chief agent in hardening his muscles, and strengthening his organs of respiration; but all galloping when in the state in which he will be for the first two months, to get off his flesh, is very highly to be reprobated, as his legs will surely suffer by it, if nothing else does. Two light doses of physic may be useful to him, if he have had none given him at grass; and care should be taken not to use the brush to his coat till the month of November be passed, in case he should not be clipped. Again, veterinary science has informed us, that danger always accrues to horses in the vicissitudes of heat and cold, from one state to its opposite; but more from the latter to the former, as an excitant to general inflammation. Horses taken from grass, then, should be put into very cool stables, and the fewer in one stable the better, for at least the first month. Windows should be left open day and night, merely taking the precaution of coarse matting, or any thing else that will stop the entrance of flies; and nothing does that better than matting, frequently saturated with water. Having been clipped, and kept out several hours in the day in slow work (which, by the way, grooms are too often shy of), increasing his pace gradually as his condition progresses, the grass-fed hunter may be brought fit to look at by the first week in November; but he will be at least by a stone a worse horse than he was when he was turned out. We are no friends to quacking in either man or beast; but, knowing that mischief to horses so frequently arises from a long respite from work in the winter, unless some preventive measures are had recourse to, we recommend the repetition of a light dose or two of physic to the grass-fed hunter during frost, or even during open weather, about Christmas.

Having recommended the fashionable operation of clipping to the grass-fed hunter, we will give our reasons for having done so. Nine horses out of ten, treated as he has been treated in the summer, break out into a cold sweat, after work, during the first part of the season, the natural consequence of debility; and the dew on their coat has all the chilling influence of a wet blanket on their body. The removal of the coat by the scissars, then, although it is no remedy for the former, prevents the ill effects of the latter; which, by producing cold on the surface of the body, occasions a determination of blood to the lungs, or other important viscus, and is a great enemy to condition. Although we deny the necessity of clipping a horse that has been *properly* summered (for, admitting that he may have a long coat, he will not in that case break out after work), we allow it the merit of expediting condition, by giving increase of bulk, and promoting the vigorousness of the horses' renovating powers; and, therefore, in this case useful. Looking at it, however, in another light, we find many objections to it; amongst the greatest of which is the deprivation of the protection of the coat or hair, to an animal so much in want of it as the hunter is, and therefore an outrage on nature. In fact, it is, to a certain degree, a substitute for good grooming, and as such will continue to be in favour with many grooms, as also with such of their masters as submit to be dictated to by them, or who may pay too much regard to appearances.

Having alluded to grooms, a remark or two may not be ill placed. Such of them as have the care of large studs cannot be expected to work, but to overlook those who are under them; and their responsibility is considerable. There is much in the choice of helpers; for none but persons who have narrowly watched it, are aware of the effects of a good dressing to a hunter, not merely in having his skin cleared from impurity, and in improving its elasticity, as well as the tone and colour of the hair, which may be termed the complexion of a horse, but it greatly promotes general health by its effect on the circulation of the blood, as well as all other secretions, and in bad weather is a substitute for exercise.

Good stables are indispensable to the well-doing of hunters, equally so with a comfortable house and a warm bed to those who ride them. Even the veterinary professors have at length acknowledged the benefit of the genial warmth of a stable to horses at work, although, in common with ourselves, they insist on the necessity of well ventilated stables. No doubt it is injurious to any animal to breathe an under-oxygenated air, and the effluvia arising from animal excretions are injurious to eyes and lungs. A hunter should live in a temperature of about 63° of Fahrenheit in

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the winter, and as much below that point as it can be made in the summer, by means of exclusion of the sun, open doors, &c. But it is essential that a stable in the winter should not only be warm, but dry; and if not dry, the ground under and around it should be drained. A delicate horse never arrives at perfection of condition in a damp stable, and it operates powerfully against all others, often being the cause of fever in the feet. Stalls should not be more than six feet wide, nor raised towards the manger; but there should be a slight inclination in the flagging towards the centre of them, to enable the urine to find its way to a drain, which there always ought to be, as it contributes much to cleanliness, and consequently to health. "Loose places," or "boxes," as they are termed, are most desirable for all horses after severe work, and a celebrated veterinary surgeon (Mr Turner of Regent Street, London, to whom the public is so much indebted for his illustration of the navicular disease in the foot) has given it as his opinion, that if all horses were suffered to lie loose after work, there would not be half the cases of lameness in the feet that now occur. Desirable as such treatment may be, it is universally impracticable, on account of the space which large studs would occupy; but every sportsman should have boxes about his premises, and his hunters should be invariably put into them for two or three days after work. To their general use there is one objection, although not a serious one. Horses always lying loose are apt to refuse to lie down in stalls, when removed to premises where boxes cannot be had, but they become reconciled to them after a few days. It is, however, the opinion of a celebrated sportsman, that if a hunter should have stood his work ten seasons being always tied up, he would have stood it twelve if he had lain loose.

We quote the following extract from *Nimrod on Condition of Hunters*, on the subject of warm stables. After proving, by the fact of the horse degenerating in all cold countries, that warmth is congenial to his existence, he thus proceeds:—"They who attend to such matters will find, that the constitution and habit of a horse undergo a change when kept in a warm stable, favourable, no doubt, to the work he has to perform as a hunter in the stable of a hard-riding man. He is not that gross animal which he might otherwise be, if a hard feeder, and kept in a state more nearly approaching to a state of nature. This we may attribute to the increase of insensible perspiration occasioned by increased circulation, whereby the grosser particles of the body fly off and are got rid of. In this state he would bear some comparison with a well-fed English farmer, when put to perform feats of activity with a man of more refined habits of life, where nineteen times out of twenty he would be defeated." Again: "As there is an analogy between a man and a horse in work, let us carry it a little further, and ask, Whether, after a hard day's exercise in the winter, a man would recover sooner if he passed his evening in a warm room, or if he passed it in a bivouac, or in a room that was cold and damp?" He concludes by giving it as his opinion, that if it be possible to get a horse to look well in a cold stable, it is not in the power of a groom to put him into the height of condition in a damp one; and in this we heartily concur.

We subjoin Nimrod's plan of stabling for six hunters. "I would have," says he, "two four-stalled stables, in which I would keep only six horses, that is, three in each; and I would have a box at the end of each. If possible, I would have a southern aspect, with windows opening from the top or downward, or else on a pivot in the centre, and placed so high in the wall, that, when open, the air may be circulated through the stable, without affecting one horse more than another, and the height of the interior should be only twelve feet in the clear. I would have the stalls paved nearly flat, with only a trifling inclination to the centre; in each of which there should be a small grating over the drain, and the stalls should be no more than six feet wide. There should be at least twelve feet behind the horses, and the exterior walls and doors should be very thick. The wooden partition-walls of the boxes should be only nine feet high, with wooden bolts to the doors; and each box should not exceed ten feet square. The saddle-room, well fitted up with saddle-cupboards, boiler, &c., should be in the centre of the building; in the front of which there should be a passage, under cover, for horses to stand in when their legs are washed. Of ventilation I say nothing, that being a matter of course; but I would have the sides of the stalls nine feet high at the head, with small iron racks, and pillar-reins for each horse to be dressed in. I should be very particular about the stall-posts, for these are frequently the cause of severe injury. When I went to see the King's stables at the palace at Pimlico, I was astonished to see almost every other horse in them, with capped hocks. On inspecting the stall-posts, I perceived the cause. They were of fluted stone, and with angles, which proved that Mr Nash (the architect) knows nothing about the inside of stables. Stall-posts should be made of wood, quite smooth and circular; and they should extend to the ceiling, or be at least ten feet high."

Paddocks.—Some persons turn their hunters into the fields in the summer, because they have no small paddocks, or any outlets to their buildings, and are averse to their horses remaining all the year round in the house. Nothing, however, is easier than making temporary paddocks, or outlets that will restrain stallions, or any horse that may be put into them, without the chance of their breaking out of them. Let a small space, say thirty or forty yards, be hurdled around, and the hurdles lined with faggots reared up from seven to eight feet high. The faggots will be all the better for the exposure to the air during a summer; and as horses cannot see through a fence of this sort, they will never attempt to break through it.

Food.—The proper feeding of hunters has much to do with their condition, and likewise with their remaining sound. Food should be proportioned to work, and it should also be of the very best quality. Hay that has been much heated in the stack is above all things to be avoided, as, from its powerful diuretic properties, it debilitates, and creates thirst; and mow-burnt or heated oats are equally productive of mischief. Eight or ten pounds of hay per day are as much as any hunter should eat, and that which is produced on dry upland ground is best. Indeed, we are far from thinking that rich meadow hay, finely scented as it is, and apparently so full of nourishment, is fitted for any description of horse that is required to go fast, and we are quite certain that thousands of horses are destroyed annually by the effects of hay and water. The latter cannot be too soft, and when not so, it should be kept in the stable some days previous to use, and with a small portion of bran in it. Mr Percival (*Hippopathology*, p. 25.) mentions forty-nine horses being killed in one stud, in France, by a disease produced by eating bad hay and oats.

But nothing puts the groom's knowledge of the art of feeding hunters more to the test, than the management of such as are either naturally thick-winded, or afflicted with chronic cough; and as in man, the digestive organs are oftener than any other disordered, so the respiratory organs in the horse are the most common seat of disease. It is, however, in the power of a groom, by great attention to feeding, keeping the habit of body from becoming foul and plethoric, and well regulated work, to make horses of this description tolerably fit to go with hounds; whereas in bad hands, they would be nearly useless, at all events dangerous to ride. Such horses are generally hearty feeders, and when so, should have a setting muzzle, as used with race-horses, put on them on the night before hunting, unless they have been out with hounds within three days. Water also should be sparingly given to them on that day, and not

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ment after three o'clock P. M. Frequent mild aperients, or alterative medicines, are very efficacious here; for as, in the human subject, the lungs often become the seat of disease as a second cause of indigestion, the state of the digestive organs should be minutely attended to with horses of this description.

A broken-winded horse is never seen in a stud of hunters; but Nimrod's remark on this subject is in accordance with what we have now written upon it. "Most veterinary surgeons," he says, "attribute this disease to the consequences of high keep. Here, no doubt, they are in a great measure correct; but if good grooming were not for the most part a match for the effect of high keep, what would be the fate of our race-horses, which eat almost as much corn as they can swallow from the first month of their existence? Amongst them a broken-winded horse is a rarity."

Many nostrums are prescribed for thick-winded horses, amongst them, carrots in the winter, and green meat in the summer. We approve of a few carrots in the winter, but object to green meat, unless in small quantities. Is not flatulency the distinctive feature of a disordered respiration? And what promotes that equally with loading and distending the stomach with green food? The small dimensions of a horse's stomach, evidently shew what nature intended him for, namely, *to go fast;* and the pathologist would very soon convince us that, in proportion as that organ is distended, will the respiratory organs be oppressed. Hence the indispensable practice of not allowing hunters their usual allowance of food and water on the morning of hunting; as also of putting the setting muzzle on the racer the night before he runs. The food most proper for all horses, but particularly for such as are not perfect in their wind, is that which contains most nourishment in the smallest compass or space.

But we must not overlook the treatment of the *sound* hunter before and after hunting; as we consider the lives of more than half of those hunters which have been lost from the effects of severe chases, to have been lost from want of knowledge of how they should have been treated, at either the one or the other of these periods. Nimrod, in his letters on this subject, doubts whether it be in the power of hounds to maintain a chase long enough to cause the death of a horse, fairly ridden with them, provided that horse have been properly treated in the summer, and is in what is called strong work, or quite fit to go, on the day of the run. Without stopping to argue this point, which is not capable of proof, we will proceed to shew in what state a hunter ought to be taken into the field, to meet foxhounds, giving him fair play; and the man who takes him there when not fit to go, must always be prepared for the consequences.

We consider a hunter, in proper condition, equal to at least three days' hunting in a fortnight, taking the average of sport, which will, of course, at some certain periods, send him oftener into the field in one given time than in another, as, after a severe day, he should have a week's clear rest. But since the second-horse fashion has been so general, it is impossible to speculate on this point, as it so often happens that one of the two horses the sportsman sends to cover, returns home without having done much. The chief point, however, to be insisted upon is, that the hunter should have a good gallop, causing him to sweat freely, on the day before he goes to hounds, and if for half-a-mile on rising ground, it will be more favourable to his wind. His food on that day should also be attended to, in reference to his constitutional peculiarities; for, if not the best winded horse in the stud, or given to throw off his meat on his road to cover, he should have no water after three o'clock the preceding afternoon, with the exception of a few swallows, to make him relish his corn, on the morning of hunting. Sending hunters out now with full bellies has no excuse; whereas one was found for it, when they left their stables five hours sooner in the morning than they do at present; and returned to them often five hours later. We allude to past days in which there were few artificially made covers, and when foxes were found by the "drag," through long chains of woods, and certainly ran over much more ground than modern foxes do, which, being generally bred near game preserves, run shorter, and are not so stout as formerly.

After Hunting.—The treatment of a horse now, will depend on what he has been doing. If not a severe day, no further notice of him is requisite, than to ascertain whether he feeds as usual; and if not an alterative ball,[1] with a liberal allowance of tepid water, will soon restore his appetite, by allaying the over-excitement that has checked it. It is after a severe day's work that danger to a hunter is to be apprehended, the consequence of over-excitement of the vascular system, and he should be in this case narrowly watched. If merely fatigued, such are the restorative powers of the animal, rest, in a large loose box, with an hour's exercise daily, in the open air, will soon bring him about; but we should be on the alert against fever. Here, however, we generally have notice,—some directing symptoms which cannot be mistaken, such as hurried respiration, extreme thirst, restlessness in his stall, a considerable relaxation of the muscles in the interstices of the hips, reddened eyelids, and a quick pulse. But unfortunately for hard-riding sportsmen, it too often happens, that such is the rapidity with which what is termed accidental inflammation takes place in the horse, that the most prompt measures will not always arrest its progress, and the most common termination of it here is in the feet. Not only does the animal suffer great pain, but should he not cast his hoofs entirely (the fore-feet are most commonly affected), he becomes, what is called, pumice-footed, and of no value afterwards as a hunter. Knowing this to be the case, we are advocates for some prophylactic measures to be taken after a very hard day; something repellant and sedative administered, which may not only prevent an inflammatory attack, but, by cooling the system, and consequently restoring the appetite, enable the horse to go sooner into the field again, than if he had been entirely abandoned to his own restorative powers.

But the most critical period with the over-ridden hunter is, when he first appears to shew distress, which he often does on his road home, or even before he quits the field; and here mistakes have been made, which have caused the death of many a good animal. In the first place, his rider fancies it necessary to drag him home, perhaps many miles on a cold winter's evening, to "his own comfortable stall," than which, just at this time, a large and cold stable, and the first he could be put into, would be far more beneficial to him. Again, he says, "I'll not do any thing to him till I get him home, when I will have him bled;" whereas, since all horses that die from exertion beyond the limits of vital power, die from suffocation, it will then be, in all probability, too late, as *instant* relief is wanted. A stimulating cordial is likewise at this time good (a pint of sherry as good as any other), but both are bad if inflammation has commenced; also keeping up a strong determination of blood to the surface by friction of the body, head, and legs, with warm clothing afterwards on the body and head; a well littered down stall, with plenty of fresh air. A gallon of blood should be at first drawn; and if the increased action of the heart and arteries continues, the horse should be well blistered behind the elbows, and lose another gallon of blood. Blood-letting from the foot-veins, is also highly to be recommended in cases of extreme exhaustion, after a hard day with hounds. It is a very simple operation, and can never do harm; but we advise it to be performed by a veterinary surgeon.

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[1] The following alterative and sedative medicines are found efficacious at this time:—Cinnabar of antimony, 3 oz.; balsam of sulphur, 2 oz.; camphor, 1 oz.; nitre, 4 oz. To be made into ten balls; one ball a dose. These are known among grooms by the term "red balls."

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They who have never before experienced it, may be alarmed by an inward noise in a distressed horse, which may be mistaken for a beating of the heart, whereas it proceeds from a convulsive motion of the abdominal muscles, or muscles of the belly. It is, however, a symptom of deep distress, and is only relieved by relief given to the lungs, by bleeding and other preventive means.

Treatment of Horses' Legs.—We have already said, that the management of horses' legs forms part of the science of the stable, and a most important part too. It is no where so well understood as in racing stables; but from the violent nature of his work, the hunter is equally indebted to it. The barbarous practice of blistering all four legs previously to turning out, is now happily exploded; but as in less violent exertion than following hounds, a certain insecurity from accidents is inseparable from the delicacy of all animal structure, the legs of hunters will occasionally fall amiss. It being useless, however, without stating the extent of the injury, to talk of prescribing remedies, we have only to state, that a very efficient one has been found for the torturing one of firing, in many cases where the actual cautery was considered as the only one. For example, for ligamentary enlargements, cases of enlarged joints, tendons shewing symptoms of giving way, or any other appearance in the limbs, of a departure from their primitive tone and vigour. This consists in the application, during the non-hunting months, or any other period of rest, of the mercurial charge, in either of the following forms. It is made up by Mr Field, veterinary surgeon of London, and no doubt by others in the profession, in a strong adhesive form; or, at a distance from the metropolis, it may be applied, as recommended by Mr Kueny of Nottingham, who is constantly in attendance upon the studs at Melton Moubray, in Leicestershire. It consists of the common mercurial *plaster* (not *ointment*) of the shops, made up according to the London Pharmacopœia; and in the proportion of half-a-pound to a leg, applied in a warm and consequently liquefied state, and when covered by deer's hair, bound to the limb by means of a linen roller. At the end of a fortnight, the stitches of the bandage being decayed, the charge will slough off, when another, if necessary, is put on. It is to the highly absorbent property of mercury that the benefit here derived is to be ascribed; and it is no small recommendation to it, that, in addition to the general restoration of the limb, the painful operation of the actual cautery, as also the blemish occasioned by it, are avoided.

It is, however, a well known fact, that hunters will work and stand sound, for many successive seasons, with legs apparently much out of form. Enlargements take place in the sheath of tendons after strains; also from blows, where the parts become lined by a thick coat of lymph; and sometimes the body of the bone itself is found thickened, from a deposition of bony lamina over the original bone. When all this has been in progress, we question the propriety of any active measures, unless, as is generally the case, a feeling of soreness is expressed after work, by a shifting, or favouring of the limb, or limbs, in the stall; or by a "feeling" manner of going on first quitting the stable. When legs are really callous, little impression can be made upon them, unless by active measures; but physic, rest, and good grooming, are the best preservatives of these most essential members of the horse's frame; with the friendly auxiliaries of hot-water, flannel bandages, and loose boxes, after severe work, and good shoeing at all times.

The Foot.—Owners of valuable horses may congratulate themselves on the assurance that, by the aid and extended influence of veterinary science, they have no longer to apprehend injury to the feet from the mere application of shoes. On the contrary, they may rest satisfied that, provided no internal disease attack them, from over-excitement by work (and that often is created on ground where shoes would be unnecessary, such as crossing a very deep country), they will be not only as sound and healthy, but *in better form*, from having been properly shod, than if they had not been shod at all. Some hoofs, however, having a greater disposition to secrete horn than others, and thus called strong feet, should never remain more than three weeks without being subject to the drawing knife of the blacksmith (the ruinous butteris is now put aside), and the shoes properly replaced. Neither should stopping with damp tow be omitted; as moisture, *not wet*, is beneficial to the health of the foot. Here then, again, are at once apparent the evils of the out-of-door summering of hunters. The foot of a horse so exposed, is at one time saturated with wet, and at another exposed to a drying wind and a burning sun, the contractile powers of which upon horn, are too well known to require comment. Do what we may, however, horses that are required to "go the pace," will always be more or less subject to diseased feet, quite unconnected with shoeing; and against such diseases there are but two precautions on which much reliance can be placed: First, let hunters be well prepared for their work, and properly treated after it; and, secondly, let them have sufficient obliquity of pastern-joint (in our opinion one of the most important points in the whole structure of the horse), to break the force of concussion; which, together with over-excitement of the vascular system, is the parent of that irremediable disease of the navicular bone, formerly called "founder;" and by the wiseacres of old times, "chest-founder," because the muscles in that part wasted, from the inability of the suffering animal to exert them. The posture of a horse in his stall, when afflicted with this complaint, or fever in the feet, is too characteristic to be mistaken.

We have only one more remark on shoeing. In following hounds across deep countries, hunters are apt to strike a hinder foot against a fore foot, and inflict a severe wound. There have, indeed, been many instances of the total separation of the back sinew by this, often unavoidable act, particularly in leaping brooks. It was formerly very generally believed, that the blow was inflicted with the *toe* of the hinder shoe, to obviate which, shoeing smiths were ordered, by hunting grooms, to let part of the hoof protrude over the front of the shoe, but still the evil continued. It was, however, asserted, in the letters of Nimrod, that it was by the *inside edge, or the rim of the hinder shoe*, and not by the toe, that the act of over-reaching was performed. This was at first doubted, but experience has confirmed the assertion; and we have reason to believe, there has not been an instance of serious mischief by *cutting*, from an over-reach, since the inside edge, or rim, has been rounded off, or bevelled. Indeed, a moment's reflection would dispel all doubts on the subject; for the obtuse form of the toe of a horse-shoe could not inflict the severe wounds we have seen inflicted (often cutting off part of the fore-heel); whereas the inside rim of a worn shoe is nearly as sharp as an ordinary knife. Besides, the act is performed *after* the hinder-foot has overstepped the fore-foot, and therefore cannot be performed by the toe, but in the act of drawing the hinder foot back, after it has overstridden its bounds. Bruises, from over-reaches, still occur, which, though sometimes serious, are comparatively, with cutting, harmless, as fomentation, and a few days' rest, will effect a cure.

The action of the hinder leg reminds us of one useful hint to grooms travelling hunters on the road. If we follow a well-formed horse, with the free use of his limbs, on a road upon which his footsteps are imprinted, we shall find the hinder foot oversteps the fore-foot in the *walk*, but falls behind it in the slow *trot*. Exclusive of relief to the muscles by change of action then, it is safer to vary the pace from a walk to a slow trot on a journey, as causing less fatigue to the hock-joint, by which curbs and spavins are frequently thrown out. Add to this, the slow trot is the safest pace a horse goes, because his step is shortest.

(B. B. B. B.)

HORSEMANSHIP.

As to the question, Who was the *first* horseman? it would be in vain to inquire, for even the writers of ancient fables do not agree upon the point. By some it is pretended that Bellerophon first mounted a horse; that Pelethronius first bridled him; that he was harnessed by Erichthonius, and fought upon by the Centaurs of Thessaly. But quitting fiction, we learn from the Sacred Writings, that to Egypt we are indebted for the equestrian art, from which country, by the aid of the colonists who emigrated from it and from Phœnicia, it was introduced into Greece (perhaps by Erichthonius, fourth king of Attica), where it attained to great perfection. Although there was no cavalry employed in the Trojan war, equestrianism must have been much practised and well understood in Homer's time, which is at once proved by a reference to his works. In the fifth book of the Odyssey, the shipwrecked Ulysses, tossed by the waves on a plank, is compared to a skilful horseman on an unruly steed; and in the fifteenth Iliad, we find one man managing four horses at once, leaping from the back of one to another, at their full speed. Herodotus (in *Thalia*) speaks of hunting on horseback in the time of Darius, even descending to the particulars of an accident in the field to the noble satrap of Persia; and likewise the same writer (in *Melpomene*) mentions the Amazonian women hunting with their husbands on horseback. Xenophon also says that Cyrus did so, when he exercised himself and his horses. Again, with reference to those early times, we should not pass over the introduction of horses and horsemanship into the public games of Greece, and particularly the Olympic Games, which, according to an expression of Pindar, as far transcended all the others as gold is superior to the baser metals.

From the same authority we learn, that the Ethiopians and inhabitants of India, as cavalry, formed part of the expedition of Xerxes against the Greeks. But it appears that the Arabs and the Parthians, who afterwards became so famous for their equestrian accomplishments, were ignorant of the art at the period in question; at least both these nations fought under Xerxes, the former on camels, and the latter on foot. The Persians were more celebrated for their horses than for their riding. According to Athenæus, they were more solicitous of their ease and safety, than anxious for reputation of boldness and dexterity in horsemanship. The Scythians and the Sarmatians were both famous about this period, as well for their breed of horses as for their skill in riding them. In fact, so renowned were the former people, that, according to Gibbon, they were supposed by strangers to perform the ordinary duties of civil life on horseback; "to eat, to drink, and even sleep, without dismounting from their steeds."

The people of Mauritania, Numidia, Massilia, Nasamonia, and other adjacent parts, are also spoken of as having possessed breeds of excellent horses, but were still more distinguished for their singular mode of managing them (on the authority of Livy, and Cæsar) without the aid of a bridle, and even in battle by means of a small switch or wand, turning them to the left by striking on the right side of the head, and *vice versa;* and stopping them by striking the front of the face. These practices are also confirmed by Ausonius, who celebrates the Emperor Gratian as having excelled in them. All we have to remark here is, that we are glad such practices are abolished, not only on our own account, but for the sake of horses, who must have been greatly tortured before they were brought to such a state of obedience as to be ridden *infræni* (without bridles), as Virgil says of the Numidians, and this in the confusion and excitement of a battle. There is an elegant passage on this subject in Lucan's *Pharsalia*, descriptive of the several tributary nations which Juba took into the field in the cause of Pompey, against Curio's army, which he entirely defeated.

> "Autololes, Numidæque vagi, semperque paratus
> Inculto Gætulus equo," &c.

Thus translated by Rowe:—

> "With him unnumber'd nations march along,
> Th' Autololæ, with wild Numidian throng;
> The rough Gætulian, with his ruder steed;
> The Moor, resembling India's swarthy breed;
> Poor Nasamons, and Garamantines join'd;
> With swift Marmaridans, that match the wind;
> The Marax, bred the trembling dart to throw,
> Sure as the shaft that leaves the Parthian bow;
> With these Massilia's nimble horsemen ride;
> They nor the bit, nor curbing rein provide,
> But with light rods the well-taught coursers guide.
> From lonely cots the Lybian hunters came,
> Who, still unarm'd, invade the salvage game,
> And with spread mantles tawny lions tame."

The Greeks transmitted the art of horsemanship to the Romans, who soon equalled, if they did not excel, their instructors; and nearly one of the first public acts of their first king was to establish the equestrian order, the second order in Rome; the *equites*, or horsemen, being placed far above the commonalty, and next to those of the highest quality and fortune in the state. In short, were proof wanting that horsemanship, as an accomplishment, was held in the greatest esteem in the early ages of the world, it would be found in the fact of the accomplished Cicero (*De Off.* l. 2, c. 13) telling his son Marcus, with the vanity that now and then breaks forth in the splendid effusions of that great man's pen, that the eyes of the world were upon him, on account of his father's fame; and that he had received the praise of the whole army for his excellence in *riding.* But the exercise and art of horsemanship occupied much of the study and attention of the Roman youth; and we find Horace inviting them to the practice of it, in the eighth ode of the first book.

Descending from the heroic ages, in which the earliest history we possess informs us the art of horsemanship was in full force and vigour, to comparatively modern times, the first notice we find in our own history of the art of riding horses, is in the tilts and tournaments; the earliest mention of which we find in the French historian Nithard, who reports, that, at an interview which took place at Strasburg between Charles the Bald and his brother Lewis of Germany, the followers of both these princes fought on horseback; and, by way of marking the period, it may be observed, that Charles the Bald succeeded to the throne of France A. D. 840. Ducange affirms, that these combats were for some time peculiar to France, and expressly called French combats, *conflictus Gallici.* Scarcely any thing distinct, however, is known about them till we find them practised in England, about the year 1140, in the reign of Stephen, after which time they became general all over Europe, particularly in England, where they were displayed on all great occasions. The spots most famous for them in London, were the Tilt-Yard, near St James's Park, and Smithfield; which the neighbourhood of the latter place confirms, by the names of the streets, such as "Giltspur," "Knight-rider," and so on. They are also known to have been practised on the spots now called Cheapside, Barbican, and Bridewell; and to have been exhibited in considerable splendour in various parts of the country besides, which a reference to the highly popular novel *Ivanhoe* will show. These were the days when "to witch the world with noble horsemanship" was one of the chief accomplishments of a gentleman; in which the management of the horse and the lance was amongst the principal requisites of knighthood; when the contest, both in real and in mimic war, was decided by the superiority of such means; the days of chivalry, in fact, which, as a well-known historian says of it, in his portrait of the character of a perfect knight, the accomplished Tancred, "inspired the generous sentiments and social offices of man, far better than the base philosophy, or the baser religion of the times."

The manège, and more especially the *high* manège-riding, is now nearly out of use. As Colonel Peters observes (*Treatise on Equitation*, p. 236, London, 1835), "In the riding-houses, for mere pleasure, or military purposes, very little of the manège riding is requisite. The instructions for a manège rider and his horse go far beyond those required for a military horseman and his horse. The confined airs, cadences, or paces of the manège, are not calculated for the duty of a pleasure or a military horse; the sensitive, delicate hand, and its aids, of the manège-rider would not do for a soldier. It should, therefore, be well understood, that, although a soldier's horse should be quick and ready, it is not required to have him so much on his haunches, nor so fine in the mouth, as the manège-horse must be. If a military horse be put in his proper equilibrium, it is all that is requisite; he should not lose that boldness and freedom of action, which is generally so much admired, and so necessary, in the different duties that a military rider is called upon to perform." We are glad to be enabled to state, on such high authority as that of Colonel Peters, that the exercise of the manège is by no means necessary to the education of the horse, for any purposes which require his being trained in the school, as it is impossible to read the instructions of the masters of that art, as practised so generally at one time, without being satisfied, that the greatest severity must have been resorted to in their lessons. It is a maxim in horsemanship, and a good one, "that a horse must never do any thing of his own head, but in obedience to his rider;" but to call upon him to force himself into the unnatural positions which the *Manège d'Ecole* requires, is, in our opinion, labour very ill bestowed; and as for the gracefulness of his action, so much insisted upon by the manège-riders, we think it is never more fully displayed by him than when nearly in his natural state. There is, however, we admit, something pleasing in the associations of the horse highly caparisoned, as well as the airs of the manège, with grand and imposing spectacles; and there are several passages in the third Georgic of Virgil, which shew that the manège was found out earlier than many persons may imagine.

Not only is good horsemanship well suited to the pith and nerve of the English character, but it has always been considered as one of the corporeal accomplishments of a gentleman. Thus Clarendon, in his character of the Duke of Newcastle of his day, says of him, that "he was a very fine gentleman, active, and full of courage, and most accomplished in those qualities of *horsemanship*, dancing, and fencing, which accompany a good breeding; in which his delight was." But there are other than mere personal advantages attending good horsemanship. It is the habitual contempt of danger that ennobles the profession of the soldier; and horsemanship, as practised in England at present, and with the *esprit de corps* of the several hunts, tends much to the same end. Those who pursue it in the field, learn to expose themselves to danger with less reluctance, are less anxious to get out of it, or given to lose their presence of mind when in it, than persons whose pursuits have been of a different turn; in fact, it may be said to increase natural courage. Such persons, again, as merely ride on horseback for exercise, find in it the great preservative of health. Nay, more than this, persons of tender constitutions have surmounted the weakness of their nature entirely, by horse-exercise and hunting; in proof of which, many cases could be quoted. The following, of a patient of the celebrated Dr Sydenham, is perhaps as conclusive as any other:—A gentleman, a relation of the Doctor's, who was brought so low by consumption, that there appeared to be no possibility of a recovery by medicine, was induced by him to try horse-exercise, and a journey to his native country. On leaving London, he was so weak as to be lifted on his horse, and was refused admittance to the first inn he stopped at, being supposed to be in a dying state. Notwithstanding, he persisted in riding, by easy stages, to Exeter, and gained so much strength by the way, that though one day his horse lay down with him, in some water, and he was forced to pass many hours in his wet clothes, he not only sustained no harm by the accident, but arrived at Exeter greatly recovered. Thinking he had gained his point, he left off horse-exercise, and had a relapse; but, on betaking himself again to the saddle, he obtained a perfect recovery. Nimrod, in one of his hunting tours, says, "My time was almost divided between my saddle and my bed; but I never knew what it was to be fatigued when I lived temperately, and went early to rest. Indeed, such a life bade defiance to disease. A celebrated physician of the last century used to recommend riding on horseback to his patients. 'Live,' said he, 'in a saddle.' That riding is the most wholesome of all exercises, I have little doubt. Despite of all the vile stuff that finds its road down his throat, who ever heard of a bilious post-boy?" To this might be added, the no small advantage a person mounted on horseback derives, from breathing a purer air than when on foot, and consequently nearer to the ground. The salutary effect of the motion of a horse, also, on a sluggish or diseased liver, is acknowledged by all medical men.

We shall now take a view of horsemanship in the only forms in which it is at present applied to any useful or pleasurable purposes; namely, military, hunting, racing, and on the road, leaving the art of instructing horses for the Circus to those who find it profitable to fit them for it, which we admit they do to very great perfection, though we fear not without the necessary privation and punishment unavoidable, we believe, in such kind of instruction; or, in other words, in making animals perform far more, we conceive, than the Creator of them ever intended they should perform.

The military seat approaches nearer than any other to that of the manège; and, by reason of the horse-soldier having, in general, but one hand to hold his bridle with, is one which gives him great command over his horse, without disturbing his seat. He sits well down in his saddle, on his fork, or twist, with his body erect, and in perfect equilibrium with his horse; his legs well stretched down the sides, with a firm pressure of the calves, as well as of the knees and thighs, and the feet firm in the stirrups. But it is not by any *one* of these aids that he becomes a good horseman. He must be in perfect unison, as it were, with his horse's actions and paces, to maintain a good and graceful seat; and, in proportion to the just balance of his body, will he be able to have a steady hand, a point of vast importance to the dragoon. The importance of this balance, and keeping himself in a proper equilibrium with his horse, is increased by the fact of his not being allowed to rise to the horse's trot, and therefore requiring a still finer use of the bridle hand. "The man who rides with the aid of the proper equilibrium," says Colonel Peters (p. 234), "will, in case of necessity, know when to apply the strength he has retained with a steady, light hand, and govern every motion according as he finds it necessary for his purpose; play light with his own weight upon the saddle (by a gentle spring in the instep of both feet on the stirrups), with an easy pressure of both thighs, knees, and calves of the legs. When the horse jumps or plunges, then these aids are also requisite to keep the seat; but, in an easy, steady pace *forward*, it is most particularly to be pointed out to a young man, and cannot be too often repeated, that, to become an easy, elegant, or proper horseman, he must learn to ride with comfort and pleasure to his horse as well as to himself; he must learn to seek his balance from his hip upwards, to keep the body with a slight inclination backwards from the perpendicular, and balance himself thus gradually on his horse in all the different paces; which, of course, cannot be expected all at once. A man that rides by the force of his knees alone, shaking his arms and hands, although he rides his distance in the same period of time that the good rider would, yet he cannot be said to ride his horse, or to have any part of his body in the proper equilibrium; but the man who rides his horse with a light, steady hand, and elastic body (which, when disturbed even, has the power of restoring itself to its former seat), in unison with the horse's action, may be truly said to ride in the proper equilibrium."

It would much exceed the limits of this article, were we to enter into the detail of the military riding-school; neither is such a task necessary, from the number of works that have been published on the subject, and also from the various changes in the system that are perpetually occurring, according with the fashion of the day. We shall proceed, then, at once to the general principles of horsemanship, as applicable to the road, the hunting-field, and the race-course, commencing with the road.

The act of mounting may be called the first step in practical horsemanship. With horses perfectly quiet, it matters little in what manner we approach them; but in every thing that relates to horses, a certain precaution is necessary. Let the person who is about to mount, then, walk up to his horse, not directly in his face, lest he may alarm him, nor behind him, lest he may strike at him, which he would thus give him an opportunity of doing. Let him rather approach him on the left side, over against his shoulder, inclining something more to his head than to his flank. In the summer time, when the flies are troublesome, this caution is not ill bestowed, because the quietest horses will sometimes strike out, sidewards, after the manner of cows, to rid themselves of their tormentors; and many a man has been injured in the abdomen, or thigh, from this cause. Old writers on horsemanship recommend the horseman, when about to place himself in the saddle, after having put the left foot firmly into the stirrup, to take the reins and the pummel of the saddle in his left hand, and laying his right hand fast upon the hinder part of the saddle, thus to spring into his seat. We should prefer his taking a lock of the mane, together with the reins, into the left hand; because, if he be a man of any considerable weight, his having recourse to the saddle for all the assistance he may require, would be very likely to displace it, especially as no horse in the hands of a good horseman is now tightly girthed.

When he is mounted, the proper adjustment of his reins is the next thing to be attended to. If a single-rein bridle, he has nothing to do but to draw the reins with his right hand through his left, till he finds he has got hold of his horse's mouth equally on both sides of it, when he shuts the left hand, letting the little finger separate the two reins. The same should be done with a double-rein bridle, only observing, as they are drawn through the hand, that the horse's mouth is to be consulted, as to whether that attached to the bridoon or to the bit is the one required to be first acted upon. Many an inexperienced horseman has met with accidents from want of a proper discrimination as to the right use of the reins, when mounted on high-spirited horses, with finely made, that is to say, highly susceptible, mouths, and unused to a rough hand. The bridle reins should be held at a convenient length; for, if short, they will discompose the attitude of the body, by pulling the left shoulder forward; and they should be held with a firm grasp, dividing them, as before mentioned, with the little finger. When a horse pulls at his rider, he should advance his arm a little, but not the shoulder, towards the horse's head, raising his hand towards his breast, and the lower part of the palm rather than the upper; but he should not shorten the rein in his hand, if he can command his horse without it, or he may lose the proper *appui*, or bearing of his mouth. Old writers recommend the bridle-hand to be held perpendicular, the thumb being uppermost, and placed on the bridle. Modern practice is in favour of the knuckles being uppermost. The perpendicular hand may do very well in the school, or with the severe bit of the highly-drilled dragoon horse; but no man could ride a free-going race-horse over a course, or a hasty hunter over a country, in that form.

In dismounting a horse, the bridle and mane should be held together in the left hand, in the same manner as in mounting. Unless the horseman be very active, he may put his right hand on the pummel of the saddle, to raise himself, previously to throwing his right leg back over the horse; when, by grasping the hinder part of the saddle with the right hand, he lets himself down with ease. The right leg, however, should not be bent at the knee, or the spur may strike the horse's side, in the act of being thrown backward.

The first step towards perfection in a horseman, is to know and to feel how his horse is going; but this must be the result of some practice and experience. A horse may not only gallop false, that is to say, if going to the right he leads with the left leg, or, if going to the left, he leads with the right; but he is at times what is called disunited, that is, he leads with the opposite leg behind, to that which he leads with before. In both these cases, either in the school, or in his exercise, he must be stopped, and put off again properly. The method of effecting this, is by approaching your outward leg, and putting your hand outwards; still keeping the inward rein the shorter, and the horse's head inwards, if possible; and if he should still resist, then bend, and pull his head outwards also; but replace it again, bent properly inwards, the moment he goes off true. A horse is said to be disunited to the right, when going to the right, and consequently leading with the right leg *before*, he leads with the left leg *behind;* and is said to be disunited to the left, when going to the left, and consequently leading with the left leg *before*, he leads with the right *behind*. A horse may at the same time be both false and disunited; in correcting each of which faults, the same method must be used. He is both false and disunited to the right, when, in going to the right, he leads with the left leg before, and the right behind; notwithstanding that hinder leg be with propriety more forward under his belly than the left, because the horse is working to the right. And he is false and disunited to the left, when, in going to the left, he leads with the right leg before, and the left behind; notwithstanding, as above, that hinder leg be with propriety more forward under his belly than the right, because the horse is working to the left. A horse will also occasionally both trot and walk false.

Although the foregoing remarks apply principally to the working of a horse in a circle, or in the school; yet, as all horses will occasionally get disunited in their action, when going straightforward, it is very necessary that horsemen should know when they become so, and be able to set them right. Such action is extremely unpleasant to the rider; and likewise so much so to horses themselves, that they will not continue in it long, but generally quit it of their own accord.

The Seat.—It was well observed by Don Quixote, in one of his lectures to Sancho, that the seat on a horse makes some people look like gentlemen, and others like grooms. But a wonderful improvement has taken place within the last half century in the seat on horseback, of all descriptions of persons, and effected chiefly by the simple act of giving the rider a few more inches of stirrup-leather. No gentleman now, and very few servants, are to be seen with short stirrups, and consequently, a bent-knee, which, independently of its unsightliness, causes uneasiness to the horse as well as to his rider; whose knees being lifted above the skirts of the saddle, deprive him of the assistance of the clip, by his thighs and legs. The short stirrup-leather, however, was adopted with the idea of its giving relief to the horse, although a moment's consideration would have proved the contrary, and for this reason; the point of union between a man and his horse, as well as the centre of action, lies just behind the shoulder-blades, which, as must be apparent to every one, is the strongest part of the horse's body, and where the sack of wheat or flour is placed by the farmer, or the miller. With short stirrup-leathers, the seat of the rider is thrown further back on the saddle, instead of being exactly in the centre of it, and consequently his weight thrown upon the part approaching the loins, the weakest part of the body, and very easily injured. From the same mistaken notion was the saddle formerly placed nearly a hand's-breadth from the shoulders, which, of course, added to the mischief; but modern practice has entirely remedied this, as it is now placed as near as possible to the shoulder-bones, so as not to interfere with the action of them.

Next to the advantages of a good seat to the horse, stands the ease and elegance of it in the rider. In the first place, what is natural is easy, and there must be no formal stiffness of the body of a man, or of a woman, who wishes to look well on horseback. When we see a man sitting as upright as if he were impaled, and his body not appearing to yield at all to the motion of his horse, we cannot fancy his having a good hand upon him, because he cannot be in unison with him in his action; neither can he be firm in his seat. But to some persons a good seat is denied by their shape and make. For example, a man with short legs with large calves, and very round thighs, cannot sit so close to his saddle, as another whose legs are thinner and longer, and of course yield him a firmer clip; and whose thighs, instead of being round, are hollowed out on the inside, as we see in the form of our most eminent jockeys. The seat of the short-legged, large calved, round-thighed man, has been jocularly termed the "wash-ball seat," and not inaptly neither, for, like a wash-ball in a basin, he is seldom at rest in his saddle, from the absence of a proper clip. The thighs, in fact, are a most essential part of the horseman in giving him a good, graceful, and strong seat, as on the form of them depends greatly the good or bad position of the knee, which is a point of the utmost importance, not only to the eye, but to the firmness of his seat. The thighs, in fact, should be applied to the saddle and to the sides of the horse, chiefly by their inner surfaces, or the knees and toes would be too much out; and although the line is by no means required to be perpendicular, yet the shoulder, the hip, the knee, and the foot, should not deviate too far from it, to render a seat perfect. When this is the case, we may be certain the disposition of the thighs and legs is correct, as they will hang down sufficiently straight, and without force or restraint; which can never be the case, unless the body of the rider is placed evenly on the saddle, opening his knees a little, whereby his fork will come lower in the saddle, giving him the appearance, as Shakspeare expresses it, of being "incorpsed and demi-natured with the brave beast."

The position of the foot of the horseman is material both to comfort, safety, and elegance. In the old style of riding, the heels were turned outwards, which, of course, threw the toes inwards, and very near to, as well as parallel with, the shoulders of the horse; but this is all wrong. The toes should be turned a little outward and upward, which the slight opening of the knee induces. No animal, human or brute, can look well, or exert its strength well, with toes turned in, and the position is contrary to every thing approaching to elegance.

The position of the foot in the stirrup, however, varies with the pursuits of the horseman. The soldier always, the rider for pleasure, or on the road, generally, rests on the ball of the foot, with a gentle play of the instep. But the man who rides after hounds, and the jockey when he rides a race, find it necessary to have the foot more home in the stirrup, with the toes turned a little upward, as well as a little outward. The advantages of all this are twofold. First, it gives them more power over their horses, by furnishing them with a more substantial fulcrum; and, secondly, to the man following hounds, it is a great security against the foot being chucked out of the stirrup, by the seat being disturbed in a leap, or from any of those causes which perpetually occur in crossing a country.

Great as has been the alteration for the better in the seat of Englishmen, in general, by increasing the length of the stirrup-leathers, and thereby placing them more properly in the saddle; yet, in the schools of the military this system has been said to have been carried too far, so as to endanger the safety of the rider. Indeed both Hippocrates and Galen speak of a disease which, in their time, was occasioned by long and frequent riding, with the legs hanging down without any support, stirrups then not being in use. How it happened that an advantage so obvious was so long in being made available, is not for us here to inquire; but we consider the support of the stirrup to be the *sine qua non* of the management and services of the saddle horse, for all essential purposes. Nevertheless its most essential use is confined to Great Britain alone, and that is, in enabling the horseman to rise in his saddle to meet the action of the horse in his trot, by which means a pace, otherwise most disagreeable and fatiguing, is rendered nearly the pleasantest of any. So long as the demi-pique saddle was in use, in which the horseman was so deep-seated, and trussed up as to make falling almost impossible; and he rode, as Sir Walter Scott made King James to ride, "a horse keeping his haunches under him, and seldom, even on the most animating occasions of the chase, stretching forward beyond the managed pace of the academy;" pressure on the stirrup might have been dispensed with, but with the saddles of the present day, and the more natural action of the horse, we consider it quite indispensable. It is indeed to the disuse of this practice in France, and other parts of the Continent, where rising in the stirrups is never resorted to even on the hardest trotting horses, that is to be attributed the almost rare occurrence of persons riding any distance, or at a quick rate, for pleasure. To this peculiar system in our horsemanship also are we indebted for our rapid style of posting, as without it post-boys could not endure the fatigue the action of a horse creates, especially in hot weather, over a fifteen miles' stage, at the rate of ten or twelve miles an hour, without a moment's intermission; whereas, by means of it, he performs that task with comparative ease and comfort. The objection to it on the part of foreigners lies in the fancied inelegance, if not indecency, of the motion, which we consider not worthy of an argument; but of this we are certain, that what is called "riding hard," that is, *not* rising in the stirrups, in the trot, nor leaning any weight upon them in the gallop, or canter, must be extremely distressing to horses, and especially to such as carry high weights.

Previously to our describing the various kinds of seat, it is necessary to observe, that how well soever a man may be placed upon his horse, his performance upon him will mainly depend on the use he makes of his hands. It is on this account that old writers on horsemanship have dwelt upon the difficulty of the art, rendered more so, in their time, when the airs of the manège formed part of it. The fact, however, is notorious, that not more than one man in a hundred of those who have been riding horses all their lives, has what is called "a good hand upon his horse," much less a fine one, which falls to the lot of but few. When, however, we consider first, that the hand of the rider is to the horse what the helm is to the ship, that it guides his motions and directs his course; and, secondly, that we have recourse to a severe and cutting instrument, acting upon so sensible and totally unprotected a part, as the *natural* mouth of a horse must be, it is at once apparent, that not only a fine hand, with an easy bit, must be most agreeable, and, at the same time, most serviceable to the horse, in any thing he is called on to perform, but that it constitutes the very essence of fine horsemanship. It has been before observed, that a horse's ear has been figuratively said to lie in his mouth, and no doubt he receives the instruction from his rider chiefly through that medium. How material, then, is it that it should be conveyed to him in a manner in which he is not only most likely to understand it, but in one the least disposed to irritate him? How often have we seen a horse fractious and unpleasant both to his rider and himself, when ridden by an indifferent horseman (allowing him even a good seat) but going placidly and pleasantly when mounted by another with a low and fine hand, which appears to sympathize with all his motions, and all his wishes. It is here that Art becomes the handmaid of Nature; and it is the assistance which it is in the power of a jockey with a fine hand to give a horse, which alone exhibits the superiority of one horse over another *in himself* equally good.

Whence this superiority of hand arises, it is very difficult to determine, particularly as it is so frequently apparent in men possessing equally good seats on their horses. From the well-known fact that it is an accomplishment, which in thousands and ten thousands of cases never can be acquired by the practice and experience of a long life, we may almost consider it to be, like the poets, an *ex re natâ* property in the human composition, and thus sought for in vain by those to whom nature has denied it. That it is intimately connected with the nervous influence of the touch is obvious, from its being the result of the action of the hand and arm; and it is in being delicately alive to every motion of the horse, that the excellence of a good hand consists. That it is associated with the good or bad state of the digestive organs, is proved by the necessity all persons find, who are called upon to excel in horsemanship, of living temperately, and keeping early hours. That it is the greatest security to the horseman, under all circumstances in which he can be placed, is also shewn by the numerous instances we meet with, of some persons being enabled to ride horses over every variety of ground, and in all paces, with security; but which, with others not equally gifted, are constantly getting into scrapes, either by falling on the road, running into fences in the field, bolting out of the course in a race, or falling backwards when rearing, which latter accident arises, in most cases, from a rough, unskilful hand.

Seat on the Road.—Of the various, and too often fatal accidents that occur to horsemen, the majority occur on the road. The reason of this is obvious. They are generally, with the exception of cases of inebriation, the result of horses running away with their riders, and either coming in contact with something in their course, which suddenly stops their career, when either one or both are thrown headlong to the ground. Accidents of this description are very frequently attended with the most serious consequences, and shew the necessity of persons who get on horseback being capable of commanding their horse. Next come accidents from horses falling, which are often attended with fracture of limbs, if not loss of life, chiefly, perhaps, from the hard nature of the ground on which the horse and his rider are thrown; for, if a twentieth part of the falls sportsmen get in the field, their horses so frequently falling upon them, were to occur upon hard ground, the danger in hunting would put a stop to it. Falls from horses starting only happen to persons who have a loose seat, and such should ride none but horses free from that fault. But the greatest safeguard on the road, next to a firm seat, is derived from the hand of the rider, who should never trust himself entirely to his horse, however safe he may consider him. He may tread on a rolling stone; the ground may give way from under him; he may step into a hole; or, by the effect of sudden alarm, he may lose the centre of gravity, and then, in all or either of these cases, the fall is worse, by reason of his getting no assistance from the rider, which he may have looked for, until past recovery, when he comes to the ground with a crash. We therefore recommend persons who ride the road, always to feel their horses' mouths lightly, by which means not only will the proper equilibrium be sustained, and they will be carried better for it; for, observe, a horse with a weight upon his back, and one without a weight upon his back, are by no means in relative positions, but, should a false step be made, the aid of the rider being *instantly* at hand, is nearly certain to recover him. By which rein the mouth should be felt, supposing the bridle to consist of a bit and a bridoon, must depend on the sensibility of it, although by changing the pressure from one to the other, the mouth is kept fresher and more lively than when one only is used, and especially if that one should be the bit. There is a certain, but not a large, proportion of horses, that are rideable for all purposes on the snaffle only, whose mouths are generally kept fresh by the light pressure they receive. These are perfect mouths; but, nevertheless, horses that have them in this perfection, should not be left quite to themselves in any one pace.

Previously to the general use of stage coaches, which are now to be found in abundance upon all roads, road-riding was much more in use than it is at present; and immense distances were travelled over in a day by graziers, horse and cattle dealers, racing jockeys, and others, whose habits of being so much on horseback rendered them superior to fatigue. A hundred miles, from sun-rise to sun-set on the same horse, was no uncommon day's work, and this when the roads were in a very different condition from that in which they now are, abounding in ruts and quarters, so that horses were travelling over half their ground, either on a narrow ridge, between two ruts, or over loose unbroken stones; and these were the days in which really good roadsters fetched large prices, as only horses with very good legs and feet could stand fast work long, or be depended upon as to safety. But all modern feats of men on horseback, or indeed the feats of any other period, on the authenticity of which we can rely, retire into the shade before that performed in the year 1831, by George Osbaldeston, Esq. of Hummanby Hall, Yorkshire, over Newmarket Heath, who rode two hundred miles in nine hours and twenty minutes, winning his Herculean match with forty minutes in hand. As may be supposed, he was not restricted to the number of horses, which consisted of thirteen, then in training on the heath; but he rode one of them, Mr Gulley's Tranby, by Blacklock, sixteen miles, at four four-mile heats. Mr Osbaldeston, also celebrated for his bold and judicious riding to hounds, appeared very little fatigued; and, after the use of the warm bath, and a short repose, joined in the festivities of the evening, and did not retire to rest till an hour after midnight.

An easy seat in the saddle is very important to persons who ride many hours in succession on the road. To accomplish this the following rules should be observed:—To sit well down in the middle of the saddle, with just that length of stirrup leathers that will allow of the fork clearing the pummel of the saddle; for a greater length than this would add to the fatigue of a journey, and lessen the rider's command over his horse. On the other hand, short stirrup leathers create fatigue by contracting the knees, and thereby adding to the exertion of rising to the action of the horse in the trot, which should chiefly proceed from a gentle play of the instep. The body of the rider should incline forwards in the trot, as, by forming a proper counterpoise, the movement of the horse is facilitated; and, above all things, steadiness of seat is required, or the latter will be much incommoded in his action. So distressing, indeed, is a swaggering unsteady seat, that it is a well established, though not a universally known fact, that horses will carry some persons of considerably greater weight than others, long distances on the road, or over a country in hunting, with less fatigue to themselves, solely because they ride them with a firm seat and an easy hand. In a long day's journey on the road, great relief is given to a horse by now and then dismounting from his back, and leading him a few hundred yards; as also by frequent sips of water, particularly if the weather be hot. As to *frequent* baiting of a hackney in a day's journey, the practice is not recommended. In a journey of sixty miles, he should only be stopped once, but then it should be for at least two hours, during one hour of which time he should be shut up in a plentifully littered stall. It is well known that a horse in good condition would perform this distance without hurting him, if he were not baited at all, but we are far from recommending the practice. Short stops, however, on the road are injurious rather than beneficial, and teach horses to hang towards every public-house they pass by, in their journey.

Most horses should be ridden in double reined bridles long distances on the road, and all should be ridden with spurs. Should they flag, or become leg-weary towards the end of a day, the use of the curb may be the means of avoiding falls; and, by the gentle application of the spur, a sort of false, that is, more than natural, action is created, which will have the same beneficial effect. As to the rate at which horses should be put on the road, that is a point so much under the control of circumstances, that no line can be drawn respecting it; but our experience assures us, that if a horse has to perform the distance we have already taken as a fair day's work, namely, sixty miles, under not a very heavy man, he would perform it with more ease to himself, and feel less from it the following day, if he travelled at the rate of seven or eight miles in the hour, than less. In the first place, this rate of speed is no great exertion to a horse of good action, and also in good condition; and, in the next, by performing his day's work in less time than if he travelled slower, he gets sooner to rest, and is, of course, sooner fit to go to work again. Let it, however, be observed, that he should have two hours quiet rest in the middle of the journey, which will enable him to perform it without fatigue. But we do not recommend this rate of travelling, when a much greater extent of ground is before us. If a horse is to be ridden two or three hundred miles or more, he ought not to travel, in the best of weather, more than from thirty to forty miles per day, and he should rest the entire of the fifth day, or he will become leg-weary, hit his legs, or perhaps fall. We are of course alluding to valuable horses, with which extra expense is not to be put into the scale against the risk of injuring them. The earlier, travelling horses, in the summer particularly, start in the morning, the better, that they may get their day's journey over in good time, and be early shut up for the night.

The following good advice to persons riding on the road is very much to the purpose (see *Ency. Brit.* p. 624):—"When you ride a journey, be not so attentive to your horse's nice carriage of himself, as to your encouragement of him, and keeping him in good humour. Raise his head; but if he flags, you may indulge him with bearing a little more upon the bit than you would suffer in an airing. If a horse is lame, tender-footed, or tired, he naturally hangs on his bridle. On a journey, therefore, his mouth will depend greatly on the goodness of his feet. Be very careful, then, about his feet, and not let a farrier spoil them." To this we add, that, as has been already observed, horses often fall on the road, from the state of their shoes being neglected; in journeys, and on hot and dusty roads especially, the feet as well as the shoes demand care. They should be stopped every night with moist clay, or what is better, wetted tow, which, whilst it cools and moistens the foot, acts beneficially, by causing pressure to the sensible sole and the frog.

The Hunting Seat.—Next to that of a jockey, on whose skill in the saddle thousands of pounds may be depending, the seat of the fox-hunter is most essential of any connected with amusement. He must not only be firm in his saddle, to secure himself against falls when his horse is in the act of leaping, but he must unite with a firm and steady seat a light and delicate hand, to enable him to make the most of his horse, as well as to preserve himself as much as possible against danger. His position in the saddle should resemble that which we have recommended for the road, with the exception of the length of his stirrup leathers, and the position of his foot in the stirrup irons. The former, the length of stirrup leather, should depend on the form and action of his horse, as well as the nature of the country he has to ride over. With a horse very well up in his forehand, with his haunches well under him, and going perfectly collected and within himself, his stirrup leathers may be long enough to admit of the knee being very nearly straight, and the foot resting on the ball. But, on the other hand, if his horse be somewhat low in his forehand (which many first-rate hunters are), with very powerful action in his hind-quarters; if ridden in hilly countries, or if at all disposed to be a puller, he will require to be at least two holes shorter in his stirrups; and his foot will be firmer if placed "home" in them, instead of resting on the balls. Above all things, he must acquire a firm, close, and *well-balanced* seat in his saddle, which is not merely necessary in leaping, but in galloping over every description of ground. A swagging seat in the last mentioned act is sufficiently bad to make a great difference to a hunter in a severe chase; but when we picture to ourselves a horse alighting on the ground, after having cleared a high fence, and his rider alighting two or three seconds afterwards in his saddle, so far forward, perhaps, as to fall beyond the pillars of support, or backwards behind the centre of action and the part (just behind the shoulders) which ought to form the junction between the rider and his horse, we can readily imagine how distressing it must be to him, and how much a large fence, so taken, must exhaust him over and above what would be the case if he had had the assistance of a firm hand to support him on alighting; but which, however, with such a seat as we have been describing, no man can possess. The first requisite, then, for a person who follows hounds is the combination of a light hand with a firm seat; and fortunate is it for his horse, as well as for himself, if he possess it to the degree required to constitute a fine horseman, over a country.

But as the science of war cannot be learned perfectly by any thing short of experience in the field, neither can the art of horsemanship, as far as the sportsman is concerned, be learned perfectly in the riding-school or the academy. If our own observation did not confirm this fact, it would appear evident, from the variety of situations in which the man following hounds may be placed, in one individual run; and we will endeavour to enumerate them. First, there is galloping at very nearly full speed, not over turf as smooth as a carpeted floor, and with nothing beyond a daisy's head to come in contact with the horse's feet, but (*cursu undoso*) over every description and every variety of ground; over the high ridge and across the deep furrow; over ground studded with ant-hills, which, unlike the mole-hill, are often as hard as if they had been baked in an oven; over stones and flints, the latter so sharp as frequently to sever the sinews of a horse's leg so completely as to cause his toe to turn upwards, when his throat must be cut on the spot; over grips covered by weeds, and thus, if visible to the horseman, too often invisible to his horse; over deep under-drains, with rotten coverings, which frequently give way, and let in a horse nearly to his shoulders; down steep hills, stony lanes, through deep sloughs and treacherous bogs; and all this very frequently on infirm legs, as those of hunters which have been long in work are very apt to be.

Next come the "fences," as all obstacles to the follower of hounds are now technically termed; and let us just see of what they are composed. There is the new and stiff gate, with always five, and sometimes six bars, and each bar, perhaps, as firm against the force or weight of a horse and his rider as if it were made of wrought iron. Then there is the nobleman or gentleman's park-paling, full six feet high, and too often a turnpike road on the other side to alight on. The stiff four-barred stile, generally to be taken from a narrow and slippery foot-path, and not unfrequently on the declivity of a hill. The double post and rail fence, as it is called, too much to be cleared at one leap, in which case the horse has to leap the second rails from the top of a narrow bank, and sometimes from out of a ditch which is cut between them. Every now and then, in the rich grazing countries, which are far the best for hunting, and in which hounds run faster than in others, there is the ox-fence, which may thus be described: If taken from one side of it, there is, first, a ditch, then a thick and strong black-thorn hedge, and about two yards beyond it, on the landing side, is a very strong rail, placed to prevent feeding bullocks from running into the hedge, to avoid the œstrum, or gadfly, in the summer. This fence, covering a great space of ground, must be taken at once, or not at all, from either side on which it is approached. In these countries, from the goodness of the land, the black thorn attains great strength; but in places where it happens to become weak, instead of the ox fence, four strong rails are put, which, in addition to the ditch, makes also rather an awful fence; at least, if a horse do not clear it, he must fall, as the rails very rarely will give way. Some of these hedges being impracticable, from their thickness, the sportsman makes his way to one corner of the field, where he finds a flight of very high and strong rails, but without a ditch, and every now and then a sheep-fold. The former is somewhat of a more severe fence than it appears to be, owing to the ground on each side of it being either poached by cattle, or, what is worse, rendered slippery by sheep, which are driven into the corner to be examined by the shepherd, in the case of there not being a sheep-fold in the field. The sheep-fold, or sheep-pen, as it is called in Leicestershire, is a still more serious undertaking. To get into it, the horse must leap four strong bars, about the average height of gates, and then, with a very short space to turn himself round in, must do the same thing to get out of it. Next comes the brook, from twelve to twenty feet in width, often bank-full, and sometimes overflowing its banks, which are often hollow, and generally rotten. In most of our best countries, few runs of extent take place without a brook, or brooks, being to be crossed; and no description of obstacle to which the sportsman is subject in crossing a country is the cause of so many disasters.

In what are termed the Provincial Hunting Countries, in contradistinction to Leicestershire, and the other chiefly grazing countries, timber, with the exception of stiles, is not so frequent, nor is the ox-fence to be seen at all; but there is comparatively more fencing, though chiefly hedges and ditches. In many of these, Dorsetshire in particular, the fences are generally what is termed double; that is, there is a ditch on each side of the hedge, which it requires a horse to be prepared for, by receiving, if not his education, a good deal of instruction in the country. In other parts of England, Cheshire and Lancashire, for example, we find fences that require an apprenticeship. They consist of a hedge and ditch, not of large dimensions, but in consequence of the former being planted on a cop, or bank, a horse must land himself on the cop before he can get his footing to clear the fence, provided the hedge be on the rising side. Were he to spring at it from the level of the field, and clear the bank, together with the hedge and ditch, the exertion would be so great as soon to exhaust his powers. Those fences require horses very active and ready with their hinder legs, and also riders with good hands. In all strong plough-countries, as our fine loams and clays are termed by sportsmen, hedges with ditches (for the most part only one ditch) prevail. For height and width they are not equal, by much, to those of the grazing districts, but circumstances render them equally difficult and trying to the skill of a horseman, and the judgment of his horse, and oftentimes still more so. In the former, although the fence is large (brooks excepted) the ground on the rising side is almost always sound and firm; whereas in deep plough-countries it is generally soft, and often, what is worse, it is sticky. Neither is this all. It very often happens that the headland of a field is ploughed to within a foot or two of the ditch, when a small ridge, or "balk," as it is termed in some districts, is left to prevent the soil of the field washing into the ditch. This ridge is often very perplexing to the horseman. He must either put his horse at the fence so as to clear all at once, or he must let him take his footing from off this narrow ridge, which, if his head be not in a very good place, and his rider's hand an indifferent one, makes even a small fence dangerous. The objection to a ploughed country also holds good as regards the other, the landing side of the fence. In the grass countries, a horse alights on turf sufficiently elastic to break the concussion from the weight of himself and his rider, but seldom soft enough to sink him below his hoofs. On the other hand, in the ploughed districts, he is perpetually alighting in fallowed ground, or in that sown with wheat or other corn, which, particularly after a severe frost, is so far from being firm enough to bear his weight, that it sinks him nearly to the knees. This is very distressing, especially to a horse which carries a heavy man; and here the skill of the rider is shewn in his preventing his jumping at fences of this description, higher or farther than is absolutely necessary to clear them. To a man who follows hounds, indeed, this art of handing his horse easily over fences, is one of the very highest value; and to the possession of it, to perfection, is to be attributed the extraordinary performance of hunters under some of our heaviest sportsmen, such as Mr Edge and his brother, Mr Richard Gurney, Sir Bellingham Graham, Mr Maxse, Lord Alvanley, and others, in fast runs of an hour or more, over strongly inclosed countries.

Walls are, we believe, the only fence met with in Great Britain which we have as yet left unnoticed. They are of two descriptions, namely, fast, by means of mortar, and loose, being built without mortar. The first do not often come in the way of the sportsman; and it is well that they do not, for, in the event of a horse striking them, they do not yield to his weight. The last, the loose walls, particularly those met with in Gloucestershire and Oxfordshire, are the least dangerous fences he can ride at; for, unless his horse be blown, or he is himself a very powerless horseman, they seldom resist him sufficiently to throw him down. Their height varies from three to five feet; but as there never is a ditch on either side of them, and the ground is generally firm in the parts of those counties which are inclosed with walls; those even of the last-mentioned height may be taken with safety by a good horseman, on a horse that is accustomed to them, and is not distressed at the time by the pace; for, as "*it is the pace that kills*," so is it the pace that causes falls.

The following directions may be serviceable to a young beginner in the hunting field:—When hounds find and go away, place yourself well down in your saddle, on your fork, or twist, and dont be standing up in your stirrups (as formerly was the fashion, and the cause of many a dislocated neck), sticking out your rump as if it did not belong to you. Let your knee be not very far from straight, with your foot well out in front of it, and feeling in the stirrup as if it formed a sufficient fulcrum for your bodily strength to act upon, in the assistance your horse may require from you. Be assured that the military seat, with the very long stirrup leathers, will not do here, however graceful it may appear on a parade. There must be a kind of *obstando* power in the rider, to act against the preponderance of his horse, particularly at what are called drop-leaps, in very deep ground; or, in case of his making a blunder, or getting into false ground, in his gallop. Having got well away with the pack, keep your head up, with your reins in the left hand, and your whip in your right, held perpendicularly upwards, with the thong falling loosely through your hand, when it will be ready for all purposes. Cast your eye forward, to take a view of the country, and then on the body of the hounds, to satisfy yourself that they are well settled to the chase. And now comes the young fox-hunter's trial. *You must neither take liberties with the hounds, nor with your horse.* Ride wide of, that is, on the left, or on the right of, the former, turning as you see them turn, and never find yourself exactly behind them, on their line; and no matter how perfect may be the latter, never trust him to himself, nor upset him by going too fast for him, or, in other words, over-marking him for pace. However good his mouth, never ride him in chase with quite a slack rein, for, independently of your own safety, it is not giving him a fair chance. He requires your support, and he should have it.

In riding to hounds, there is much to be gained by what is termed picking out your country. Avoid going straight across land highly ridged, and, consequently, deeply furrowed, if possible to avoid it, but rather take your line diagonally. If the furrows are very deep and holding, make for the side, or the head-land, where, of course, it is comparatively level ground. Even if it takes you a little out of your line, you will find your advantage in this, for you may increase your rate of going, and that with ease to your horse, more than equal to the extra distance you have to go. If your horse appear somewhat distressed, it is on a head-land, or still more on a long side-land, that you have a good opportunity of recovering him; and here you may have recourse to the old-fashioned style of riding a hunter. You may stand up in your stirrups, catching fast hold of your horse's head, and pulling him well together, when you will find, that, without slackening his pace, he has recovered his wind and can go on. Avoid deep ground as much as possible; but when in it, keep a good pull on your horse, and by no means attempt to go so fast over it, as you have been going over that which was sound. After Christmas, turnip fields should be skirted if possible; for, by reason of the many ploughings they receive at seed-time, the land sown with turnips becomes so loose and porous after severe frost, that it cannot carry a horse. Also avoid *crossing* fallows, or land sown with wheat. If obliged to go athwart them, get on the head-land; or if you ride straight down them, choose the wettest furrow you can see. It is sure to have the firmest bottom, which is proved by the water standing in it.

As no man can say where a fox-chase will end, have an eye to your horse, and endeavour to give him all the advantages in his favour that the country and the pace will admit of. Next to a judicious choice of your ground, is quickness in turning with hounds, as the difference between riding inside and outside of them, in their turns (be it remembered hounds very seldom run straight) is very considerable indeed; and to a certain degree corresponds with what is called "the whip-hand" in a race. Again, if you wish to stand well with the master of the pack, and to obtain the character of a sportsman, observe the following rules:—Never press upon hounds, even in chase. When they have lost the chase, in other words, when they are at fault, pull up your horse and keep wide of them; and, in the words of a celebrated old sportsman, "*always anticipate a check.*"

Never, for the sake of displaying your horsemanship, or your horse, take an unnecessary leap when hounds are running, nor a large one when a smaller is in your view, unless the latter take you too much out of your line, or for a reason which we shall presently give. If your horse is a good timber leaper, and not blown, prefer a moderate timber fence to a rough, and blind hedge-and-ditch fence, as less likely to give you a fall, neither will it take so much out of your horse. But when your horse becomes distressed, avoid timber, for if he do not clear it, he will give you a worse fall in that state than if he were quite fresh. A blown horse falls nearly as heavy as a dead one. There is, however, another precaution to be observed with horses a good deal beaten by the pace. Have an eye, then, rather to the nature of the ground on which it is placed, than to the size of the fence; that is, prefer a good-sized fence, where you see firm ground for your horse to spring from, to a small one where it is soft and sticky. Moreover, a distressed horse will often rise at a fence of some height and appearance, whereas he will run into, or, at all events, endeavour to scramble through, a small one. If you decide upon the smaller place, let him go gently at it, as he will be less likely to give you a fall; at all events, he may not give you so bad a one as if you went fast up to it. Some horses get out of scrapes better than others; but it is as well not to give them an opportunity of shewing their prowess in such matters.

A chief requisite to a good rider across a country is, courage, one of the most common qualities of human nature; and another is, coolness. No man, when flurried, can do any one thing well; but when we consider the variety of objects that the sportsman, following hounds, has to attract his notice, and the many obstacles he may have to encounter, it is evident that, according to the old adage, "he must have all his wits about him." The perfection of fine horsemanship in the hunting-field, then, is in a man riding well up to hounds, when going their best pace, over a stiff country, and yet appearing to be quite at his ease, and his horse, as it were, sympathising with him in his calmness. Such a man (and there are some such in every hunt, but not many) is capable of taking every advantage that can be taken of country, hounds, and all obstacles which appear to oppose him in his career. Another signal advantage to the sportsman also arises from his coolness in these moments of no small mental, as well as bodily, excitement and exertion. He is able to observe the beautiful working of the hounds, which is displayed to advantage with a burning scent; and he enjoys it the more, in consequence of the superiority of his horsemanship having placed him in a situation where he is not molested by the crowd.

Horsemanship.

The greater part of mankind, it is true, are endowed with a capacity for performing, and, to a certain degree, excelling in, the various exercises which have been invented for our amusement; but we have reason to believe, that out of the vast numbers of persons who attempt the apparently simple art of horsemanship, particularly that part of it which we have now been speaking of, there are fewer who arrive at perfection in it, than in any other with which we are acquainted. Luckily, however, for sportsmen, it is not in horsemanship as in the fine arts, which admit of no difference between distinguished success and absolute failure; and it is certain that there are more good and spirited riders to hounds at the present day, than were ever known since fox-hunting, as now practised, begun. And Englishmen may be proud of this; for although amongst the classical glories of antiquity, we hear nothing of leaping five-barred gates, twenty feet drains, and six-feet walls, after hounds, yet a daring horseman always found honour. Alexander the Great first signalized himself by subduing an unruly horse, which no man but himself dared to mount; and his celebrated general, Eumenes, was first noticed by Philip his father, on account of his skill in horsemanship and all public exercises. Neither are there wanting parallel cases in our own country, in which titles and honours have been conferred upon persons who might never have been known to him who conferred them, but for their possessing similar accomplishments.

Although speed in the hunter is now absolutely necessary, from the much increased rate of hounds, yet it is equally necessary, in most of our hunting countries, that he should be a perfect fencer as well, and that his rider should be an accurate judge of the extent of his fencing powers. Thus it often happens that horses, not equal in speed to others, get quicker over a stifly-inclosed country than they do, because, by the means of their superior fencing, they are able to cut off angles and go straighter. In fact, there are frequent instances of one individual sportsman beating every other in the field, and being alone throughout a run, merely by clearing a great fence in the direct line of the hounds at starting; in avoiding which, so much ground had been lost by the rest of the field, that it could not be recovered by them until the chase was ended.

The effect of the exertion of leaping, in horses, is pretty accurately ascertained by the observation and experience of sportsmen; but some rather curious facts are drawn from them. A very large fence, as has been before observed, exhausts a horse, or, in the language of the field, "takes a good deal out of him;" nevertheless, a hunter becomes sooner distressed over quite an open country, when the pace is very severe, than he does over an inclosed one, provided the fences are not very large indeed. This is accounted for in two ways: First, fences check the speed of hounds, and consequently the speed of horses. Secondly, the mere act of pulling or gathering a horse together, to shorten his stride previously to his taking his leap, is a very great relief to his wind, as we know from the effect a good pull at his bridle, towards the end of his course, has on that of the race-horse. At several kinds of fences, likewise, it is necessary that he should be pulled up nearly, if not quite, into a walk, to enable him to take them with safety, such as fences by the sides of trees, hedges with ditches on each side of them, particularly if they are what is termed "blind:" in short, all places known in the hunting vocabulary as cramped places, as well as now and then a timber fence, which must be taken nearly at a stand. And it was the old system of taking all upright fences, such as gates, rails, stiles, and hedges without ditches, at a stand, that enabled the low-bred hunter of the early part and middle of the last century to live with hounds as well as he did live with them. The very short time that it takes for a horse to recover his wind, to a certain extent, might be proved by a reference to stage-coach work. Previously to the perfect manner in which it is now performed, and the superior condition of the cattle, from their owners having at length found out how to feed them, it was not unusual for a coachman to have a high blower, as a thick or bad winded horse is called on the road, in his team, which might scarcely be able to keep time. If he found him distressed, he would pull up his coach on the top of a hill, and draw back the distressed horse from his collar. But how long would he keep him in this position? Why, not many seconds, before he would be sufficiently relieved to proceed. Thus the country of all others which puts the physical powers of horses to the greatest test in following hounds, is one which is hilly, and totally without fences, of which the Sussex South Downs, in the neighbourhood of Brighton, may be taken as a sample. Nothing but a thorough-bred horse, and a good one too, can live quite alongside hounds, going their very best pace, more than half an hour over such a country as this, and very few can do even so much, if they carry more than average weight. The open ploughed countries, such as great part of Wiltshire and Hampshire, are for the same reason very distressing to horses, and require them to have a great share of blood; but hounds do not, neither can they, run so fast over ploughed ground, as over old, or maiden turf, which the Sussex Downs are clothed with. In the first place, the scent is seldom so good; secondly, the ground is not only not elastic, which the other is, but it impedes the progress of hounds from two other causes; its surface is less even, and the soil of all ploughed land sticks more or less to the feet of hounds; or, in the language of the huntsman, it "carries" invariably after a slight frost on the previous night.

We now resume our advice to the young foxhunting horseman: It is the practice of all first-rate horsemen over a country to ride slowly at the majority of fences. For example, if the ditch be on the rising side, you may cause your horse to put his feet into it before he rises at the hedge, if you hurry him at it. Should the ditch be on the landing side, the case is somewhat altered, as the pace you ride at must be regulated by its width. If you have reason to believe it is of moderate width, do not go fast at the fence, because it will cause your horse to leap further than he needs to leap, and of course help to exhaust him. But if, when within a few yards of the hedge, going slowly at it, you perceive the ditch is a broad one, "put in some powder," as the modern sporting term is; that is, urge your horse by the hand and spur, and he will be aware of what you wish him to do, namely, to extend himself so as to clear a wide space of ground. If the ground on the landing side be lower than that on the rising side, causing what is called "a drop leap," or even if the ground be not lower, but soft or boggy, your horse will look for assistance from you on alighting, which you should give him by throwing your body back, having at the same time a resisting power from your stirrups. But another precaution is necessary when the ditch is on the rising side, or indeed with all fences except those (as will be hereafter named) which require to be ridden quickly at. This is, to fore-shorten the horse's stroke so as to enable him to gather himself together for the spring, or he may misjudge his distance, and get too near to his fence to rise at it. In fact, to judge accurately of the distance from the fence, at which the spring should be taken, is a great accomplishment in a man and a horse. In the former, it is the result of experience and a quick eye; with the latter, it is in great measure dependent on temper; and consequently violent horses, "rushing fencers," as they are termed, never perfectly acquire it. It is a serious fault in a horse to take his spring sooner than he need take it; and perfect fencers go close up to their fences before they rise at them, particularly to hedges when the ditches are on the landing side. Horses, however, of hasty tempers, particularly well-bred ones, with great jumping powers, cannot always be made to do so. Neither will they save themselves by walking into, or pushing through, places which do not require to be jumped; on the contrary, many otherwise excellent hunters will scarcely suffer a brier to touch their legs. A good bridle-hand here comes into play, more especially with horses who are rather difficult to handle, either from too fine a mouth, or a loose, ill-formed neck. It is difficult, however, to offer instruction here, as there ought to be an absolute interchange of feeling between the instructor and the instructed, to render them intelligible to each other; but we will endeavour to make ourselves understood:—When you approach a fence with a horse of this description, you should leave him as much to himself as you find it prudent to do, particularly when within a few yards of it. If you are obliged to check his speed, do so with as light a hand as possible; and if he shews a dislike to be much checked, by throwing up his head, or otherwise, drop your hand to him, and let him go. He has by this time most probably measured the fence by his eye, and it may not be safe to interfere with him.

Double fences, particularly with a horse not quite perfect in his mouth, and the setting on of his head, try the hand of the horseman. The first part of the fence, usually a ditch, may be cleared without any difficulty, and so may the second, if visible; but it often happens that neither horse nor rider is prepared for the second. Here it is that, in our opinion, lifting a horse is to be recommended, and in very few cases besides. Our objection to it arises from the horse being led to expect it; and if he do not get it at the critical moment, it may mislead him. In fact, it requires a hand nicer than common to make a practice of lifting a horse at his fences. Nevertheless, in the instance we have alluded to, the unforeseen ditch, it is useful; as also towards the end of a run, when a horse, from distress, is given to be slovenly at his fences, if not disposed to run into them. In leaping timber fences, we consider the attempt to lift a hunter dangerous; for a horse becomes a good timber-leaper from confidence; and if he finds he is to wait, as it were, for your pleasure for him to rise at a gate or a stile, he will be very apt to make mistakes.

We have already observed, that timber fences are the most dangerous of any, by reason of their general strength; if a horse strikes them with his fore-legs, or gets across them, as it were, by not being able to bring his hinder-quarters clear of them, they are nearly certain to cause him to fall. And he falls from timber in a form more dangerous to his rider than when he merely stumbles and eventually falls, by putting his feet into a ditch. In the latter case, his fore-quarters come to the ground first; and by breaking the force of the fall, the rider has time to roll away from him before he himself rolls over, should the violence of the fall cause him to do so. In the former, if the timber be strong enough firmly to resist the weight and force of a horse that strikes it with his fore-legs, especially if above the knees, the first part of his body which comes to the ground is either his back or his rump. Should the rider then not be thrown clear of him, he must be made of hard materials if no bones are broken, or some serious injury sustained. All this, then, enforces the advice we have already given, of avoiding strong timber with horses not perfect at leaping it, as much as may be compatible with keeping your place with hounds; and still more so with horses, how perfect soever they may be at it, that are blown, or very much distressed. It likewise induces us to point out the best and safest method of riding at this description of fence.

Never ride a horse fast at a timber fence, unless it be a low one, with something wide to be cleared on the landing side. If a man or a boy is seen exercising himself in jumping heighth, you do not see him run quickly at it, nor does he run over any considerable space of ground before he springs. On the contrary, he only takes a few steps, and those at a moderate rate. Never, then, ride your hunter fast at gates, stiles, &c. unless in the one case alluded to. Mr Thomas Assheton Smith, perhaps more celebrated for his horsemanship in the hunting field than any other person of the present age, and who was for many years at the head of the Quorndon (Leicestershire) Hunt, never rode fast at any fences, brooks excepted, and then only under circumstances which will be explained when we treat on that part of our subject. When riding at timber, however, take a firm hold of your horse's head, chiefly by the aid of the bridoon, if his mouth is good enough for it; and let him understand, by assuming an air of resolution on your part, that you not only mean him to leap it, and that you will not suffer him to turn his tail to it, but that it is something at which his best energies will be required of him. But, above all things, do not interfere with his stroke or stride, unless absolutely called upon by some peculiarity of the ground, such as a grip on the headland, or a small ditch on the rising side. A horse making up his mind to leap a timber fence, will of his own accord regulate that matter, and gradually gather himself together on his haunches, previous to being required to take his spring. He will also, if you let him, often make choice of his pace at which he goes up to a gate, &c. It is true the deer can clear a greater height in its trot than in any other pace; but a horse prefers the very slow gallop, or canter, when thus called upon to exert himself; for if he do trot to any upright fence, we generally see him break into a canter in the last few yards. As the fulcrum for the spring comes from behind, the canter is the most natural pace, the haunches being at this time more under him.

The same instructions to the horseman hold good with regard to stone walls as to timber fences, at least to those met with in England, which are loose, and without ditches. But in several parts of Scotland the case is different, as the sportsman very frequently has to encounter walls with ditches on one side or the other of them. In consequence of their being placed at some distance from the wall, to prevent the water which runs down them undermining the foundation of it, there is frequently room, when the ditch is on the rising side, for a horse to leap the ditch, and take a second spring from the intermediate space, and so clear the wall. But when he has to leap the wall, with the ditch on the landing side, it becomes a very difficult fence, and must be ridden at with judgment. If the ditch be not too far from the wall, to come within the stretch of a hunter, he should be ridden quickly at it, and well roused by the rider, to make him extend himself sufficiently; but if it be too far, he should be put very slowly at the wall, so as to enable him to drop, with his hinder legs at least, on the intermediate space, and from thence spring over the ditch. This fence is very trying to horses not accustomed to it; and with those which are, one fact becomes apparent, namely, that the mere holding the reins of a bridle does not constitute what is called "a hand" on a horse. A workman with a "finger" is wanted here.

In riding at every description of timber your seat as well as your hand requires attention. You have already been told on what part of your horse you ought to sit, namely, in the middle of your saddle, which should be placed close to the shoulder bones, when your seat will be most secure, from its being just in the centre of motion when your horse springs at his fence; as, in the rising and falling of a board placed in equilibrio, the centre will be most at rest. Your true seat, indeed, will be found nearly in that part of your saddle into which your body would naturally slide if you mounted without stirrups. But other security than this is required, to insure safety over very high fences. It is not the horse's rising that tries the rider's seat; the lash of his hinder legs is what ought to be chiefly guarded against, and is best done by the body's being greatly inclined backward. Grasp the saddle lightly with the hollow, or inner part of your thighs, but let there be no stiffness in any part, of the person at this time, particularly in the loins, which should be as pliant as those of a coachman on his box, when travelling over a rough road. A stiff seat cannot be a secure one, because it offers resistance to the violent motions of the horse, which is clearly illustrated by the cricket-player. Were he to hold his hand firm and fixed when he catches a ball struck with great force, his hand or arm would be broken by the resistance; but by yielding his hand gradually, and for a certain distance, to the motion of the ball, by a due mixture of opposition and obedience, he catches it without sustaining injury. Thus it is in the saddle. A good horseman recovers his poise, by giving some way to the motion, whereas a bad one is flung from his seat, by endeavouring to be fixed in it. In old times, when hunters were trained to leap all upright fences standing, these precautions were still more necessary, because the effect of the lash of the hinder quarters was more sudden and violent, in consequence of the horse being so close to his fence, that he rose perpendicularly at it, and not with the lengthened sweep of a flying leap.

Although Virgil, in his third Georgic, speaks of not suffering the brood mare to leap fences (*non saltu superare viam*), we find nothing on this subject in the classics, to induce us to believe that the ancients, although they hunted, were given to ride over fences. Here they sustained a loss; for we know few more delightful sensations, than that experienced in the act of riding a fine flying leaper over a high and broad fence. Nothing within the power of man approaches so nearly to the act of flying; and it is astonishing what a great space of ground has been covered at one leap by horses following hounds, or, at other times, with first-rate horsemen on their backs, who alone have the power of making them extend themselves to the utmost; and particularly when the ground, on the rising side, is sound, and somewhat in favour of the horse. In the grand Leicestershire steeple chase of 1829, a grey horse, called "The King of the Valley," the property of Mr Maxse, and ridden by the justly celebrated Mr Richard Christian of Melton Mowbray, cleared the previously-unheard-of space of eleven yards, or thirty-three feet. Yet, after all, the most extraordinary fact relating to the act of leaping in horses, is the power they have of extending themselves by a second spring, as it were, when, on being suspended in the air, they perceive something on the further side of a fence, for which they were not prepared. That they occasionally do this under good horsemen, all good horsemen of experience can vouch for; but whence the fulcrum is derived, it would be difficult to determine. All horses which have been in Leicestershire, and other countries where the fences are large and wide, become more or less accomplished in the act of throwing themselves forward, as well as springing upward, causing a very pleasant sensation in the rider, as well as an assurance that he is not likely to drop short into the ditch or brook.

We have already said, that brooks stop a field more than any other description of fence, and for the following reasons: Very few men, and still fewer horses, like jumping brooks. In the first place, as concern the rider, they are very apt to injure his horse by a strain, or a bad over-reach; secondly, water is deceiving as to the extent of it; thirdly, a wide brook takes much out of a horse; and, lastly, the banks often give way, after the horse supposes he has landed himself; and although it is easy for him to get into a brook, it is often very difficult for him to get out of one. Few horses become very good water-jumpers, unless they have been hunted a good deal in countries where brooks abound, and also have been fortunate in not getting into one of them in their noviciate. For this reason, it is a hazardous experiment to give a large price for a hunter, how high-soever may be his character, that has been only hunted in counties like Hampshire or parts of Wiltshire, where there are no brooks but such as, from the soundness of their bottoms, horses may walk through. We have already stated the most likely way to make a young horse a good brook-jumper; a very superior accomplishment in a hunter, and chiefly to be attained by his acquiring confidence.

There is one other untoward circumstance attending leaping brooks with hounds. They are, for the most part, met with in the middle of a field, and it often happens that, until the horseman arrives on the very brink of them, he cannot form a correct estimate of their nature or extent. They also vary much in both these respects, we mean in the soundness or unsoundness of their banks, and in their width, in the space of a few yards; so that it is in some measure a matter of chance whether you have to leap a wide brook or a narrow one. But then, it may be said, you can always satisfy yourself on these points. True; you may do so: but what would too often be the consequence? Why, if you shew your horse a brook before you ride him at it, it would too frequently happen that he would not have it at all; add to which, whilst you were doing this, on a good scenting day, the hounds would get a long way a-head of you. Besides, the *vis vivida*, or momentum of the horse's gallop, so necessary to get him well over wide brooks with rotten banks, is wanted, but in this case would to a certain extent be lost; and if he is once pulled up, and turned around, it is not so readily acquired again, as he is always more or less alarmed, after having got a sight of what he is going to encounter. Wide brooks, then, with uncertain banks, are the only fences which should be ridden very fast at; for, exclusive of the advantage the horse gets from the impetus derived from the speed, should he fall on the other side from false ground, he will generally save himself from dropping backwards into the brook, an object of no small importance to him, as also to his rider. There are, however, exceptions to the rule of riding *fast* at brooks. When they are not wide, and the banks are sound, it takes less out of a horse to put him at a moderate rate at them. Neither should he be ridden quickly at them when they overflow their banks, as it will then require all his circumspection and care to know when, or where, to spring from, to cover them. In fact, overflown brooks are rather formidable obstacles; but (a fine trial of hand) numerous instances do occur in the course of a season, where they are leaped when in that state by some of the field, but not by many.

Although, when the sportsman rides over a very wide brook, or any other fence which requires much ground to be covered, he has a certain hold by his bridle; yet, as may be supposed, it is very unequal to the weight of his own body, increased by the resistance of the air. How happens it, then, that his horse does not leap from under him? or, at least, how is it that, when the horse alights, the rider alights in the very same spot in the saddle on which he sat when his horse rose at it? The fact is, his body so far partakes of the speed of his horse, and increases in common with it, that, with very little assistance from his bridle-reins, he keeps himself in his proper place. If it were not so, what would become of the rider in the circus, who leaps directly upward, through a hoop perhaps, or over his whip, whilst his horse is going at considerable speed? He would, of course, alight upon the ground, perpendicularly, under the point at which he sprang from his saddle. It is evident, however, that on leaving the saddle, the body of the rider has equal velocity with that of the horse; and the spring, which he takes perpendicularly upward, in no degree diminishes this velocity; so that, while he is ascending from the saddle, he is still advancing with the same speed as his horse, and continues so advancing until his return to the saddle. In this case, the body of the rider describes the diagonal of a parallelogram; one side of which is in the direction of the horse's motion, and the other perpendicularly upward, in the direction in which he makes the leap. From these facts, these striking instances of the composition of motion, then, may the advantages of good, and the disadvantages of bad, horsemanship be appreciated; and as it appears that the motions of the rider and his horse are so intimately connected and in unison with each other (for were the circus rider to project his body forward, in his leap through the hoop, as he would do if it were on the ground, he would alight on his horse's head or neck, or perhaps before his head, for he would then advance forward more rapidly than his horse), the importance of a steady seat and a good hand is apparent, and accounts for some men crossing a country on middling horses, quicker and better than others do upon really good ones.

Having spoken of overflown brooks, and being aware of the many fatal disasters that have occurred to sportsmen in water, and the narrow escapes of drowning from crossing flooded rivers, by others, within the last twenty years, we are surprised that the exercise of swimming horses, in the summer months, is not more generally resorted to. It was practised by the ancients; for we find Alexander swimming the Granicus with thirteen troops of horse. But the horses should be practised in swimming as well as their riders, or it would not avail the sportsman so much, as we know some horses are very much alarmed when they lose their legs in water, and often turn themselves over. That the act of swimming on horses is a most simple and safe one to those who practise it, may be proved at any of our watering places in the summer, where boys swim them out to sea, two at a time, changing their seats from one to another with the greatest ease. We observe they generally lean their body forwards, so that the water gets under it, and partly floats it, interfering as little as possible with the horse's mouth; at all events, never touching the curb rein. When the sportsman or the traveller has occasion, or is accidentally called upon, to swim his horse through deep water, and the banks will admit of it, he should enter it as gradually as possible, as not only will his horse be less alarmed at the loss of his footing, but less liable to turn himself over in it. Thus in fording a brook too wide to leap, and with a soft bottom, a horse should be ridden *very slowly* into it, which will enable him to get his hinder legs well under his body before he makes his spring to ascend the opposite bank; which he cannot do if he enter the brook quickly.

As the young sportsman may be induced to "make his own horses," as the term is for qualifying them for the appellation of hunters, it may not be amiss to offer him a few words of advice. Be careful, the first season, how you ride them at very cramped places, especially where there is timber, for they cannot be expected to be *au fait* at such things; and many of the worst falls that some of our hard-riding sportsmen have experienced, have been from expecting young horses to do what old, or at least experienced ones, only can do. Avoid also taking the lead with hounds, especially if they run hard, with a young horse, for it may cause him to refuse a big fence which he might have followed another horse over, and thus become a refuser ever afterwards. Although horses do not understand languages, they understand the arbitrary signs of their masters or riders; and if a young hunter makes a slovenly mistake with you at a fence, he should be corrected with either spur or whip, and also *by the voice*. The merely calling out to him, or exclaiming, "For shame—what are you about, eh!" accompanied by a slight stroke of the whip, has often a very good effect, and will be visible at the next fence, when he will be more careful where he puts his feet, and take a greater spring. A horse knows his errors; also, when he is corrected, and when cherished, each of which he should be subject to in their turns; but as, according to the old adage, a coward and a madman are equally unfit to be horsemen, the correction of a young hunter should not be severe. Nothing would be more likely to make him what is called a "rushing," and consequently an unsafe fencer for the rest of his life, than beating him *severely*, for any trifling faults he may commit in the field. Martingals on hunters are now generally condemned; but, in our opinion, more generally than they deserve to be, particularly during the first season of a young horse, as a long martingal serves to steady his head, if he is a little impetuous, and saves him many falls, which, putting his rider out of the question, are injurious to him, as all horses become large fencers, in a great measure, by having confidence in themselves, which falls must necessarily shake. All horses, indeed, whose necks are weak and loose, may be ridden with advantage by the aid of a martingal on the bridoon rein, *the rings coming quite up to their jaws*, when it cannot interfere with their galloping or their leaping. We remember the time, indeed, when the first sportsmen and hardest riders of the day, were never seen without a long martingal, *on horses whose heads were not quite in the right place*, and be it remembered that nineteen out of twenty race-horses are ridden in martingals. Nevertheless we would avoid the use of them when not absolutely necessary, as the more liberty a hunter has, the more likely he is to recover himself when in difficulty.

The perfect command of a horse in the hunting field is in nothing more essential than in passing through half-opened gates, and many have been the bad accidents that have arisen from the want of it, horses being often stuck fast between the gate and the post, to the no small injury to their rider's legs or knees. Indeed the being handy in opening a gate, is no trifling accomplishment in a hunter; and here a few lessons in the school may be of advantage to him. He would there be taught to obey the leg as well as the hand; and, by a slight touch of the spur, would throw his haunches round to the left, on his rider unfastening the latch with his right hand, and thus enable him to throw the gate behind him, and pass through it. This has reference to gates that open *towards* the horseman; such as open *from* him, require not the horse's aid. But it often happens when a horse is blown, or beat, that unless he have a very good mouth, he will hang upon a gate, and nearly prevent his rider from opening it at all. One precaution, however, should always be taken with gates: the rider should never trust to catching the topmost bar, or what is called the head of the gate, but should pass his hand inside of it, when he will be certain to come in contact with some part of it.

Falls.—There is a proverb, and a true one, which says, "He that will venture nothing, must not get on horseback." All men, however, who ride a-hunting are subject to falls, but those who ride near to hounds, or "hard," as the term is, seldom escape without having several in the course of a season. It is well, then, that the young sportsman should know, that there is an art in falling, as well as in preventing falls. This consists in getting clear of the horse as soon as possible, which a man in the habit of falling has a better chance to do than one who runs less risk of it, having greater self-possession at the moment. Next to a horse coming neck and croup over a high timber fence, a fall in galloping at full speed is most dangerous, and apt to dislocate the neck, by the head coming first to the ground; and from the velocity of the fall, the rider has no time for precautions. However, even in this case he should endeavour to put out one hand, if not both, to break the force of the fall, as well as to act in resistance to his head coming first to the ground, and receiving the whole force of the concussion. By so doing, it is true, the collar-bone stands a great chance of being fractured; but that is an accident merely of temporary inconvenience, and unattended with danger, whereas a dislocated neck is very rarely reduced. But it is a curious fact, that there are fewer instances of broken necks in the field in the present age, than there were nearly a century ago, notwithstanding that for one man who rode a-hunting then, there are fifty now; and the pace of hounds, as well as style of riding, much altered as to speed. This has been accounted for in two ways: first, the modern sportsman sits, for the most part, down on his saddle, whereas the sportsman of olden times stood up in his stirrups, and, when his horse fell with him in his gallop, was nearly certain to fall on his head. Secondly, he did not ride the well-bred, superiorly-actioned horse that the modern sportsman rides, which would account for his falling oftener in his gallop, and particularly as the surface of the country, in his day, was very uneven and uncultivated compared to what it now is. Neither was the hunting cap of much service to him in accidents of this description. On the contrary, from its being so low in the crown, as it was then made, coming in immediate contact with the top of the head, the concussion was greater if he were thrown upon his head, than if it had been cased in a hat which, from the depth of it, would break the fall.

In all falls, the horseman should roll away from his horse as soon as he possibly can, lest in his struggle to rise again he strike him with his legs or head. It frequently happens that the horse himself rolls after he falls, and, if in the direction in which his rider lies, is apt to crush and injure him. Indeed, there is scarcely any hard rider who has not been thus served; but here again self-possession often stands his friend. When he sees the body of his horse approaching him, he frequently saves himself by meeting it with one of his feet, and, by obtaining a fulcrum, shoves his own body along the ground out of his reach. Coolness in this hour of peril, likewise serves the sportsman in another way. Instead of losing hold of his reins, and abandoning his horse to his own will, as the man who is flurried at this time invariably does, he keeps them in his hand, if not always, perhaps in nine falls out of ten, and thus secures his horse. It was the remark of a gentleman to whom we have before alluded, and who (*singulus in arte*) was, from his desperate system of riding, and despite of his fine horsemanship, known to have more falls than any other man during the time he hunted Leicestershire, that nothing had so low an appearance as that of a man running on foot over a field, calling out, " Stop my horse."

Before quitting this part of our subject, it may be well to observe, that in cases of bad falls, particularly those affecting the head, where the lancet cannot be *immediately* had recourse to, a large wine glassful of equal parts of *strong* vinegar and water, drunk by the sufferer, is found to be very efficacious, from the revulsive powers of the vinegar acting on the general circulation of the system. In countries where there is much timber to be leaped, stiles particularly, calkins to the shoes of the hinder feet of a hunter should never be omitted, as should those feet slip under his body, the fulcrum, to spring from, is lost, and a fall nearly certain.

We have only a few words more to offer to the young sportsman. Nature is invariably the standard of excellence, and unless she have endowed you with a cool head, a vigorous body, and a stout heart, you will not long distinguish yourself in the hunting field, as what is now termed " *a first-flight horseman.*" You may sing with Hector,

> " ——— *The foremost place* I claim,
> The first in danger, as the first in fame;'

but you will not obtain it unless you possess the above named requisites. But having them, do not consider the following admonitions unworthy of your notice: Never ride at impenetrable, or impracticable places; you may get over or through them with a fall, but your horse will surely be the worse for the attempt, and will the sooner sink under you in a good run. Never abandon your horse to himself over any ground, but be sure to hold him fast by his head, either up or down hill, and in soft ground. If you doubt the effect of a tight hand at these times, ask the first Newmarket jockey you meet, and he will fully satisfy your doubts. In the daring movements of that " *lawless moment,*" which the first start after hounds, in some countries, may now be termed, from the desperate attempts hard-riding men make to get the lead, do not fail to have your eyes about you, and also keep a good command over your horse. In plain English, *do not ride over any man.* Some of the worst accidents to sportsmen have arisen from this cause. In the first place, one man will often ride so close to another who is going to leap a fence, that if the first horse falls, the second is almost certain to leap either on or over him and his rider, as he can rarely be pulled up, or even turned, in so short a space. But even should the second man see the first man's horse in the act of leaping the fence, he should allow him some time to get away from it, for in the event of his clearing it, it is still possible he may fall, by stumbling over something after landing; stepping into a grip or rut, or into false ground, all of which he is subject to, but more especially towards the end of a chase, when, of course, his strength and action are reduced. It is better, if you can, to take a line of your own than to follow any one at this time, as your horse is now fresh; and, by not having cause to pull him up to let others go before you, you have a better chance to get a good start, which gives you a great advantage. When once along side the pack, quit them not until they have finished their work, or at least as long as your horse can go without trespassing too hard on his powers. If, however, you get the lead and can keep it for forty minutes, *best pace over the grass*, with rasping fences and two wide brooks in your way, the laurels Cæsar won would be weeds, and withered ones too, compared with those which would, for that one day, be yours.

There have been, and are now, some splendid specimens of horsemanship, and the management of horses in other ways, amongst servants, and it appears there always were such. Amongst the celebrated ones of antiquity we find the following, moving in this humble sphere: Automedon, servant to Achilles; Idæus to Priam; Metiocus to Turnus, king of Rutuli; Myrtilus to Œnomous, a son of Mars; Ceberes to Darius; and Anniceris, servant to Cyraneus. And why should not the servant, by practice, become as fine a horseman as his master? The question appears to be easily answered, namely, that the chances are equal, with equal instruction and experience. But such has not been found to be the case; and although amongst the various huntsmen, whippers-in, and what are known by the appellation of second-horse-men, namely, those grooms who ride horses with hounds, to supply the place of those their masters ride, when they become fatigued, a most humane, as well as economical plan with all who have a stud of hunters, some super-excellent horsemen may be found, the generality of servants are deficient in that first essential to good horsemanship, a fine or sensitive hand. Nor is this a matter of surprise. The nervous influence, proceeding from the organs of touch, may be said chiefly to constitute what is termed the " hand" of the horseman; and that influence may easily be supposed to be greater in a person whose situation in life has not subjected him to rough and laborious employments which must necessarily tend to deaden it. Until of late years the seat of servants was unfavourable to a good hand on their horse, as they, with very few exceptions, rode with too short stirrups, and, consequently, by being not well placed in their seats, were perpetually interfering with their horses' mouths, from their unsteadiness. So fully aware of these objections was the late Mr Childe of Kinlett Hall, Shropshire, that, during the period of his keeping fox-hounds, he had only one servant in his large establishment that he ever suffered to mount the horses he himself rode, and that was William Barrow, afterwards more than twenty years huntsman to the late Mr Corbet in Warwickshire; and who was remarkable for his fine bridle-hand. Notwithstanding this, it may fairly be maintained, that, from the fact of the comparatively small number of good horsemen who have obtained instruction from the schools, there is more of nature than of art in the acquisition of skill and talent on the saddle.

Saddles and bridles form no unimportant feature in the equestrian art, as well as in the establishment of a sportsman. Nothing sets off the appearance of a horse and his rider more than a good saddle and bridle, nor does any thing contribute more to the comfort and safety of the latter than a well-made, roomy saddle, with spring bars for the stirrup-leathers; stirrups rather heavy than otherwise, and sufficiently large for the feet. Some persons, not contented with the spring bars, require spring stirrups as well; but in our opinion, no man can hang in a common stirrup, provided he do not wear thick boots nor use small stirrup-irons. Of the various sorts of bridles, the snaffle is most in use on the turf, and the curb for military horses, hunters, roadsters, and coach-horses. Not one hunter in twenty has a mouth good enough for a snaffle only; although there are a few horses in every hunt that will not face the curb. Some, however, go very well on the snaffle up to a certain period of a run, when all at once they require the assistance of the curb. Such horses should be ridden with a double bridle, so that the rider may have recourse to the curb-bit, when wanting.

There is often great nicety required in fitting a horse with a bridle, if irritable in his temper, or a very hard puller. If the former, he must have a bit of just sufficient severity to control him, and not any thing more. The one called the "Pelham," is well adapted to horses of this description, as it partakes of the double properties of snaffle and curb. With very hard pulling horses, the curb to a severe bit must be used; but the evil of this is, that, after a certain time, the mouth, thus acted upon, becomes "dead," as the term is, and the horse is unpleasant to ride and difficult to turn. To remedy this, three players should be attached to the port of the bit, which, by hanging loosely over the tongue, keep the mouth alive. A bridle of this description, very long in the cheek, is known in the hunting world, as the "Clipper bit," being the one in which that celebrated horseman Mr Lindow rode a horse, called the Clipper, several years over Leicestershire, in which far-famed county he was supposed to be the best hunter going. If a horse rushes at his fences, a moderately tight nose-band is useful, as also to prevent his opening his mouth, and snatching at his rider's hand. The less a horse opens his mouth in his work the better, as it tends to make it dry; whereas, it cannot be too moist for his own good. Bits very high in the port are of course the most severe, owing to the increased purchase; but with every description of bits, care should be taken that they are sufficiently wide for the mouth, so as not to press against the horse's cheeks, and that the headstall is sufficiently long to let the bit drop well into the mouth.

As we read in the 22d chapter of Genesis, 3d verse, that "Abraham rose up early in the morning, and *saddled* his ass," saddles of some sort must have been used in very early days; but few things appear more extraordinary to those persons who look into ancient history, than the fact of saddles *with stirrups* being a comparatively modern invention. Although a French translator [1] of Xenophon, by an oversight, makes a governor of Armenia hold the stirrup of the Persian king when he mounted his horse—"Il lui tenoit *l'etrier* lorsq'il montoit à cheval,"—it is well known that the ancients had no stirrups, but that men of rank among them were accompanied by a person whose office it was to lift them into the saddle, whom the Greeks called ἀναβολευς, and the Romans *strator*. There is no mention of stirrups in any Greek or Latin authors, no figure to be seen in any statue or monument, nor any word expressive of them to be met with in classical antiquity. In the celebrated equestrian statues of Trajan and Antoninus, the legs of the rider hang down without any support; whereas, had stirrups been used at that time, the artist would not have omitted them. Neither are they spoken of by Xenophon in his two books upon horsemanship, in which he gives directions for mounting; nor by Julius Pollux in his *Lexicon*, where all the other articles belonging to horse-furniture are spoken of. The Roman youth, indeed, were taught to vault into their saddles, (*Æneid* xii. 287,)

> ———"Corpora saltu
> Subjiciunt in equos;"

and in their public ways, stones were erected, as in Greece also, for such as were incapable of doing so. As another substitute for stirrups, horses in some countries were taught to bend the knee, after the manner of beasts of burthen of the East;[2] and in others, portable stools were used to assist persons in mounting. This gave birth to the barbarous practice of making captured princes and generals stoop down, that the conqueror might mount his horse from their backs; and in this ignominious manner was the Roman Emperor Valerian treated by the Persian King Sapor, who outraged humanity by his cruelty. The earliest indisputable mention of stirrups is by Eustathius (the commentator of Homer), about six hundred years back, who uses the word *stabia*.

Although the history of the saddle has not exercised the learned world so much as the antiquity of the stirrup, a good deal has been written and said about it. Like all other inventions, it appears to have been suggested by the necessity of making the rider sit easily upon his horse, and some kind of covering, consisting of cloth or leather (skins or hides, perhaps), was placed on the animal's back. These coverings, however, became afterwards extremely costly;[3] they were made to hang down on each side of the horse, and were distinguished among the Greeks and Romans by various names. After they became common, however, it was esteemed more manly to ride without them; and thus we find Varro boasting of having ridden bare-backed when young. Xenophon also reproaches the Persians with having placed as much clothes under their seats, on their horses' backs, as they had on their beds. It is certain that no coverings to the horses' backs were for a long time used in war; and, according to Cæsar, the old German soldiers despised the cavalry of his country for having recourse to such luxuries. In the time of Alexander Severus, the Roman soldiers rode upon very costly coverings, excepting at reviews, when they were dispensed with, to shew the condition of their horses. But we should imagine we must look to later times for the costly trappings of the horse. In his description of the city of Constantinople, the author of the *Letters of the Turkish Spy* says, "The next thing worthy of observation is the Serayan, or house of equipages, where are all sorts of trappings for horses, especially saddles of immense cost and admirable workmanship. There cannot be a more agreeable sight, to such as take pleasure in horses and riding, than to see four thousand men here daily at work in their shops, each striving to excel the rest in the curiosity of his artifice. You shall see one busy in spangling a saddle with great Oriental pearls and unions intermixed, for some Arabian horse, belonging, perhaps, to the Vizier Azem; another fitting a curb or bit of the purest gold to a bridle of the most precious Russian leather. Some adorn their trappings with choice Phrygian work; others with diamonds, rubies, and the most costly jewels of the east."

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[1] D'Ablancourt.

[2] See Silicus Ital., lib. 10. 465,—

> "Inde inclinatus collum, submissus et armos
> De more, inflexis præbebat scandere terga
> Cruribus."

[3] See Virgil, *Æneid* vii. 276, viii. 552; Ovid, *Metam.* lib. viii. 33; also Livy, lib. xxxi. cap. 7, who speaks of a man who dressed his horse more elegantly than his wife.

But to return to the history of the saddle, its invention, and general use, the latter a point very difficult to be ascertained. The word *ephippium*, by which the ancient Romans expressed it, being merely derived from the Greek words ἐπὶ, *upon*, and ἵππος, *a horse*, leads us to conclude that, by degrees, the covering spoken of was converted into a saddle. The Greek word ἕδρα, used by ancient authors, is believed to have been to express a saddle, and is more than once used by Xenophon, in his *De Re Equestri;* and Vegetius, who wrote on the veterinary art nearly 400 years B. C., speaks of the saddle-tree. Perhaps the clearest proof of the use of any thing approaching to the form of the modern saddle, is the order of Theodosius (see his Code), in the year 385, by which such persons as rode post-horses in their journeys were forbidden to use those which weighed more than sixty pounds; if heavier, they were ordered to be cut to pieces. What would the people of those times have thought if they could have seen one of our Newmarket racing saddles, weighing under four pounds, but giving the rider a very comfortable seat. The order here alluded to, doubtless applied to something resembling a saddle, although of rude workmanship, as its weight bespeaks. Every traveller, we may conclude, was provided with his own saddle; and about this time the Latin word *sella* more frequently occurs. In the fifth century, again, we find articles bearing something of this stamp, and made so extravagantly magnificent as to call forth a prohibition by the Emperor Leo I. against any one ornamenting them with pearls or precious stones. The saddle-tree is also mentioned by Sidonius Apollinaris, a Christian writer, who was born A. D. 430; and in the sixth century, the saddles of the cavalry, according to Mauritius, who wrote on the military art, had large coverings of fur; and about this period, the Greek word σελλα (*sella*) is used. It is considered probable, however, that the merit of the invention of saddles may be due to Persia, not merely from the circumstance of Xenophon's mentioning the people of that country as being the first to render the seat on the horse more convenient and easy, by placing more covering on their backs than was common in other parts, but also because the horses of Persia were made choice of for saddle-horses in preference to any others. That the word saddle is derived from the Latin word *sedeo*, to sit, may fairly be presumed. That the proper saddle itself, however, was unknown in England until the reign of Henry VII., we have good reason to believe; and in Ireland, from the absence of any representation of it on their coins, it may be conjectured, not till many years subsequent to that period. The woman's saddle, called by us the side-saddle, first appeared in Richard the Second's time, when his queen rode upon one; but from the pictures of men and women's saddles used in England's early days, we find they were miserable apologies for our modern saddles. Indeed, at the present time, Great Britain is the only country in which proper saddles are made. Hunting saddles should have their pannels well beaten and brushed to prevent sore backs; and no sportsman, even if light, should use a short saddle, under sixteen inches from pummel to cantle.

The antiquity of the spur does not appear to have much excited curiosity; but the use of this instrument was known in the very earliest age of which we have any satisfactory history. At least we may presume that it was so, from the Hebrew word signifying horseman (*Pavash*), appearing to be derived from a Hebrew root signifying to *prick* or *spur.* So at least says Buxtorff; and he adds, that the horseman, or spurrer, was so called on this account: *Eques quod equum calcaribus pungat;* and he quotes Eben Ezra in confirmation of his opinion: *A calcaribus quæ sunt in pedibus ejus.* Spurs occur but seldom on seals, or other antiques, in the eleventh century, but in the thirteenth they are more frequent. As it is necessary that a horse should obey the leg as well as the hand, all military and parade horses are ridden in spurs; and, as we have already said, they are very useful to the sportsman in riding across a country, particularly in the act of opening gates; also all race horses that will bear them are ridden with them, because, should punishment be wanting in a race, it is more easily inflicted by the heel than by the hand; add to which, these horses not only require the jockey's two hands at the same time, but are apt to swerve, or shut up, if struck severely by the whip.

Race-Riding, or Jockeyship.—Race-riding and riding over a country cannot be called sister arts. Indeed the former bears little relation to any other system of horsemanship, because, from the rapidity with which the race-horse gets over the ground, there is neither time nor necessity for a display of the various aids which it is in the horseman's power to afford to his horse in most other cases. Nevertheless, the very refinement of the art, the nice and delicate hand, together with a firm and strong seat, is absolutely essential to a good jockey. Neither is this all. He must possess a stout heart and a clear head.

Something like jockeyship was practised in very early times, the Greeks having introduced it at their celebrated games. In the 33d Olympiad they had their race of full-aged horses. In the 71st Olympiad they instituted that for mares called the Calpe, bearing a resemblance to our Oaks Stakes at Epsom; and an interesting anecdote is handed down to us, relating to this race. A mare, called Aura, the property of one Phidolas, a Corinthian, threw her jockey, but continued her course as if he had kept his seat, increasing her pace at the sound of the trumpet, and, finally, as the story goes, presenting herself before the judges, as if conscious of having won. The Eleans, however, declared her to be the winner, and allowed Phidolas to dedicate a statue to her. In the 131st Olympiad, the race of the πῶλος κέλης, or under-aged horses, was established; but with respect to all these races, we are left in obscurity as to the weight the horses carried, as also the distance they ran; and whether or not such matters were regulated by their age, and not at all by their size. It is the general opinion that they were left to the discretion of the judges (the Hellanodics, as they were called), who regulated all matters at Olympia, as the members of our Jockey Club do at Newmarket; but, as may be expected from the character of the times, exercising a power over their brother sportsmen, which would not be relished at the present day, although, in some respects, well worthy of imitation. For example, they not only excluded from the games and imposed fines upon such as were convicted of fraudulent or corrupt practices, but inflicted bodily correction upon them besides. But some very interesting facts are the result of the rigid scrutiny of this Elean Jockey Club. Alexander the Great was ambitious of obtaining the Olympic crown, but was objected to as being a Macedonian, the prize he wished to contend for being confined to Grecians. Alexander cleared himself by shewing, that although he was a prince of Macedon, he was descended from a family that came originally from Argos; and the Hellanodics allowed him to start, but he did not win. Themistocles objected to Hiero, King of Syracuse, as a tyrant, and proposed that the magnificent pavilion which contained his race-horses should be pulled down. The objection, however, was overruled, and he became a winner; but we do not wonder, that, in a Grecian assembly, the name of tyrant should have been abhorred.

The seat of the jockey is one of peculiar elegance, heightened by the almost universal symmetry of his form, or figure, for very few ill proportioned men are seen in the racing saddle. The good appearance of the jockey is also increased by the neat fit of his clothes; his appropriate costume to his calling; the extreme cleanliness of his person, produced by his necessary attention to it during his preparatory course of exercise; and, though last, not least, his almost affinity with the noble animal we see him mounted upon. But for this he is indebted to Nature—to the relation that the bodies of animals hold to natures altogether external to their own; and it is most happily exemplified in that of a man to his horse, which appear to have been especially formed for each other. But, as a celebrated moral philosopher has observed, "There is throughout the universe a wonderful *proportioning* of one thing to another. The size of animals, of the human animal especially, when considered with respect to other animals, or to the plants which grow around him, is such, as a regard to his conveniency would have pointed out. A giant or a pigmy could not have milked goats, reaped corn, or mowed grass; *could not have rode a horse*, trained a vine, or shorn a sheep, with the same bodily ease as we do, if at all."

Previously to describing the proper seat of the jockey, we will now endeavour to exhibit him in the most likely form to acquire that seat. In height he should be about five feet five or six inches. We are aware there are several excellent jockeys under this standard; but they do not look so well on their horses, neither can they be so firm in their seat from want of a better clip, which the firm grasp of a longer thigh gives them. He should be rather long in the fork for his height, with low shoulders, rather long arms, moderate length of neck, small head, and a very quick eye. He should be of a naturally spare habit, to save the expense to his constitution by wasting; but he should have as much muscle in his arms and thighs, as his diminutive form will admit of; in short, to ride some horses at such very light weights, he should be a little Hercules. But there must be nothing like rigidity in his frame. On the contrary, there should be a great degree of pliability about his arms, shoulders, and back-bone, to enable him to be in perfect unison with his horse. He should have very free use of his hands, so as to change his reins from one to the other in a race, and to whip with the left, as well as with the right, when occasion requires it; he should possess much command of temper; and, lastly, he should have the abstinence of a Brahmin.

The seat of the jockey may be described in a few words. He should sit well down in his saddle when he walks his horse to the post, with his stirrups of moderate length, so as to enable him to clear his pummel, and have a good resisting power over his horse. No man can make the most of a race-horse with long stirrup leathers, because, when he is going at the top of his speed, he sinks down in his fore-quarters, in his stride, to the extent of several inches. It was calculated that Eclipse, naturally a low fore-quartered horse, sank nearly eight inches. The circumstance, then, of the use of the stirrup, in ancient racing, being unknown, fully accounts for racing on horseback as we now race, being, comparatively with chariot-racing, but little resorted to; and the excellency of a jockey in the Olympic Hippodrome, consisting more in a sort of harlequin feat of jumping from one horse, and vaulting upon another, in a race, than riding and finishing it, as it is now finished, in a severe trial of speed, bottom, and jockeyship. Indeed, some racers go with their heads so low as to bear up their rider from the saddle whether he will or not, and they would pull him over their heads, if he had not the power of resistance from his stirrups. Much nonsense was written by the late Samuel Chiffney, in a pamphlet called *Genius Genuine*, on riding the race-horse *with a slack rein*, which system, although we by no means approve of a hard, dead hand upon any horse, we are convinced can never be put into practice with advantage to either the horse or his rider. Exclusive of the necessity of restraining a free horse, who would run himself to a stand-still if suffered to do so, or, in making what is called a waiting race, all race-horses feel themselves relieved by a strong pull at their heads, and many will nearly stop, or, at all events, very much slacken their pace, on finding their heads loose. In our opinion, the hand of a jockey on his horse should always be firm, though at times delicate to an extreme; and he should never surprise or disturb the mouth of his horse, in his race, by any sudden transition from a slack to a tight, or from a tight to a slack rein. In fact, every thing in horsemanship is best done by degrees, but at the same time with a firmness and resolution which a horse well understands; and the hand which, by giving and taking, as the term is, gains its point with the least force, is the best and most serviceable, as well as most agreeable to a horse.

Considering the variety of horses of all forms, shapes, and tempers, that a jockey in much repute rides in the course of a year, the necessity for a good bridle-hand is obvious. Some thorough-bred ones have their necks set so low on their shoulders, that they bend first down, then upwards, like a stag's; and were it not for the power of their rider, such horses would absolutely look him in the face. Others have the upper line of their necks, from the ears to the withers, too short. A head attached to such a neck as this is very difficult to bring into a good place, because the inflexibility of it will not admit of its forming an arch; for in long and short-necked horses the number of the vertebræ, or neck-bones, are the same. On the other hand, some horses' necks are as loose as if they had joints in them, and consequently have the power of tossing up their nose almost in defiance of their rider's hand. Others get their heads down in their gallop, in the act of reaching to get more liberty of rein, snatching at their rider's hand with great force. Some pull very hard, and others will not pull enough. Were it not, then, for the tackle in which these low-necked, short-necked, stiff-necked, loose-necked, snatching, pulling horses are ridden in, even the fine hand and firm seat of a first-rate jockey would not be a match for them; and, as it is, it is as much as he can do to manage them; but they would be nearly their own masters with a man on their back who had neither one nor the other. This tackle consists, in addition to the bridle, of the common martingal, with a spare martingal rein, independent of that to the snaffle-bit; a gag-bit and rein, and the martingal running rein. The first, the common martingal-rein, is merely to prevent a loose-necked horse throwing his head up. The jockey uses it altogether, or lets it lie on his horse's neck till he wants it. The gag-rein, from its severity, is generally knotted, and remains untouched till wanted. Its use is to prevent a horse getting his head down, when he goes too much on his shoulders, or bores, and is consequently very difficult to ride, and be made the most of in a race. By *gradually* giving and taking with this and the snaffle-rein, the jockey gets his horse's head into a proper place, and rides comparatively at his ease. We say "gradually," because if done with violence it may cause him to alter his stride. The running martingal-rein (the most common now in use, particularly with young things), is merely to steady a horse's head, and to give his jockey more power over him to prevent his breaking away with him in a race, and to enable him to pull him up at the end of it. No hard puller, or very free-going racer, is ridden without this running martingal-rein. The jockey uses it much in the same way as he uses the snaffle-rein, giving and taking with it in his pulls, so as to keep his horse's mouth alive, and thereby bring his head into a proper place. The necessity for this perfect command of the race-horse, by some one of these means, is obvious, when we see how often they are huddled together in a race, and knowing that, if a foot of either of them should strike or get locked in that of another, a fall is the inevitable consequence. Besides, no horse can exert his utmost speed for any length of time, unless he will allow himself to be handled by his rider, and pulled well together, to prevent his over-striding as well as over-pacing himself. These check-reins can all be used with the double curb-bridle, if necessary, though they seldom are, with the exception of the first, the common martingal-rein. It is pleasant to see a race-horse go with his head in a good place in a simple snaffle-bridle, without any additional reins; and no doubt it must be as agreeable to the horse, but it is rather a rare sight, and particularly with young things. That the snaffle-bit is the best in which the race-horse can be ridden, there cannot be a doubt, not merely on account of his being able to support himself to a certain degree in his gallop, by leaning upon it to the extent his rider permits him, but because his jockey can pull his head any way he likes, to the right or to the left; as in a turn, for instance, or to avoid treading on another horse's heels, which is before him; whereas the curb-bit only acts in a straight line. It is better, however, to have recourse to the curb, than to let a hard-pulling race-horse get the better of his jockey, and overpace himself at any period of his race.

We will now bring our jockey to the starting post, where the first thing he does is to strip. Having inspected the saddling of his horse, and found every thing about him secure, he cocks up his left-leg, and is chucked into his saddle by the trainer, who generally wishes him "*luck*" as he performs this office for him. After he has seated himself firmly down in it, and tried the length of his stirrup-leathers, he takes his "up gallop," as he calls it, of perhaps half-a-mile, his trainer generally leading the way on his hack; and then walks his horse quietly to the starting post. But his method of starting his horse depends entirely on circumstances. If, for a half-mile race, in which a good start is a great advantage, he catches fast hold of his horse's head, and, if he will not start quickly without, sticks both spurs into his sides as soon as the word "go" is given, taking his chance of getting his head down into its place when and how he can. If, for a two-mile race, or over that distance, he need not be in such a hurry at starting, provided he do not lose too much ground; but all this must in great measure be regulated by his orders, whether to make running or to lie by, and wait. We will, however, put him in all these different situations.

The Half-mile Race, generally straight. Orders, "*To make running.*" Having turned his horse round *beyond*, or we should rather say *behind*, the post, he brings him as quietly as he can back to it, with his near-side bridle-rein passing outside of, and over the lower part of, the palm of the left hand, and then pressed firmly by the thumb, and with the off-side rein between the middle and third fingers of the right hand, in which he also has his whip; but, at starting, and throughout a race, unless obliged to strike his horse, a jockey always holds his horse's head with both hands. If a double rein to a curb-bit is used, the near-side rein passes between middle and third fingers of the left hand, and the off-side one between the middle and third fingers of the right hand. On the word being given, as we have already said, he sticks the spurs into his horse's sides, or, by any other means in his power, gets him on his legs, that is, on his speed, as soon as he possibly can, dropping his hand to him to enable him to feel his mouth. He lets him go perhaps half the distance he has to run with only his head hard held, before he gives him his *first* pull; but this event (the half-mile race) being soon over, there is no time for much speculation, and the pull must be but a short one. He then runs up to his horses again; lives with them to the end and wins, if he can, without a second pull; but if he finds other horses too near to be pleasant, or, in other words, appearing to be as good as his own, he takes a second pull within the last one or two hundred yards, when he again lets loose and wins. The same directions hold good in a mile race, with the exception that the jockey need not be quite so much on the *qui vive* at starting, and his pulls may be longer, and the last further from home.

The Half-mile Race. Orders, "*To wait.*" In this case the jockey gets well away with his horses, but never more than a length or two behind any of them, as more than that distance is difficult to make up in so short a race. Within a hundred and fifty, or, perhaps, two hundred yards of home, he gets "head and girth," as the term is, with the leading horse, and then lets loose and wins.

The Mile Race. Orders, "*To wait.*" The jockey may start last of all if he like, but he must not lose much ground. However good judge a jockey may be of *pace*, it is a fault to lie far out of his ground. Let him then also lie well with his horses all the way, creeping up to them by degrees, and not quit them to win till he feels certain he has the race in his hand; that is, till he sees that the other horses have overmarked themselves by the pace. His orders to wait have been given him from the supposition or knowledge that speed, not stoutness, was the best of his horse, and, consequently, that if he had made the running or "play," he would not have run home.

The Two-mile Race. Orders, "*To make running.*" Nothing, next to the struggle of the few last yards between two horses very nearly equal, called on the Turf "the set-to," is so difficult in racing horsemanship, as making running or "play" by a jockey, solely for the benefit of the horse he himself is riding. In other words, it is a great accomplishment in a jockey to be a superior judge of *pace*, that is, of not merely the pace he himself is going, but how that pace affects the other horses in the race. And this task is more difficult with some horses than with others, and especially with idle or lurching horses, which, when leading, require urging by the hand or leg every yard they go. In this case, the jockey works hard to keep his horse going. He has to use his hands, arms, legs, and feet, and occasionally to turn his head round, with all his limbs in action at one and the same moment, and yet not disturb his horse's action; and this, in addition to great anxiety of mind, lest he should upset his horse, and so lose the race. The upshot is, if his horse answers the opinion entertained of him, by cutting up his competitors by severe "play," he wins his race, and has the character of being a stout, honest horse.

The Two-mile Race. Orders, "*To wait.*" In this case the jockey goes off at a steady pace, with a good hold of his horse's head, as near to the other horses as he likes, but not attempting to go in front. Thus he continues in his place to within a certain distance from home, probably specified in his orders, when he brings out his horse, as the phrase is, challenges all the others at once, and wins, if his horse be good enough. This is one of the easiest tasks a jockey has to perform, and if he is pleasantly mounted, he gets an agreeable ride. We shall say little of races more than two miles, for two reasons: First, because the same observations apply to them as do to those of two miles, with proper allowance for the extra distance; and, secondly, because four mile races are now very nearly abolished. In the latter, the chief qualification for a jockey is strength of constitution and a firm seat, added to a very correct idea of pace, for a four-mile race seldom comes to a very nice point at the finish.

The duty of a jockey is to win his race if he can, and not to do more than win it. A neck is sufficient if he have the race-hand; but he should win by a clear length whenever he is in doubt as to the state of the horses he is running against. This is a nice point for a jockey to decide upon, and one which is highly esteemed by his employers, who are always anxious that the powers of their horses should not be unnecessarily exposed. Perhaps one of the finest specimens of science in this peculiar department of the art of horsemanship, was displayed by those celebrated Newmarket jockeys, Robinson and Chiffney, in a struggle for the St Leger stakes at Doncaster in 1827.

All good jockeys avoid the use of the whip as much as possible. When a race-horse is in the fullest exercise of his powers and doing his best, it is unnecessary, for it cannot make him do more; but the blow of a whip often does harm, particularly if it fall under the flank. Instead of its having the effect of making the horse extend himself over a larger surface of ground, it may have quite a contrary effect, from his shutting himself up, as it were, or shrinking, to avoid the blows. The spur, properly used, is a much better instrument for increasing the speed of a horse, although there are times when the application of the whip, or the mere act of flourishing it in the hand, is eminently serviceable to the jockey. We mean when his horse hangs to one side of the course or the other, or towards other horses in the race, or exhibits symptoms of running out of the course, or bolting. A jockey ought to be able to use his whip with vigour when necessary, and (though this do not often happen) with his left hand, as well as with his right, in case of his losing what is called the whip-hand, when he cannot use his right.

The nature and form of race-courses are points very much to be considered in jockeyship. Such as are quite flat and straight are, of course, the least difficult to ride over; but a little variety of ground is favourable to the horse, and not unpleasant to the jockey. Those which are hilly require much judgment to know where to make the best play; or, in other words, what part of the ground is best suited to the action and nature of the horse. All horses, however, require holding hard by the head both up and down hills, or they will soon run themselves to a standstill. A small ascent is desirable to finish a race upon, as it is safer for the riders, who occasionally lose their horses' heads in the last few strides; and also in pulling them up, when they are often in an exhausted state, and, consequently, liable to fall or slip, on uneven ground, especially if it be in a slippery state from drought or wet. Most country courses have turns in them, which must be provided against in two ways. First, the jockey, at starting, should endeavour to get the whip-hand of his competitors; that is, he should try to be on the right side of the other horses, if the posts are on his right hand, and on the left side of them, if they are on the left. He will, of course, in this case have to describe a smaller circle of ground in his race than the other horses will have, and also, if the turns be on his right, the use of his right or whip-hand, at any period of the race; which he would not have, if he were on the outside of one or more horses in the race. But he must be wide awake over a course with turns in it, as some of them are very difficult to make, especially if all the horses are in strong running at the time, and the one he is riding should not be what is called kind at his turns, or an easy horse to ride. He must not omit the precaution of lying a little out of his ground before he comes to a turn, so as to make it pretty close to the post, when he will be less likely to disturb the action of his horse, than if he made it at a more acute angle, which he would necessarily do, if he did not take this sweep. Another precaution is also necessary; as, when a horse is galloping in a circle, the first leg towards the centre takes the lead, the jockey should endeavour to make his horse lead with the leg next the turn, which will prevent his changing his leading leg in the turn, which he will be obliged to do, unless a very easy one indeed. This is best effected by keeping his head a little to the opposite side of his body; that is, a little to the left hand, if the posts are to the right, as they generally are, and *vice versa*. When a race-horse is extended at the very top of his speed, his head should, of course, be kept straight; but as he is never going his best pace in his turns, the keeping of his head away from them, for the purpose we have noticed, cannot be at all injurious to him. In quite straight running, it is, we believe, of very little consequence with which leg the race-horse leads.

Our remarks on the art of race-riding may be concluded by stating the manner in which horses of various tempers, dispositions, and capabilities, are to be ridden, with the best chance of being made the most of. Nine racers in ten are free-going ones, if not hard pullers. On one of this description, the great art of the jockey is to economize his powers according to the length he has to go, as also the weight he is carrying, so as not to let him over-mark himself, and have little or nothing left in him at the finish. If other horses make running, this can only be done by his sitting perfectly still in his seat, dropping his hands, and having fast hold of his horse's head. The less he interferes with his mouth the better; and if he likes to be well up with the other horses, he is better there, supposing him not to be a regular jade, than pulled at, to be kept back. Temper is a great thing in this case, we mean in the jockey; for a hasty horse and a hasty rider are sure to disgrace themselves. Every unnecessary movement in the one is instantly responded to by the other, who becomes flurried, and pulls more determinedly than he did before.

The lazy, sluggish, or "craving" horse, as trainers call him, requires riding from end to end of his race. By this we mean, that although the body of his jockey should not move, he is often obliged to raise his hands off his horse's withers, to shake him now and then; as well as to use his feet to urge him to a better pace, or even to keep him at the one he is going. Indeed, he will sometimes require a blow with the whip, or at least to be very much roused, to make him extend his stride towards the finish of his race. This is the sort of horse that used to distinguish himself over the Beacon Course at Newmarket, when four-mile races were more in fashion than they now are, and was, of course, not thought the worse of by his owner, whatever he may have been by his jockey, for taking so much riding to make him do his best.

But the most ticklish and difficult horse, next to the determined restive one, or bolter, is what is known by the appellation of the "Flighty Horse," one which is as difficult to train as he is to ride, being delicate in constitution, of extremely irritable temper, and very easily alarmed, either in his stable or out of it. Nothing, in short, can be done with him, but by the very gentlest means; for if once ruffled, he is very hard to be appeased. The jockey, then, that has to ride a horse of this description, should have a temper the very reverse of his, and a hand as delicate as a woman's. He must also indulge him in every way in his race save one, which is, in not allowing him to overpace himself. But here, also, he must be careful; for this horse will neither bear to be pulled nor hustled, but must be let to go nearly in his own way, with the exception of being kept well together by a steady hold of his head. If challenged in the race, he must accept the challenge, and come out of the conflict as well as he can. He is too often a jade; at all events, he should always be ridden as if he were one; and the same precautions, as to steadiness of seat and hand, that we have recommended for the free-going horse, or hard puller, should be observed with regard to him.

Jockeys delight in riding a fine-tempered racer; such as Zinganee was in the year 1830, and of which year he was considered the best horse. In a plain snaffle bridle, without even a martingal, as he was ridden, and with an obedient mouth, it is a pleasing instead of an irksome task. A horse of this description is easily held, is kind at his turns, in fact, will nearly make them of his own accord; will either wait or make play, as his rider's orders may be; and when called upon to challenge, is ready to do his best. More than this, he is always going within himself, because he is obedient to his jockey's hand; and his temper is at least equal to 4 lb. weight in his favour.

We now conclude our remarks on jockeyship with a short description of the finish of a race, confining the scene of action to the last four hundred yards; the leading horses being, we will suppose, some head and girth, others head and neck, and others head and head. We will further suppose our jockey to be in the midst of them, with very little left in his horse, but just enough to win his race. The set-to is about to begin, or, in other words equally technical, he is about to "call upon his horse." But before he does this, he alters his position in his saddle. He has been previously standing up in his stirrups, with his body leaning forward over the horse's withers, and his hands down, somewhat below them. He now changes the position of both body and hands: he seats himself firmly down in his saddle, his body catching, as it were, the stride of the horse; and, raising his hands off his withers, first gives him an easy pull, and then, and not till then, the set-to begins. He now moves his hands, as if describing a circle, by way of rousing his horse, by "shaking him," as it is called; and although he does not quite slacken his reins, he allows him to reach with his head, as a distressed horse will always do, and which is technically termed "throwing him in." Then now comes the last resource. If he finds, when within a few yards of home, that he cannot win by these means, and that his horse appears to sink in the rally, he stabs him a few times with his spurs; gets his whip up in his right hand, giving a good pull with his left, and uses it as occasion may require.

Steeple-Chase Racing.—A new system of racing jockeyship has come into fashion in Great Britain and Ireland within the last twenty years, which, however in character with the daring spirit of our present race of sportsmen, we know not how to commend. We think it an unreasonable demand on the noble energies of the horse, to require him to go so very nearly at a racing pace (for such we find to be the case) over rough and soft ground, instead of upon smooth and elastic turf, with the addition of having too often a country selected for him to run across, abounding in almost insurmountable obstacles, as well as, in some cases, deep rivers, as likewise under a heavy weight. One human life has already been the victim of this practice, and, we are sorry to say, several horses have died from over-exerting themselves in steeple-chases. We have reason to believe, however, that they will not become a lasting amusement of British sportsmen.

Qualifications for a Steeple-Chase Rider.—These are exactly what are wanting in a very fast run over a stiffly enclosed country with fox-hounds; namely, a fine bridle-hand, a steady seat, a cool head, undaunted courage, and, above all things, great quickness, and very prompt decision. But the steeple-chase jockey has one evil to guard against, which the racing jockey is, comparatively, but little subject to, and this is a fall. The best preventive of it is keeping a horse well together, and making him go in a collected form at his fences, as well as over rough ground, which, when going nearly at the top of his pace, will be only done by a rider with a very good bridle-hand. But, at the same time, he must be careful not to overmark his horse, or he will not be able to rise at his fences when he gets to them. And here lies the great difficulty after all, as far as the horse is concerned. He must go, at least he is called upon to go, at a much quicker rate than he can reasonably be expected to maintain, for any considerable length of time, without becoming distressed, because his competitors in the race are also doing so, and he will be left behind, to a certainty, if his rider do not endeavour to make him keep with them. That horse, then, has the best chance to win who, barring a fall, is the stoutest runner and surest fencer, and whose rider is good enough, and strong enough, to give him all the assistance he requires, at least as much as a rider can give him, to enable him to struggle through his difficulties to the end. But there is one quality in a horse, especially calculated for steeple-chace racing, and that is *quickness.* Our readers can distinguish between a quick horse and a fast horse; the fast horse may require to be going some time before he begins to extend himself nearly to the extent of his speed; whereas the quick horse is on his legs in a few hundred yards. A similar difference is observed by sportsmen in the fencing of horses. Some are on their legs again, and almost instantly away, as soon as they alight on the ground, be the fence ever so large, whilst others dwell for some time after landing, previously to their recovering their equilibrium, and so lose time. It is evident, then, that a quick horse, with a quick man on his back, is best adapted to a steeple-chase; and would beat another, supposing leaping and other qualifications, this excepted, to be equal, who could give him half a stone weight over the Beacon Course, and beat him. Steeple-chase racing never can be a game to bet money upon, from the almost perpetual liability to accidents; nor do we think it fair that such animal suffering as we find it creating, can be considered a proper medium for that purpose, allowing for a moment that such a medium must be found. But has man, who may be considered the delegate of Heaven over inferior creatures, the right thus to speculate upon their endurance of suffering? We think not; but of this fact we are certain, There is hardly a more certain token of a cruel disposition than the *unnecessary* abuse of animals which contribute, as the horse specially does, to our advantage, convenience, and pleasures; and even a Pagan has told us that he who smothers a cock, *without necessity*, is no less guilty than the man who smothers his father.

Neither is it a great compliment to this species of horsemanship to show its origin, which is thus given in a work called *The Gentleman's Recreation*, written nearly two hundred years back: "But before I enter upon the subject proposed," (training of horses) says the author, "I think it convenient to tell you the way our ancestors had of making their matches, and our modern way of deciding wagers; first, then, the old way of trial was, by running so many train scents after hounds, this being found not so uncertain and more durable than hare-hunting, and the advantage consisted in having the trains laid on earth most suitable to the nature of the horses. Now others choose to hunt the hare till such an hour prefixed, and then to run the *wild-goose chase*, which, because it is not known to all huntsmen, I shall explain the use and manner of it. The wild-goose chase received its name from the manner of the flight which is made by wild-geese, which is generally one after another, so that two horses, after the running of twelve score yards, had liberty, which horse (qr. rider?) soever could get the leading, to ride what ground he pleased, the hindmost horse being bound to follow him within a certain distance, agreed on by articles, or else to be whipt up by the tryers or judges which rode by, and whichever horse could distance the other, won the match. But this chase was found by experience so inhumane, and so destructive to horses, especially when two *good* horses were matched, for neither being able to distance the other, till ready both to sink under their riders through weakness; oftentimes the match was fair to be drawn, and left undecided, *though both horses were quite spoiled*. This brought them to run train scents, which was afterwards changed to three heats, and a straight course." Our readers will acknowledge the resemblance between the modern steeple and the ancient wild-goose chase; and we trust that ere long, the example of our ancestors will be followed, and the man who is capable of exhibiting his horsemanship as the winner of a modern steeple-chase, will reserve his prowess for a better if not a nobler cause.

(B. B. B. B.)

HORSENS, a town of Denmark, at the mouth of a fiorde in Jutland, in the province of Ribe. It contains two churches, 504 houses, and 3650 inhabitants, who carry on fisheries, and some trade in corn and butter. Long. 9. 43. E. Lat. 55. 52.

HORSHAM, a market and borough town in the hundred of East Easewrith, and rape of Bramber, in the county of Sussex, thirty-six miles from London. It is an ancient place, according to tradition, built by Horsa, the brother of the Saxon Hengist. It stands on the upper part of the river Arun, in a fertile district. The county jail, a new building, is in the town, and also a county-hall, in which the assizes are held alternately with the town of Lewis. It is an ancient borough by prescription, and returned two members to parliament till 1832. It now returns one by about 600 voters. The market is held on Saturday, and well supplied. The inhabitants amounted in 1801 to 3204, in 1811 to 3839, in 1821 to 4575, and in 1831 to 5105.

HORSLEY, a town and parish in the hundred of Longtrees, in the county of Gloucester, 101 miles from London. It has a market, which is held on Saturday. The county bridewell is established here. There is some trade in making woollen goods. Formerly a priory existed, whose remains are still visible. The inhabitants amounted in 1801 to 2971, in 1811 to 2925, in 1821 to 3565, and in 1831 to 3690.

HORSLEY, SAMUEL, a very learned prelate of the church of England, the son of the Rev. John Horsley, for many years clerk in orders at St Martin's in the Fields, and afterwards rector of Thorley in Hertfordshire, was born at his father's residence in St Martin's churchyard, in October 1733. He received his early education from his father, and was entered at Trinity-hall, Cambridge, where he applied himself much to the study of mathematics, but, at the same time, perused with care the writings of the ancient and modern divines and logicians. Why he took no degree in arts cannot now be ascertained; we find, however, that, in 1758, he took that of bachelor of laws, and became his father's curate at Newington, which living he succeeded to the following year, and held until his elevation to the Episcopal bench in 1793, as Bishop of Rochester.

In April 1767, he was elected a fellow of the Royal Society, of which he continued for many years an active member, and, about the same time, he published a pamphlet on the Power of God, "deduced from the computable instantaneous productions of it in the solar system." This he allows to be a "very singular and whimsical speculation;" and observes respecting it, that, in all probability, it would "roll down the gutter of time, forgotten and neglected." In 1768, he went to Christ-Church, Oxford, as private tutor to Heneage Earl of Aylesbury, then Lord Guernsey. In 1770, his first mathematical publication, *Apollonii Pergæi Inclinationum libri duo*, was elegantly printed at the Clarendon press. This work, though severely criticised at the time, and, in reality, not distinguished by any peculiar felicity of restoration, does not appear to have injured his rising reputation; for, in November 1773, he was appointed secretary to the Royal Society, and in 1774 he had the degree of doctor of civil law conferred on him at Oxford, and was presented by the Earl of Aylesbury to the rectory of Aldbury in Surrey, along with which he obtained a dispensation to hold that of Newington. The same year he published Remarks on the Observations made in the Voyage towards the North Pole, for determining the acceleration of the Pendulum in latitude 79° 51′. These were addressed to the Hon. Constantine J. Phipps, 4to, and intended to correct some errors committed by Israel Lyons, the mathematician employed on the voyage.

Dr Horsley having long meditated a complete edition of the works of Sir Isaac Newton, issued, in 1776, proposals for printing it by subscription, in five volumes 4to; but the commencement of the undertaking was delayed by severe domestic affliction, nor was it completed until 1785. In the meanwhile, his diligence and proficiency in science attracted the notice of Dr Lowth, who, on his promotion to the see of London in 1777, appointed Dr Horsley his domestic chaplain, collated him to a prebend in St Paul's cathedral, and procured for him the situation, which had been held by his father, of clerk in orders at St Martin's in the Fields. In 1778, during the controversy between Dr Priestley, Dr Price, and others, on the subject of materialism and philosophical necessity, Dr Horsley published a sermon on Providence and Free Agency, in which he attempted to draw a distinction between the philosophical necessity of the moderns and the predestination of their ancestors. This discourse was evidently directed against the writings of Dr Priestley, but the latter did not take any immediate notice of the attack. In 1779, Dr Horsley resigned Aldbury, and, in 1780, was presented to the living of Thorley, which he held, by dispensation, along with that of Newington. In 1783, he became deeply involved in a dispute with some members of the Royal Society, which ended in his withdrawing himself from that learned body.

Dr Horsley was now about to engage in that celebrated controversy with Dr Priestley; which was conducted on both sides in the fiercest spirit of polemical contention, but on that of Horsley with superior learning and ability. In 1782, Dr Priestley published a work in two volumes 8vo, entitled a History of the Corruptions of Christianity; at the head of which he placed both the Catholic doctrine of Christ's divinity, and the Arian doctrine of his pre-existence, in a nature far superior to the human, at the same time representing the Socinian doctrine of his mere humanity as the unanimous faith of the first Christians. Dr Horsley conceiving that the best antidote to the poison contained in this work would be to destroy the credit of the writer, and the authority of his name, made its imperfections, moral as well as literary, the subject of review in a charge delivered to the clergy of the archdeaconry of St Alban's, at a deputation held on the 22d of May 1783. The specimens produced as evidence of the imperfections of the work and the incompetency of the author, may be reduced to six classes. First, instances of reasoning in a circle; second, instances of quotations misapplied through ignorance of the subject; third, instances of testimonies perverted through artful and forced constructions; fourth, instances of passages in the Greek fathers misinterpreted through ignorance of the Greek language; fifth, instances of passages misinterpreted through ignorance of the Platonic philosophy; and, sixth, instances of ignorance of the phraseology of the earliest ecclesiastical writers. Dr Horsley concludes his charge by observing, "I feel no satisfaction in detecting the weakness of this learned writer's argument, but what arises from the consciousness that it is the discharge of some part of the duty which I owe to the Church of God." This vigorous and systematic attack staggered the admirers of Dr Priestley; but he himself felt none of the apprehension with which they were seized. He promised an early and satisfactory answer; predicted that he would rise from his supposed defeat more illustrious than ever; undertook to strengthen the evidence in support of his favourite opinions; flattered himself that he would find a new convert in his antagonist; and even hinted something concerning the shame and remorse with which he felt confident that the latter must be penetrated. Dr Priestley could not but be sensible that his adversary was a man of no ordinary stamp; yet, with a blind self-confidence, he did not profit by this conviction so as to make a careful revision of his writings, but, on the contrary, immediately repeated his former assertions respecting the doctrine of the Trinity, in a publication entitled, Letters to Dr Horsley, in answer to his Animadversions on the *History of the Corruptions of Christianity*, with additional evidence that the primitive Christian Church was Unitarian, 1783, in 8vo. To this production, in which there are more errors of haste and infirmities of argument than could have been expected from one who had so much at stake, Dr Horsley replied in the same epistolary form, by Letters from the Archdeacon of St Alban's in reply to Dr Priestley. The object of these letters, which are seventeen in number, and display great learning and research, is to prove that if the mistakes of Dr Priestley, formerly pointed out, are few in number, they are too considerable in kind to be incident to a well-informed writer; that they betray a want of general comprehension of the subject, and an incapacity to draw right conclusions from the passages cited; that they prove him unskilled in the language of the writers from whom his proofs were professedly derived, and unacquainted with that philosophy, the doctrines of which he pretended to compare with the opinions entertained by the church. Dr Priestley, in his Letters, had attempted to draw his adversary into a controversy respecting the divinity of Jesus Christ; but the latter, knowing that question to have been long since exhausted, defended his own argument, and confined himself to the collection of proofs, from Dr Priestley's publications, of his inability to throw any light upon the subject.

Dr Priestley, finding that his letters had failed to produce the expected impression, and that his antagonist, untouched with either shame or remorse, remained unshaken in his opinion, now lost all temper; and in a second set of Letters to the Archdeacon of St Alban's, which appeared in the autumn of 1784, threw aside all profession of personal regard, or even of ordinary civility. The charge of incompetency and ignorance was warmly retorted, and "the incorrigible dignitary" was charged with manifest misrepresentation of his adversary's argument; with injustice to the character of Origen, whose veracity he had called in question; and with the grossest perversion of ancient history. In a word, he was stigmatised as a "falsifier of history, and a defamer of the character of the dead." Regardless of this reproach, Dr Horsley remained silent for eighteen months. A sermon on the Incarnation, preached upon the feast of the Nativity in 1785, formed the prelude to the renewal of the contest on his part, and was, early in the ensuing spring, followed by Remarks on Dr Priestley's Second Letters to the Archdeacon of St Alban's, with proofs of certain facts asserted by the Archdeacon. This tract consists of two parts; one containing new specimens of Dr Priestley's temerity in assertion; and the other defending the attack upon Origen, and proving the existence of a body of Christians at Ælia after the time of Hadrian, which was the fact upon which the Archdeacon's historical fidelity had been so loudly arraigned by Dr Priestley. With this publication Dr Horsley had intended that the controversy on his part should close; but having been induced to collect and republish what he had written (in one vol. 8vo, 1789), this led to a second perusal of Dr Priestley's Letters, which produced not only many important notes, but some disquisitions of considerable length; and as the Remarks on Dr Priestley's second Letters had elicited a third set, in which he endeavoured to support the veracity of Origen, and to maintain his position respecting the orthodox Hebrews of the church at Ælia, these are replied to partly in the notes, and partly also in two of the disquisitions Towards the conclusion of his Remarks, Dr Horsley observes: "These and many other glaring instances of unfinished criticism, weak argument, and unjustifiable art, to cover the weakness and supply the want of argument, which must strike every one who takes the trouble to look through those second letters, put me quite at ease with respect to the judgment which the public would be apt to form between my antagonist and me, and confirmed me in the resolution of making no reply to him, and of troubling the public no more upon the subject, except so far as might be necessary to establish some facts, which he hath somewhat too peremptorily denied; and to vindicate my character from aspersions which he hath too inconsiderately thrown out."

The reputation which Dr Horsley had now acquired, recommended him to the patronage of Lord Chancellor Thurlow, who presented him to a prebendal stall in the cathedral of Gloucester; and, by the interest of the same eminent person, he was, in 1788, promoted to the see of St David's. As a bishop, his conduct was exemplary and praiseworthy; in this character he fully answered the high expectations of eminent usefulness, which his elevation to the mitre had so generally raised. In his diocese, he carried through a general system of reform, regulated the condition of the clergy, introduced greater strictness with respect to candidates for admission into holy orders, preached frequently in the parish churches, and acted with Christian liberality towards the poor. Bishop Horsley's first charge to the clergy of St David's was delivered in 1790, and deservedly admired, as was also his animated speech in the House of Lords, 31st May 1791, on the subject of the Catholic Bill. These effective displays are understood to have occasioned his subsequent promotion to the bishopric of Rochester and the deanery of Westminster, upon which he resigned the living of Newington.

During the agitating period between 1793 and the close of the century, Bishop Horsley ranged himself on the side of the government, and with great zeal and warmth opposed the enemies of the constitution, and the professors of democratic principles, under which categories were then included all those who sought for reform in the representation of the people as a guarantee for the removal of abuses, and the progressive improvement of our institutions, ecclesiastical as well as civil. As a senator, his talents and activity necessarily gave him weight; and there were few discussions of importance in which he did not take part. He was not, however, an every-day speaker, nor desirous of protracting the debate, unless he had something original or important to communicate. In 1802, he was translated to the bishopric of St Asaph, and resigned the deanery of Westminster. Until 1806, his vigour of body and mind remained unimpaired. In the month of July of that year he went to his diocese, and after a residence of two months intended to visit his patron Lord Thurlow at Brighton, where he arrived on the 20th of September, after learning on the road that his noble friend was no more. On the 30th, he became affected with a complaint in the bowels, which, slight at first, soon terminated in mortification, and on the 4th of October proved fatal. Bishop Horsley died in the seventy-third year of his age.

Dr Horsley was throughout life an indefatigable student; he indulged no indolence in youth, and amidst an accumulation of preferments, contemplated no time when he might rest from his labours. His mind was constantly intent on some pursuit, and, setting a high value upon the fame he had acquired, his ambition was to justify the favourable opinion of the public, and the liberality of his patrons. In classical acquirements, and in the critical knowledge of the languages in which the sacred books were originally written, he stood in the very first rank of excellence. In the mathematical and physical sciences, if he stood not in the first rank, he occupied at least a very respectable station. In metaphysical acuteness and research, he had probably few superiors; whilst, in his proper science of theology, we will venture to affirm that he had none. The ablest champion of orthodoxy that the church had for many years seen, he was so much of an original thinker, and so independent of his predecessors or contemporaries, that his mode of defence was entirely his own, and his style and manner, like Warburton's and Johnson's, though dangerous to imitate, were nevertheless the best, perhaps, that could have been devised in the conflict of opinions with which he was surrounded. In his writings, as in his character, there was nothing lukewarm, nothing compromising. His character and manner were indeed somewhat harsh, and arrogant, and dogmatical; but, whilst due allowance must be made for the heats and errors which controversy engenders, charity induces us to believe that much of his apparent asperity arose from his zeal for the truth, and his high sense of its importance, and that, in fact, he possessed more genuine liberality than some of his most clamorous opponents. He was classed, indeed, and he classed himself amongst High-churchmen; but he was no doubt perfectly sincere in his attachment to the constitution and doctrines of the Church of England; and on more than one occasion he gave proof that he understood the great principles of practical toleration better than some who made louder pretensions to liberality. It is certain, indeed, that he was not only willing, but anxious, to enter into a Parliamentary inquiry into the claims of the Roman Catholics of Ireland, and to grant them whatever that inquiry might shew could be granted with security to the Protestant Establishment, and the Protestant succession.

In his fierce controversy with Dr Priestley, Bishop Horsley had a manifest advantage both in learning and argument; and when we reflect that his adversary aimed at nothing less than the overthrow of the English establishment, and avowed his purpose in language not remarkable either for modesty or for delicacy, we cannot justly wonder that he used strong language in return. Yet it is dignified language; and will not now, perhaps, appear to any candid reader, to be much stronger than the case required. The concluding paragraph of his *Remarks upon Dr Priestley's Second Letters*, affords a striking specimen of his manner as well as of his temper; of a manner, no doubt, sufficiently authoritative and decided, but of a temper which appears to us entitled to the name of Christian. "For eighteen months or more," says he, "it hath been the boast of the Unitarian party, that the Archdeacon of St Alban's hath been challenged to establish facts which he had averred; that he hath been insulted in his character, as a scholar and a man; charged with ignorance, misrepresentation, defamation, and calumny; and that, under all this, he hath continued speechless. He hath at last spoken, in a tone which, perhaps, will little endear him to the Unitarian zealots. It matters not. The time seems yet so distant when the train which they are laying may be expected to explode, that the danger is exceedingly small that he will ever be reduced to the alternative of renouncing his faith, or relinquishing his preferments; or to the harder alternative which Dr Priestley seems to threaten, of a prison with a good conscience, or his present emoluments without one. If those happy times of which Dr Priestley prophecies, should overtake him ere his course is finished; when an Arian or Socinian Parliament shall undertake the blessed business of a second reformation, and depose archbishops from their thrones, and archdeacons from their couches of preferment; he humbly hopes that he may be supplied with fortitude to act the part which may not disgrace his present professions. The probability, however, seems to be, that ere those times arrive (if they arrive at all, which we trust they will not), my antagonist and I shall both be gone to those unseen abodes, where the din of controversy, and the din of war, are equally unheard. There we shall rest together, till the last trumpet summon us to stand before our God and King. That whatever of intemperate wrath, and carnal anger hath mixed itself, on either side, with the zeal with which we have pursued our fierce contention, may then be forgiven to us both, is a prayer which I breathe from the bottom of my soul, and to which my antagonist, if he hath any part in the spirit of a Christian, upon his bended knees will say AMEN."

As a preacher, or rather as a writer of sermons, Bishop Horsley must be allowed to stand in the first class, yet we do not know with whom in that class we can well compare him. In force, depth, and erudition, in precision and distinctness of ideas, in aptitude and vigour of expression, and, above all, in the original powers of thinking displayed in them, Dr Horsley's discourses are unquestionably *sui generis*. But difficult as the subjects often are, which he discusses in them, even ordinary readers, moderately conversant with the Bible, and with the theory and practice of their religion, may derive more advantage from them than from any volumes of sermons which have issued from the press for more than half a century. Even difficulties, and very serious difficulties, Dr Horsley frequently renders plain and practical, by clear, patient, and ingenious criticism; and having fixed his principle on a scriptural ground, and made that ground comparatively clear and easy, he enforces the practical consequences on that direct authority of God which, within the walls of a Christian church, ought to supersede every other. Dr Clarke, in his sermons, which stand in the very first rank of excellence, often treats and largely discusses, Christian subjects, the mysteries of redemption, and the various positive ordinances of the gospel. But he does so with this remarkable difference from Bishop Horsley, that he is never satisfied with any scriptural principle or precept, till he has laboured to render it conformable to what he calls *eternal reason* and *the fitness of things*. Thus, even on subjects of which we should never have known any thing but from Scripture, and which derive all their importance and authority from revelation, we are frequently perplexed with thorny and intricate discussions, intended to accommodate them to this eternal reason and immutable relation of things. The evil of such discussions is, that they are apt to leave an impression on the mind that the obligations of duty rest on something different from, and independent of, the will of God; whereas, to a Christian, the source of the obligation, whether as respects moral or religious duties, is beyond all controversy, the revealed will of God alone. Hence it was that Bishop Horsley, when he had distinctly traced a principle, doctrine, or precept to Scripture, justly conceived that he had done all which a Christian could require to enforce obedience. It may be interesting, it may even be important, to trace the admirable conformity which subsists between the revealed will of God, and the same will as it may be deduced from the nature of things, and the condition of man; but it never can be absolutely necessary to establish this conformity; for whether we are able to trace it or not, the Christian obligation is the same. The supposition that revelation may, in every instance, be accommodated to reason, or, in other words, that a conformity can always be traced between the dictates of reason and the doctrines of Scripture, is a supposition not only fraught with danger, but incompatible with the very import of the term revelation, which necessarily implies the disclosure to man of that which reason could never have informed him of.

Besides the works already mentioned, Bishop Horsley was the author of the following, viz. 1. On the Properties of the Greek and Latin Languages, 1796, in 8vo; 2. On the Achronical Rising of the Pleiades, appended to Dr Vincent's *Voyage of Nearchus*, 1797; 3. A Circular Letter to the Diocese of Rochester, on the Scarcity of Corn, 1796; 4. Another Circular Letter to that Diocese on the Defence of the Kingdom, 1798; 5. Critical Disquisitions on the 18th chapter of Isaiah, 1799, in 4to; 6. Hosea translated from the Hebrew, with Notes explanatory and critical, 1801, in 4to; 7. Elementary Treatises on the fundamental principles of Practical Mathematics, for the use of Students, 1801, in 8vo. Since his death have appeared, 1. Sermons, 1810 and 1812, in three vols. 8vo; 2. Tracts in controversy with Dr Priestley, upon the historical question of the belief of the first ages in the Divinity of Jesus Christ, revised and augmented by the author, with an appendix by his Son, 1812, in 8vo; 3. The Speeches in Parliament of Samuel Horsley, 1813; and, 4. The Charges delivered at his several visitations of the dioceses of St David's, Rochester, and St Asaph, 1813, in 8vo.—(Chalmers's *Biog. Dict.* art. HORSLEY; *Edinburgh Review*, vol. xvii. p. 465, 468.) (A.)

HORST, a town of the Netherlands, in the province of Limburg, and circle of Ruremont. It contains 2246 inhabitants; but is an extensive parish, which has a population of 4490, who are occupied in weaving linen and cotton goods.

HORTENSIUS, QUINTUS, one of the most celebrated orators that Rome produced, the contemporary and rival of Cicero, was born B. C. 114, and eight years before Cicero. He was son of L. Hortensius, who had distinguished himself in his prætorship in Rome, and proconsulship in Italy, by a strict adherence to justice and the ancient laws of his country. His mother Sempronia was grand-daughter to Tuditanus. Of the manner in which he spent his earlier years, we have received no information; but we find him at the age of nineteen (B. C. 95), at once taking a distinguished place amongst the orators of his country. (*Cic. Br.* 64.) The first cause which he undertook was that of Africa, in which he was eminently successful; and shortly afterwards he was employed by the king of Bithynia in his defence before the senate. The breaking out of the Social War, B. C. 90, so alarmed the Romans for the very existence of their power, that all domestic proceedings were for a time suspended, and the youth enrolled themselves for the defence of their country. Hortensius, like others of his own age, joined the army, and in the second campaign was raised to the rank of tribune. It does not appear, however, that he possessed military talents, as we do not find him taking an active part in any warlike proceedings. His ædileship was distinguished by the magnificence of his exhibition of the public games, and by a gratuitous distribution of corn among the people. It was in 70 B. C. that he was first directly opposed to Cicero in the celebrated trial of Verres, but notwithstanding the utmost efforts of his eloquence, Verres was brought in guilty of the charges which Cicero brought against him. The following year (B. C. 69) we find him raised to the consulship, along with Q. Cecilius Metellus; but it was a period during which Rome enjoyed profound peace at Rome, whilst she was triumphing over Mithridates in the east by the arms of Lucullus. The conduct of the war against the Cretans fell by lot to Hortensius, but feeling that the proper arena for the display of his talents was in the peaceful contests of the Forum, he refused to leave Rome, and gave up the commission to his colleague Metellus, who derived the name of Creticus from the subjugation of the island. (*Xiphilin. Epit. Dion.* tom. i. p. 75.) He amassed great riches, and became remarkable for the magnificence of his villas, and his sumptuous mode of living. He opposed with success a sumptuary law proposed by Pompey and Crassus (*Dion.*); and resisted the proposals of Gabinius and Manilius to invest Pompey with powers of so extraordinary a nature, that they seemed calculated to annihilate the independence of Rome. Though the most formidable rival of Cicero in the Forum, he was the intimate and affectionate friend of that orator; and when Clodius threatened Cicero with exile, Hortensius appeared in the assembly of the people in deep mourning, and was attacked by the slaves of that factious tribune. (*Cic. Mil.* 14.) In his latter years, he did not exert himself to maintain the rank to which he had attained, and allowed his glory to be eclipsed by the wonderful powers of eloquence displayed by Cicero. A few days before his death, B. C. 50, he defended the cause of Appius Claudius; and it was in consequence of the exertions which he made in that case that he broke a blood-vessel, which put an end to his life. *Cic. Br.* 94; *Ep. Fam.* viii. 13; *Ep. Att.* vi. 6. Hortensius was first married to Lutatia, the daughter of the celebrated Lutatius Catullus, by whom he had a son, whose conduct gave him great cause of uneasiness, and a daughter, Hortensia, distinguished for her talents, who married Valerius Messala. Hortensius afterwards contracted a second marriage with Marcia, daughter of Philippus, and wife of Cato. This transaction was of a very extraordinary nature, and was little to the honour of any of the parties; but the details may be read in Plutarch (*Life of Cato*). As none of his writings have been preserved, we are without the means of forming an opinion of his eloquence, except from the statements of the ancients. It was highly ornamented, flowery, and even more Asiatic in its character than that of Cicero. His style was full of animation, and his composition was extremely polished. Hortensius also cultivated poetry with success. (Ovid. *Trist.* ii. 441; *Aul. Gell.* xix. 9. See Sallier, *Recherches sur la Vie de Q. Hort.* in the *Mém. de l'Acad. des Inscript.* vi. 500. Luzac. *Specimen historic. jurisdic. de Q. Hort. oratore*, Lugd. Bat. 1810. *Tiraboschi Storia della Litterat. Italiana*, iii. 2.)

HORTICULTURE.

Introduction.

Horticulture is that branch of rural economy which consists in the formation and culture of Gardens. Its results are culinary vegetables, fruits, and flowers. On one side it is allied to Agriculture, from which, however, it is distinguished by the nature of its products, and by the smaller extent and greater complexity of its operations; on the other side, in its processes of embellishment, it approaches the arts of the Landscape Artist and the Forester, from which, however, it also retires in the comparative minuteness of its details. Respecting the former of these departments of rural art, considered as distinct from Horticulture, information may be obtained in the article on Gardening.

Like other arts, Horticulture borrows its principles from the general sciences. To Botany it is beholden for the facts and theories of vegetable physiology; to Chemistry for assistance in reference to soils, manures, and artificial heat; and to Meteorology for a knowledge of many circumstances which very materially affect the labours of the gardener. On these subjects, with which the philosophical horticulturist will not fail to make himself familiar, we refer to the various scientific articles in this Encyclopædia. It is very desirable that such information should be extensively diffused among *practical* men; as it is only from this quarter that much improvement, in our present state of knowledge, can be expected. Truth, however, obliges us to admit, that gardening has been most successfully practised, when treated as an empirical art. Few of those who are minutely conversant with its numerous manipulations have undergone such an intellectual training as to enable them to wield general principles with effect. Many who are not inexpert or unsuccessful while they follow the routine practice (a practice, be it remembered, founded on long experience) egregiously fail, when, with imperfect information, or ill-advised ingenuity, they endeavour to strike out new paths for themselves. The object of the art, too, limits the application of the deductions of science. Its whole business consists in the imitation of Nature, whose processes may indeed be, in some measure, originated, as when a seed is inserted in the ground, or modified, as in the artificial training of fruit-trees, but which may not be entirely controlled, much less counteracted. The principle of vegetable life will not endure interference beyond a certain point, and our theoretical views should be so directed as to interfere with it as little as possible. Observation and experiment are the grand means by which the art has arrived at its present state of advancement: at the same time it is obvious, that an enlarged acquaintance with science will aid us in imitating the processes of nature, will guide the hand of experiment, suggest contrivances, and enable us to guard against error; and above all, will tend to dispel those prejudices which practitioners in the empirical arts are so prone to cherish.

Gardening, Mr Walpole observes, was probably one of the first arts which succeeded to that of building houses, and naturally attended property and individual possession. Culinary, and afterwards medicinal herbs, were objects in request by every head of a family; and it became convenient to have them within reach, without searching for them in woods, in meadows, or on mountains, as they were wanted. Separate enclosures for rearing herbs were soon found expedient. Fruits were in the same predicament; and those most in use, or the cultivation of which required particular attention, must early have entered into and extended the domestic enclosure. Such may be deemed the leading heads of a conjectural history of the art; and indeed, if we would ascend into remote antiquity, we can have recourse only to conjecture, for although, in the Sacred Writings, and in the earliest profane authors, allusions to gardens occur, little is told us either of their productions or their culture. At the close of the Roman commonwealth, the catalogue of fruits had become considerable, the principles of grafting and pruning were understood and practised, and shortly afterwards, even artificial heat seems to have been partially employed. With the decline of the empire, horticulture also declined or became stationary; but at the revival of learning, it arose from the slumber of the dark ages, encumbered, it is true, by the dreams of the alchymists, the restrictions of unlucky days, and the imaginary effects of lunar influence. From these fetters it was ere long emancipated by the diffusion of knowledge, and it has hitherto kept pace with the general improvement of society. Modified by climate and other circumstances in different countries, its advancement has been various; but nowhere has it made greater progress than amongst ourselves. Introduced into England at an early period, gardening became conspicuous in the reign of Henry VIII. and his immediate successors, and met with considerable attention during the reigns of the Stuarts. In the first half of the eighteenth century, Miller, Switzer, and others, laboured with success in improving the operations, and unfolding the principles, of the art; and these were succeeded by Abercrombie, Speechly, and a host of writers, who added greatly to our stores of knowledge. In 1805 was established the Horticultural Society of London, which was soon followed by the institution of the Caledonian Horticultural Society at Edinburgh; and in their train have sprung up a multitude of provincial gardening societies, all of which have given an impulse to the public mind, and stimulated the exertions of individuals. Experimental gardens have been formed, in which, amongst other things, the important work of distinguishing and classifying the numerous varieties of our hardy fruits has been zealously prosecuted. The mass of information now collected is immense, and the labour expended in its diffusion unwearied. Judging from the literature of the day, and passing downward from the sumptuous Transactions of the metropolitan Society, through the numerous periodicals, to the penny information for the people, we shall scarcely find any art, however nationally important, which receives more attention, or on which the liberality of the wealthy is more abundantly bestowed. The public nursery-gardens, too, both at London and elsewhere, establishments intimately connected with our subject, and which, in a manufacturing nation, are not the least wonderful amongst the applications of skill and capital, prove the extent and perfection to which gardening has advanced. Although, however, there is not, perhaps, in the annals of invention, a chapter of higher interest than the history of Horticulture, our limits do not permit us to enter further into details: we must therefore refer to Loudon's *Encyclopædia of Gardening*, a work which, for minuteness of exposition, and copiousness of illustration, is unrivalled amongst the didactic treatises of our times.

We intend to confine our attention almost exclusively to the horticulture of Great Britain, and we shall endeavour to give such an exhibition of its practice as may suit the middle districts of the island. The objects of culture are so numerous, the operations so varied, and the materials so copious, that, in presenting what can claim only the character of a sketch of our subject, it will be necessary to follow a plan of selection. It would be unprofitable to describe all the methods of culture in practice; we shall therefore notice such only as are deemed the best.

The subject naturally divides itself into the Fruit, the Kitchen, and the Flower Garden; but as the first two generally occupy the same locality, or are intermingled with each other, and as every thing connected with their formation is inseparably involved, we shall, to some extent, take them together. Then will follow the Flower-Garden; and by way of conclusion to the whole, a short Calendar.

FRUIT AND KITCHEN GARDEN.

In this department are cultivated the articles which are necessary for the supply of the kitchen and the dessert table. It is inclosed within walls, not only for the sake of security and general shelter, but, in our climate, as affording the means of cultivating the finer fruits, by training the trees close to the walls. It is furnished with hot-houses, melon-frames, and similar contrivances, by which the fruits of other climates are subjected to an artificially increased temperature, and thus brought to maturity. The size of a walled garden ought evidently to bear some proportion to the splendour of the mansion-house of which it is an appendage, to the extent of the park, and the means of the family. Where the demand is large, such a garden should comprehend from four to six acres. In many places this extent will not afford an adequate supply of culinary vegetables, but some of the bulkier crops, such as pease, potatoes, and turnips, may be grown in the exterior fields. From an acre and a half to three acres may be regarded as forming a respectable garden; but, within the limits already mentioned, it is better, in the first formation of a garden, to enclose too large a space than too small a one.

The productiveness of such an establishment will depend chiefly upon the natural fertility of the soil, and the eligibility of the situation, but also in a considerable degree upon the labour expended upon the culture. Where a garden is *underworked* (to use a gardener's phrase), the finer products must necessarily be scanty, for whatever requires care, requires time; and it not unfrequently happens that a gardener fails in some crop, not from defect of method or skill, but because he has not been able to overtake it, or has been obliged to make his preparations in a hurried and insufficient manner. All circumstances being favourable, a British garden is perhaps unrivalled in fertility by any cultivated spot in the world. A copious supply of esculents flows into the kitchen at all seasons; and after a rich abundance of fruit has been afforded during summer and autumn, the winter stores may be easily prolonged till the early forced fruits come again to the table.

We shall first treat of the general properties and appendages of the Fruit and Kitchen Garden.

Situation.—The position of the garden in relation to the mansion-house, properly belongs to the province of Landscape-Gardening, as it obviously should be in keeping with the general features of the park scenery. It may, however, be remarked, that, as a place of interest to every well-informed proprietor, it should be so near as to be conveniently accessible on foot, probably within little more than a quarter of a mile; while it should be so distant as to avoid the possibility of offence arising from gardening operations and the resort of workmen. A position on one side of the house is to be preferred, unless a much more eligible one occur in the rear. Wherever it be placed, it should be so masked by evergreen shrubs and trees, as not to be visible from the principal lawns, or from the walks in the shrubbery and flower-garden. If the surface of the domain be undulated, the garden is almost unavoidably seen from some point or other, and the *coup-d'œil* of the enclosure walls is apt to present the idea of a large box; an unpleasant impression, which should by all means be avoided or lessened by plantations judiciously placed.

Ground possessing a gentle inclination toward the south is desirable for a garden. On such a slope effectual draining is easily accomplished, and the greatest possible benefit is derived from the sun's rays. The lower part of a gentle declivity is perhaps to be preferred; but a very low situation should scarcely be chosen, as the subsoil is apt to be damp, fogs often brood over such spots, and frosts are more injurious there than on higher ground. It is beneficial to have an open exposure towards the east and west, so that the garden may enjoy the full benefit of the morning and evening sun.

Shelter is absolutely necessary; and that afforded by natural objects, such as rising grounds, is the best. Where this is wanting, its place should be supplied by masses of forest-trees, disposed at such a distance, however, as not to shade the wall-trees, perhaps not nearer than 150 feet. The purpose of such screens is to break the force of the winds; and as every situation is, in this respect, liable to some peculiarities occasioned by the general structure of the country, or by the reverberation of aërial currents from adjacent eminences, these peculiarities should be carefully observed and obviated. The idea that crowded plantations increase the warmth of a place is often fallacious; and, in the opinion of many, they do more harm than good, by encouraging blight. The trees employed may be of a varied character, but lime-tree, horse-chestnut, beech, sycamore, weeping birch, and the smooth-leaved wych elm, should prevail. There may also be a proportion of evergreen trees, such as firs, pines, hollies, and evergreen oaks. When these masses of wood are planted at the time the garden is formed, poplars, larches, and other fast-growing trees, should be thickly intermixed to act as temporary trees and nurses, which are afterwards to be weeded out, as the permanent trees more slowly advance to maturity.

A supply of *water* is equally necessary. Where a streamlet can be made to flow through the garden, and keep a central pond constantly full, it will conduce both to utility and amenity. If this cannot be effected, a pipe of sufficient caliber should be led from some neighbouring pond to the hot-houses, and to two or three different stations in the garden. Well or spring water should be exposed in tanks or reservoirs to the action of the sun and air, when it becomes comparatively soft and salubrious for plants. As rain water is found better than any other for this purpose, all that can be collected should be stored and kept for use.

Connected with the situation is the *approach* to the garden from without, a matter requiring some taste and contrivance. If possible, it should be from the south, when the range of glazed houses will be seen at once, and produce a pleasing effect. Sometimes a lateral entrance is very suitable, leading, it may be supposed, from the flower-garden through an intermediate shrubbery, and coming upon the hot-houses in flank. It is delightful to be introduced at once and by surprise into a Slip, as it is called, where on the one hand there is an extent of wall covered with luxuriant fruit-trees in full bearing, and on the other is displayed a rich collection of ornamental shrubs and large perennial border-flowers.

Form.—The form of a garden, it is obvious, must chiefly be determined by the nature of the situation and the taste of the proprietor. In general, gardens are either squares or oblongs, chiefly, it is presumed, because walls of this configuration contain the greatest space within the least perimeter, a result of very questionable value. They may be of any form, with this limitation, that attention should be paid to facilitating the transport of manures and garden products, for when the grounds are straggling, or complicated in structure, the labour of cultivation is much increased.

Exterior Fence.—Most gardens are encircled by an outer boundary, formed by a sunk wall or ha-ha, surmounted by an invisible wire fence to exclude hares, or by a hedge and paling. Occasionally this sunk wall is placed on the exterior of the screen plantations, and walks lead out among the trees, to give favourable views of the adjacent country. Although the interior garden receives its form from the walls, the ring fence and plantations may be adapted to the shape and surface of the ground. The spaces between the outer fence and the walls are, as already noticed, called *Slips*, and, where circumstances render it eligible, a considerable extent of ground is sometimes included, and appropriated to the culture of small fruits and vegetables. If possible, the gardener's house should be situate here, as being convenient for him, and as tending to scare depredators.

Walls.—For the production of the finer fruits, such as peaches, apricots, hardy grapes, and most of the delicate French and Flemish pears, the aid of walls is indispensable in our climate. Indeed, in the northern and higher parts of the country, where there is no walled garden, the dessert can seldom consist of more than small fruits, and ill-ripened apples and pears. So valuable in this respect are walls, that it is perhaps a matter of surprise that they have not been multiplied by the erection of slight and cheap structures, such as are common in the peach-gardens in France. The north wall having, in the interior, a south aspect, is of course appropriated to the more tender kinds of fruit-trees; here, it is generally estimated, they enjoy an increased temperature equal to 7° of south latitude; the east and west walls are set apart for fruits of a somewhat hardier character; while the inner face of the south wall, having a north aspect, is well adapted for retarding Morella cherries and currants.

The north wall is generally placed nearly perpendicular to the meridian, that is, so as to have the sun directly in front at 12 o'clock. Minute directions have indeed been given to make it face towards 11 or $11\frac{1}{2}$ A. M., on the ground that thus it would sooner meet the rays of the morning sun; but it does not appear that this arrangement has been the subject of direct experiment, and certainly the arguments, by which the superiority of this aspect is supported, are far from being satisfactory. The east and west walls are commonly placed at right-angles to that already mentioned, but they may follow the shape of the ground, and if this slope to the south, they descend with the declivity. The south enclosure wall, as affording on the outside a valuable aspect to the south, is deserving of particular attention. It is presumed that the walls are to be covered, both within and without, with trees trained *en espalier*.

Different portions of the enclosure wall are always built of different heights, and this variation of height is the more necessary, when the ground approaches to a level. In such a situation, and when the enclosure does not exceed two acres, the north wall may rise to the elevation of 14 feet; the walls on the east and west may be two feet lower, and the south wall need not exceed 10 feet. In larger gardens, the walls are generally made proportionally higher: on the north, perhaps 16 feet, on the east and west 14, and on the south 12. In several excellent Scottish gardens planned by Mr John Hay, such as that at Castle Semple, a piece of building is made to project diagonally outwards from the corners where the walls meet at right-angles. This projection is 16 or 17 feet in length. It serves to strengthen the fabric, and, at the same time, breaks the force of the winds which sweep around walled gardens.

Walls inclined to the horizon have been recommended by Desaguliers and others; but, independently of the theoretical objections which might be urged against them, and which, in actual practice, would probably counterbalance their supposed advantages, they must be extremely inconvenient from their bulk, or the space which they occupy; and hence they have never come into general use.

Bricks afford the best and the most kindly material for garden-walls. Being bad conductors of caloric, they accumulate heat; they do not retain moisture, and, by their numerous interstices, they furnish every facility for nailing in the twigs of the fruit-trees. Where freestone (that is, sandstone capable of being easily dressed) is abundant, the exterior wall is often formed of coursed masonry, and the interior is faced with bricks. The foundation should, if possible, be formed of stone. Whinstone (that is, either the greenstone or the basalt of mineralogists) forms an excellent material for fruit-walls. It is susceptible of a neat hammer-dressing; it does not readily imbibe moisture, and therefore is not much cooled by evaporation; and being of a very dark colour, it absorbs more solar heat during sunshine than a lighter surface, while at night the radiation from both is nearly the same. Part of the principal fruit-wall of the Experimental Garden at Edinburgh is built of greenstone; and the plants trained against it have evinced, by their growth, that they enjoy a superior temperature.

For the preservation of the walls, a coping is necessary; and it seems a matter of indifference whether it be formed of stones with a rounded surface, or of flat pavement, or of tiles. Probably it should not project more than an inch, though some contend for a larger measure, on the ground of its preventing to some extent the radiation of heat from the tree towards the sky in clear nights, and affording shelter from the perpendicular deposition of dew. Temporary copings of wood are often adopted, and are found to answer every good purpose. They are put on in spring, to protect the tender blossom and embryo fruit from the hoarfrosts, and when danger is past are removed, to give free access to the genial showers and sunshine of summer and autumn.

Hot Walls.—A considerable proportion of the walls of every good garden, especially in the north, should be constructed with flues, to supply the means of applying artificial heat. The additional expense is trifling; and in colder situations, the aid of this species of wall is nearly indispensable for the regular ripening of peaches, grapes, and figs. The application of fire-heat for a few weeks in spring will secure the setting of the fruit, and the same operation continued for a short time in autumn will suffice to ripen it, and also to prepare the young wood for the next year. The flues may be about twenty inches deep, and should make as many horizontal turns as the height of the wall will allow. One furnace will be enough for a surface fifty feet in length. When the boundary walls do not furnish room sufficient for the production of the finer fruits, one or perhaps two middle walls are built across the garden from east to west, of the same height as the side walls, to which they nearly approach. They are generally flued, and are sometimes covered, on their southern aspect, with glazed frames, either fixed or moveable. These cross walls add greatly to the capabilities of a fruit-garden, and are useful in affording additional shelter to the small fruits and crops of vegetables.

Espalier-Rails.—Subsidiary to walls as a means of training fruit-trees, espalier rails were formerly much employed, and they still prevail in many parts of the country. In their simplest form, they are merely a row of slender stakes of ash or Spanish chestnut, driven into the ground, and connected by a slight rod or fillet at top. In some gardens, the perpendicular rods are fastened into two horizontal rails, supported by strong posts, which are battened into stones. Cast-iron rails have also been proposed. The frame-work is sometimes inclined to the horizon, and sometimes flat like a table, which last, when there is room, is perhaps the best arrangement. Espalier rails, especially the more elaborate sorts, are expensive and formal, and therefore in many instances have given place to dwarf standard trees, which are equally productive, and far more elegant in their appearance.

Soils.—It is of great importance that the ground selected for a garden should be naturally of a good quality. A hazel-coloured loam, of a light or sandy texture, is well adapted for most crops, whether of fruits or culinary vegetables. As it is more easy to render a light soil sufficiently retentive, than to make a tenacious clay sufficiently porous, a light soil is preferable to one which is excessively stiff and heavy. It is advantageous to possess a variety of soils; and if the garden be on a slope, it will often be practicable to render the upper part light and dry, while the lower remains of a heavier and damper nature. The soil should be good to the depth of two feet, and any necessary additional deepening by manures or otherwise, should not be neglected. The nature of the subsoil demands particular attention. If it be strongly impregnated with metallic substances, or composed of cold till, it will prove pernicious to the roots of fruit-trees, and will scarcely admit of a remedy. A decomposing rock, or a bed of sand, is preferable. Perhaps the best of all is a dry bed of clay, overlying sandstone, which crops out within the enclosure. If the inferior strata be retentive, and if water lodge in any part of the garden, draining should be carefully executed, so as to carry off the superfluous moisture.

Preparatory to the distribution of the several parts of a garden, it is proper that the ground be trenched to the depth of two feet at least; but the deeper the better. In this operation all stones larger than a man's fist are taken out, and all roots of trees, and of perennial weeds, are carefully extracted and cleared away. When the soil is not tolerably good to the depth of two feet, it will often be proper to remove a portion of the subsoil; and its place should be made up by a proportional quantity of turf or fresh loam from the fields. If the subsoil be gravel, and the upper layer sandy, the additional earth should be clayey loam, or the scourings of ditches; but if the original body of soil be of a compact texture, the materials introduced should be mixed with sand, marl, and other light opening substances. When the whole ground has been thus treated, a moderate liming will, in general, be useful. After this, supposing the work to have occupied most of the summer, the whole may be laid up in ridges, to expose as great a surface as possible to the action of the winter's frost. The draining, trenching, and other operations here recommended, will unavoidably be attended with considerable expense, and this expense will not immediately be followed by any perceptible beneficial result. The lapse of a few years, however, will develope the vast advantages of such a mode of procedure, which, if it have been neglected at first, cannot be practised at a subsequent period but with indifferent success, and not without a great increase of care and labour.

Manures.—In enumerating the general appendages of gardens, it may be proper to say something of manures, but we do not consider it necessary to enter into minute details on this subject. Where there are extensive melon grounds, an abundance of stable and other litter is required; and this substance, in its partially decomposed state, as afforded by exhausted hotbeds, supplies a manure well adapted to aid the processes of vegetation. Decayed leaves, which are plentiful where there are extensive pleasure-grounds, also form an excellent manure for many purposes. Some practical men prefer composts to simple dungs, or such substances as have undergone fermentation. For fruit-trees turf from rich pastures, mixed with vegetable earth, is perhaps the best stimulant which can be applied. It is questionable whether any sort of trees are permanently benefited by the application of crude manures to their roots; and it is certain that many have been irremediably injured by this practice. But whatever caution may be necessary in their use, the prudent horticulturist will find it expedient to pay particular attention to the collection of manures. He cannot go on long without them; for ground which is exhausted by continual cropping, requires to be continually repaired.

Internal Arrangement of Gardens.—A considerable portion of the north wall, or of the cross-wall, is covered in front with glazed structures, called hothouses, or forcing houses. To these the houses for ornamental plants are sometimes attached; but the last are more appropriately situate in the flower garden, when that forms a separate department. It is well, however, that every other thing connected with the forcing, whether of fruits or flowers, should be concentrated in one place. The melonry and other smaller pine-pits, should occupy some well-sheltered spot in the slips, or on one side of the garden, and, if possible, in the neighbourhood of the stable-yard. Adjoining to this may be found a suitable site for the compost ground, in which various kinds of soils may be kept in store, and composts may be prepared.

Extensive gardens, in exposed situations, are often divided into compartments by hedges, so disposed as to break the force of winds. Where these are required to be lofty yet narrow, holly, yew, or beech is preferred; but if space be no object, common laurel-bay is one of the most beautiful plants that can be employed for this purpose. Smaller hedges may be formed of evergreen privet, or of tree-box. These subordinate divisions, though often neglected, are worthy of attention; for, in addition to shelter, they furnish shade, which, at certain seasons, is peculiarly valuable.

The laying out of the area of the garden in walks, borders, and compartments, may be regulated very much by the shape of the ground, and the taste of the owner. In general, a gravel walk six or eight feet broad, is led quite around the garden, both within and without the walls. A walk of similar dimensions is often constructed in the centre of the garden in the direction of the glazed houses, and this is sometimes crossed by another at right-angles. At times these walks are led diagonally from the corners. The space between the wall and the walk that skirts it, is called the wall-border, and is commonly from fifteen to twenty feet broad. On the interior of the walk there is usually another border five or six feet broad, which is generally occupied by fruit-trees trained to espalier rails, or by dwarf standard trees. The middle part of the garden is divided into rectangular compartments for the raising of the various culinary crops. These compartments may be divided by rows of moderate-sized fruit-trees, or of gooseberry and currant bushes. It is advantageous to have several small beds, in which to cultivate the less bulky articles, such as basil, sage, tarragon, &c. which, in large spaces, are apt to be overlooked or neglected.

Wall-Borders.—The preparation of borders for fruit-trees is a matter of the utmost importance, and no pains should be spared in this essential operation. Where borders are not in good condition, the care and toil of the most experienced gardener will avail but little to the production of fruit. The first object is effectual draining. The next, if the subsoil be indifferent, is the formation of a bottom impervious to the roots of trees. This is sometimes done with stone-shivers and lime-rubbish, or with coal-ashes and clay, compacted by treading with the feet, and beating with the back of a spade. Loudon recommends successive layers an inch thick of clean gravel, pulverized earth, and then gravel, well watered and firmly compressed by means of a heavy roller. Good soil to the depth of two feet and a half, or three feet, is placed over this impervious bottom. Three-fourths rich loam, and one-fourth light sandy earth, form a mixture congenial to the generality of fruit-trees, In selecting the soil, regard may be had to the particular trees which are to cover each portion of the wall. Thus a heavy soil may be allotted to pears and plums; loam of a medium character, inclining to be strong, to peaches; and a lighter earth for cherries and figs. Above all, care should be taken to render the borders sufficiently rich and substantial. Whilst every skilful horticulturist can in various ways reduce the luxuriance of his trees, nothing can compensate for extreme poverty in the soil. The same principle will dictate moderation in cropping wall borders with culinary vegetables; a practice in which gardeners are apt to exceed, from a desire to furnish very early crops of pease, turnips, cabbage, or potatoes.

Orchards.—In most large gardens dwarf standard trees may be planted, sufficient to afford a supply of fruit for an ordinary family. Where this is not the case, it is desirable that there should be a separate orchard. A situation similar to that of a garden, and the same preparatory operations, are necessary: but a simple hedge will, in most situations, suffice for a fence. The trees may here be on free stocks and high standards, and the taller growing pears and apples are best suited for a large orchard. Thorseby in his Diary, under date of March 1702, mentions, as a novelty, an orchard "kept in the new order of dwarf trees," evidently intimating that dwarf standards were introduced from Holland by the Prince of Orange at the time of the Revolution. When an additional supply of culinary vegetables is required, they may be cultivated in the orchard; and then the trees should be planted in rows, with considerable intervals between the rows, otherwise the close quincunx order is preferable. In any circumstances, the trees should not be choked up with currant and gooseberry bushes, as is common in market gardens. On the margin of the orchard may be planted Walnuts, Chestnuts, Filberds, and any other fruit-trees less commonly cultivated, or the fruit of which is not much in demand. The whole should be effectually screened from the prevailing winds, by rows of forest trees, at a sufficient distance, however, to prevent shading, or the robbing of the soil.

FRUIT GARDEN.

We shall first direct our attention to the culture of hardy fruits, or of such as, in our climate, do not, to an extensive degree, require the assistance of artificial heat. But before proceeding to a minute detail of the management of the different varieties, it may be proper to attend to some of the operations which are common to all.

Preliminary Operations.

These may be classed under the heads Propagation, Planting, Training, and the Protection of Blossom.

Propagation by Seed.—Although fruit-trees are furnished with all the natural means of reproduction, it is not in general expedient to attempt to propagate them by the sowing of seed. This method is found to be equally tedious and precarious, requiring the labour of a good many years, and very seldom producing an exact copy of the fruits from which the seeds are taken. All our present admired fruits are seminal varieties obtained from the wild inhabitants of the forests; they have been trained into an artificial condition; and when sown, seem to have a tendency to resume their original constitution. In the peach-orchards of America, for instance, which are planted with the kernels of choice sorts, there are seldom more than a few trees affording fruit fit for the table: the produce of the majority is so worthless, that it is employed for feeding the hogs. Notwithstanding this embarrassing circumstance, there are some considerations which render this mode of propagation at once interesting and important to horticulturists. It is the only way by which we can procure new kinds to supply the place of those which are falling into decay; and it is a great means of adapting the tender sorts to the rigour of our climate. It is well known that some of the favourite cider apples of the seventeenth century have become extinct, and others are fast verging into decrepitude; and hence the conclusion has been drawn, that all our present fruits, as they are artificial in their constitution, are also limited in their duration. Each variety springing from an individual at first, however extended by grafting or budding, partakes of the qualities of the individual: and where the original is old, there is inherent in the derivatives the tendency to decay incident to old age. It is assumed that all the individual trees of any given variety, such as the golden pippin, or the grey leadington, are in a lax sense equivalent to *one individual.* By careful management, the health and life of this composite individual may be prolonged; and grafts inserted into vigorous stocks, and nursed in favourable situations, may long survive their parent tree; still there is a sure progress towards extinction, and the only renewal of the individual, the only true reproduction, is by sowing seed. It is admitted by those who have paid attention to the subject, that this curious principle of vegetable economy holds true, at least so far as regards fruit-trees.

Mr Knight, to whom this ingenious theory is due, conceived the idea of supplying the lack of old varieties by semination. It further occurred to him, that advantage might be taken of that tendency which plants exhibit on repeated sowings, to adapt themselves to the climates in which they are raised, so that trees of warmer countries may thus become habituated to colder regions. He therefore devoted much of his attention to the production of improved and robust varieties; and his zeal and labours have been rewarded by the Acton Scott Peach, the Ingestrie and Downton Apples, and many others, in almost every sort of hardy fruit. Mr Knight entertained the opinion, deduced, we may presume, from experiment, that more is to be expected from hybrid varieties, than from the mere reproduction of old kinds; he therefore had recourse to the nice operation of dusting the pollen of one kind on the pistil of another. He opened the unexpanded blossom of the variety destined to be the female parent of the expected progeny, and, with a pair of small-pointed scissors, cut away all the stamens, while the anthers were yet unripe, taking care to leave the style and the stigma uninjured. When the female blossom, thus prepared, naturally expanded, the full blown blossoms of the other variety destined to be the male parent were applied. Mr Knight has often remarked in the progeny a strong prevalence of the constitution and habits of the female parent: in this country, therefore, in experimenting on pears, the pollen of the more delicate French kinds, such as crasanne and chaumontelle, should be dusted upon the flowers (always deprived of stamens) of the muirfowl egg, the grey achan, the green yair, or others, that are hardy, or of British origin.

As this is a subject of interest, we may state some of the precautions adopted by Mr Knight and his followers, in conducting their experiments. It is, in the first place, a rule to employ seeds of the finest kinds of fruit, and to take them from the largest, ripest, and best-flavoured specimens of that fruit. When Mr Knight wished to procure some of the old apples in a healthy and renovated state, he prepared stocks of such good sorts as could be propagated from cuttings, he planted them against a south wall in rich soil, and then grafted them with the kind required. In the following winter the young trees were taken up, their roots retrenched, and then replanted in the same place, by which mode of treatment they were thrown into bearing when only two years old. Not more than a couple of apples were allowed to remain on each tree, and these in consequence attained a larger size and more perfect maturity. The seeds were then sown, in the hope of procuring an equally excellent and more vigorous offspring. In the case of cross-impregnation, every seed, though taken from the same fruit, produces a different variety, and these varieties, as might be anticipated, prove to be of very various merit. In general those seeds are to be preferred which are plump and round. An estimate of the value of the seedlings may be formed, even during the first summer of their growth, from the resemblance they bear to those of highly cultivated and approved trees. The leaves of the promising seedlings improve in character, becoming thicker, rounder, and more downy every season. Those whose buds in the annual wood are full and prominent, generally prove more productive than those whose buds are small and shrunk into the bark. Early flowering and hardy blossoms are desirable characters. It has been observed, that even after a seedling tree has commenced bearing, its fruit has a tendency to improve as the tree itself acquires vigour, so that, if, in the first season, there is any considerable promise, a great improvement may be expected in succeeding years.

The slowness with which seedlings reach the bearing state, has been the subject of complaint among horticulturists, and indeed is the principal reason why this mode of propagation has not been more frequently practised. According to Mr Knight, the pear requires from twelve to eighteen years to reach the age of puberty; the apple from five to twelve or thirteen years; the plum and cherry four or five; the vine three or four; the raspberry two years. The peach, he found to bear in two, three, or four years. This period, however, must depend on the soil, situation, and mode of culture. In the warm and highly manured garden of M. Van Mons at Brussels, (called Pepinière de la Fidélité), seedling pear-trees produced fruit in considerable quantities in the sixth and seventh summers. The great means of accelerating the epoch of bearing, seems to be, to make the trees grow vigorously when young. Crude manures are indeed to be avoided; but vegetable earth, and, above all, a liberal supply of rotted turf, are wholesome and excellent stimulants. The seed-bed, and the ground on which the seedlings are transplanted, should be extremely well worked and comminuted with the spade; and should not be too much exposed to the parching rays of the sun, and the action of the wind. Great care ought to be taken to prevent the young plants from becoming stunted. In pruning, the small twigs in the interior should be removed, so as to relieve the tree from the bushy appearance which it frequently assumes. It has been recommended to transfer cions and buds of promising individuals into other trees in a bearing state. This is peculiarly advantageous with respect to the peach and other stone fruits, as it both hastens the period of puberty, and economises the space which must be occupied on the wall.

Propagation by Cuttings.—Gooseberries, currants, figs, vines, and some others, are increased by means of cuttings. An annual shoot is taken off, along with a thin slice, or *heel*, as it is called, of the former year's wood, which is found to facilitate the production of roots. The cuttings are placed firmly in the soil, at various depths, according to their length, the buds or eyes which would thus come beneath the surface having been previously removed. Vines are sometimes propagated from small pieces of shoots having a single bud: when they have to be transmitted to a distance, an inch in length may suffice. Most of the codlin apples may be increased by cuttings; and even large branches of those which produce *burs*, may be planted at once, with success. In all deciduous trees, the operation is most advantageously performed in winter.

Propagation by Layers.—This is not much resorted to in the fruit garden. It is occasionally employed as the means of dwarfing trees. "Laying," says Mr Lindley, "is nothing but striking from cuttings which are still allowed to maintain their connexion with the mother plant by means of a portion at least of their stem." The operation is performed by bending down a branch to the earth, and pinning it there with pegs. A few inches from the extremity a notch or slit is cut upwards, generally from the insertion of a bud. Sometimes the shoot is pierced with a number of holes; a wire is bound round it; or even a ring of bark is removed. The object of these expedients is to retard the descending sap, and thus to promote the formation of radicles, or young roots. This is also aided by bending the branch upward from the point at which the roots are wanted; and the whole branch, except a few buds at the extremity, is covered with soil. The seasons best fitted for these operations, are early in spring and about midsummer, that is, before the sap begins to flow, and after it has completely ascended. One whole summer, sometimes two summers, must elapse before the layers be fully rooted.

Propagation by Grafting.—When a shoot or young branch of one tree is inserted into the stem or branch of another, and, by the influence of vegetation, is made to coalesce with it, the process is termed grafting. In this manner apple and pear trees, sometimes plum and cherry trees, are propagated. Our attention must be directed to the *stocks* into which the shoots or cions, as they are called, are inserted; to the *cions* themselves, and to the *mechanical operations* employed in grafting.

The *stock* should be of the same *genus*, or, at least, of close affinity in natural family, to which the graft belongs. The following are the principal kinds of stocks, including, by anticipation, such as are used in budding. For *apples*, seedlings of the crab apple, layers of the doucin or paradise, and of the codlins, with cuttings of the bur-knot varieties. For *pears*, seedlings of the common, and wilding pear; with seedlings or layers of quince. For *plums*, seedlings of any of the common sorts, particularly the muscle, the Brussels, and the Brompton; also the Bullace plum. For *cherries*, seedlings of the small black cherry or gean, Prunus Avium; and, for dwarfing, P. Mahaleb. For *apricots*, seedlings of the wilding apricot, with the muscle and Brussels plums. For *peaches* and *nectarines*, seedlings of the muscle, white pear-plum, and Damas noir plum, the almond, and the wilding peach.

Stocks are commonly divided into two classes, viz. *free-stocks* and *dwarfing stocks*. The former consist of seedling plants which naturally attain to the same size as the trees from which the cions are taken. The latter are plants of diminutive growth, either varieties of the same species, or species of the same genus as the cion, which have a tendency to lessen the expansion of the engrafted tree. The Paradise or Doucin is the dwarfing stock for apples, the Quince for pears, the Bullace for plums, and Prunus Mahaleb for cherries. The nature of the soil, in which the grafted trees are destined to grow, should also have weight in determining the choice of stocks. When the garden is naturally moist, it is proper to graft pears on the quince, because this plant agrees with a moist soil, and at the same time serves to check the luxuriance thereby produced. In France, peaches are commonly budded on almond stocks, to adapt them to the dry soils of that country. The seeds from which stocks are to be raised, are generally sown in beds in March; but the germination of some kinds is promoted by placing the seed, for a time, in moist sand in a greenhouse. Next season the seedlings are transplanted into nursery rows, in which they are allowed to reach the size necessary for the various forms of fruit-trees hereafter to be mentioned.

The *cion* is always a portion of the wood of the preceding year. As the diseases incident to fruit-trees are transmitted by this mode of propagation, it is desirable that the parents should be as healthy as possible. In the shy-bear-

Fruit Garden.

ing kinds, it has been found beneficial to select shoots from the fruitful branches. The cions should be taken off some weeks before they are wanted, and half-buried in the earth, as it is conducive to success that the stock should, in forwardness of vegetation, be somewhat in advance of the graft. During winter, grafts may be brought from America, or from the Continent of Europe, if carefully wrapped up in hypnum-moss. If they have been six weeks or two months separated from the parent plant, they should be grafted low on the stock, and the earth should be ridged up around them, leaving only one bud of the cion above ground. Out of forty cions of new Flemish pears, procured by the Caledonian Horticultural Society from Brussels and Louvain, and treated in this way, only one failed.

Success in *grafting* depends almost entirely on accurately applying the inner bark of the cion to the inner bark of the stock, so that the sap may pass freely from the one to the other. They are therefore fitted together and held fast by a slight bandage of matting. To lessen evaporation, a portion of ductile clay is moulded around the place of junction, and is retained until it appears, from the developement of leaves, that the operation has succeeded. The best season for grafting is the month of March; but it may be commenced as soon as the sap in the stock is fairly in motion, and may be continued during the first part of April.

The most usual mode of grafting is called *whip-grafting*, or *tongue-grafting*, represented in Plate CCXCIII., Fig. 8, *a*, *a′*. The top of the stock and the base of the cion are cut off obliquely at corresponding angles, as nearly as can be guessed by the eye; the tip of the stock is then cut off horizontally; next a slit is made downwards in the centre of the sloping face of the stock, and a corresponding slit upwards in the corresponding face of the cion. The tongue or upper part of this sloping base is then inserted into the cleft of the cion, and so adjusted that the inner bark may unite neatly and exactly on one side. The junction is then tied up and covered with clay. Several other methods may be mentioned, such as *cleft-grafting*, Plate CCXCIII., Fig. 8, *b*, *b′*, in which the cion is sloped at the base, and inserted like a wedge into a cleft in the stock. *Side-grafting*, Plate CCXCIII., Fig. 8, *d*, *d′*, which resembles whip-grafting, but is performed on the side of the stock without heading it down. *Crown-grafting*, Plate CCXCIII., Fig. 8, *c*, *c′*, in which the cion is inserted between the bark and the wood. *Grafting by approach*, or *inarching*, also resembling whip-grafting, but the cion remains attached to the parent plant. Plate CCXCIII., Fig. 8, *e*, *e′*.

It is evident that the method of performing the operation may be diversified to a great extent. The late M. Thouin of Paris described, in the Annales du Museum, nearly fifty *greffes*, but little practical utility results from such nice distinctions. It is of greater importance that the horticulturist should be expert in the manipulation of the more common forms, such as those above enumerated. An extensive fruit-garden requires a frequent repetition of the operation, in order to secure proper kinds, and productive branches. At Dalkeith Park, Mr Macdonald, the excellent gardener officiating there, annually inserts on his established trees numerous grafts, and by this means is enabled to overcome the disadvantages of a somewhat unfavourable situation, and to obtain abundant crops of large and beautiful fruit.

Propagation by Budding.—Most kinds of fruit-trees may be propagated by budding; and there are some, such as peaches and apricots, which can scarcely be multiplied in any other manner. It consists in removing a bud with a portion of the bark from one tree, and inserting it in a slit of the bark of another tree. The season for performing this operation is in July or August, when the buds destined for the following year are completely formed in the axils of the leaves, and when the portion of bark parts freely from the wood beneath. The buds to be preferred are those on the middle of a young shoot. There are many forms of budding, but that which is simplest, and is generally practised in this country, called *Shield-budding*, need alone be described. The operator should be provided with a budding-knife, in which the cutting edge of the blade is rounded off at the point, and which has a thin ivory or bone handle, like a paper-folder, for raising the bark of the stock. A horizontal or transverse incision is made in the bark quite down to the wood, and from this incision a perpendicular slit is drawn downwards, to the extent of perhaps an inch. The slit has now a resemblance to the letter T (see Plate CCXCIII., Fig. 8, *f*, *f′*, *f″*); a bud is then cut from the tree wished to be propagated, having a portion of the wood attached to it, so that the whole may be an inch and a half long. The bit of wood is then gently withdrawn, care being taken that the bud adhere wholly to the bark or shield, as it is called. The bark on each side of the perpendicular slit being cautiously opened with the handle of the knife, the bud and shield are inserted. The upper tip of the shield is cut off horizontally, and brought neatly to fit the bark of the stock at the transverse incision. Slight ties of moist bass-matting are then applied. In about a month or six weeks the ligatures may be taken away, when, if the operation have been successful, the bud will be fresh and full, and the shield firmly united to the wood. Next spring a strong shoot is thrown out, and to this the stock is headed down in the course of the summer.

Planting.—After propagation, the next care is to transfer the young trees to those places, whether in the open air or against the wall, where they are to remain. It is of some importance that these situations should be considerately selected; for although all fruit-trees admit of repeated transplantation at a subsequent period, they seldom fail to exhibit injurious effects from it. Planting may be performed at any time in the beginning of winter, and in the early spring months; but it is considered that the most advantageous seasons are immediately after the fall of the leaf in autumn, and before the ascent of the sap in spring. The trees should be carefully lifted from the nursery lines, avoiding the mutilation or bruising of the roots; and, to prevent the desiccation of the fibres, they should be planted as soon as possible after being lifted. When they have to be carried to a distance, the roots should be enveloped in moist hypnum-moss. In the ground, which is presumed to have been previously trenched or otherwise prepared, pits or holes are formed, and the soil is finely pulverized; and in these the trees are placed, their roots being spread out and intermingled with the earth. Shallow planting is strongly recommended; two or three inches of soil being in general a sufficient covering. On filling up the hole, a surface of at least an equal size is *mulched*, that is, covered with dung or litter, so as to restrain evaporation, and preserve moisture. In the case of wall-trees, a space of five or six inches is usually left between the stem at the insertion of the roots and the wall, to allow for the effects of growth. To young standard trees stakes are added, to prevent their roots being ruptured by wind-waving. During the dry weather of the first summer, the trees should be watered from time to time as occasion requires.

The selection and distribution of the different kinds of fruit-trees is an important and interesting point in the formation of a garden. Regard must necessarily be had to local situation and climate, as the selection ought manifestly to be different for a garden in the south-west of England, and for one in Yorkshire or Scotland; for one near the level of the sea, and for another elevated several hundred feet. The best walls, having a south or south-east aspect, are dedicated to the grape-vine, the fig-tree, the peach, and apricot. The finer varieties of French and Flemish pears

Fruit Garden.

require and deserve a good aspect, as also the early sorts of cherries. The later cherries, and the generality of plums, succeed very well either on an east or west aspect. In Scotland, the mulberry requires the protection of a wall, and several of the finer apples do not arrive at perfection without it.

The wall-trees which are intended to be permanent are called *dwarfs*, from their being grafted near the ground. Between each of these, trees with tall stems, called *riders* in Scotland, are planted as temporary occupants of the upper part of the wall. The riders should always be five or six years trained in the nursery, in order that when planted out they may come into bearing as speedily as possible. The distances at which the permanent trees are planted is to be regulated by the known mode of growth of the different sorts, and by the height of the wall. When the walls are about twelve feet high, the following average distances have been recommended:—For vines, 10 or 12 feet; peach and nectarine trees, from 15 to 20 feet; fig-trees, 20 feet at least; apricots, from 15 to 24 feet; plums and cherries, from 15 to 20 feet; pear-trees, 20 feet if on quince stocks, and 30 feet on free stocks; apple-trees, 12 feet if on paradise stocks, and 15 to 25 feet on free stocks. Where the walls are only seven or eight feet high, the distance should be increased by nearly one-fourth, as in this case the want of height must be compensated by greater breadth.

Apples and pears make the best espalier-rail trees, especially in Scotland. These should be of the more robust sorts, and should be planted at the distance of 15 or 20 feet. Cherries and plums are sometimes introduced into the espalier-rail row, but these succeed in those situations only where they would do equally well or better as standards.

In many excellent gardens, dwarf standards are preferred to espalier-rail trees. They are placed along the inner borders at 8 or 10 feet apart. When proper attention is paid to such trees, the effect is very pleasing, each being in itself a handsome object, and generally clothed with fine fruit. Where the situation is warm, and the climate favourable, a few of such of the finer pears as have hardy blossoms should be planted out in this form. Though they may fail to ripen in some seasons, they will often add greatly to the resources of the fruit-room, their produce being frequently superior in flavour to the fruit grown on walls.

Training.—Two functions belong to training,—that, namely, which modifies the form of the tree, and that which regulates the bearing wood, and consequently the supply of blossom. The latter, more accurately termed *pruning*, being of a varied character, will more properly fall to be considered when treating of the several fruits; at present we shall make a few remarks on the former. The essential properties of training are, that it should be simple, not requiring frequent amputation; that it should be appropriate to the growth of the tree; and that it should be such as to facilitate the production of fruit. The knife is the great instrument in training, and whoever can wield it skilfully, will have a perfect command over his trees: at the same time, it may be laid down as a maxim, that it should be used with some degree of reserve, as nothing is more prejudicial to the health and fruitfulness of all sorts of trees, than severe and injudicious cutting.

Training of Standards.—Orchard-trees are generally worked in the nurseries with stems five or six feet high. All that is necessary, in pruning trees of this sort, is merely to cut out the branches which cross or press upon one another. Bushy heads should be thinned out, and those which are too lax cut back. Three or four leading branches may be selected, to pass ere long into boughs, and form a handsome skeleton for the tree; but it is useless to be finical in this matter, as these branches will soon grow beyond the power of the pruner, and of any artificial system which he may adopt. Dwarf standards being more accessible, are more under the dominion of training. When worked on paradise stocks, they may be kept not much superior in size to gooseberry bushes, and in a state of abundant fruitfulness. The more fanciful Dutch modes of training apple-trees, in the cup-and-ball fashion, and after many other curious devices, have never been relished in Britain. In this country, they are generally allowed to grow *en buisson*, that is as bushes. For pears, the French forms, *en pyramide*, fig. 1, and *en quenouille*, fig. 2, are justly gaining ground.

Fig. 1.

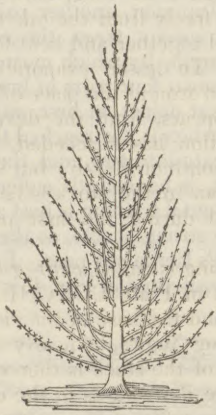
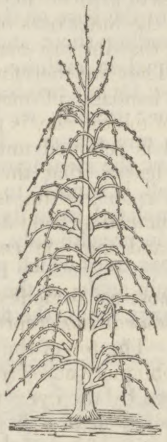


Fig. 2.



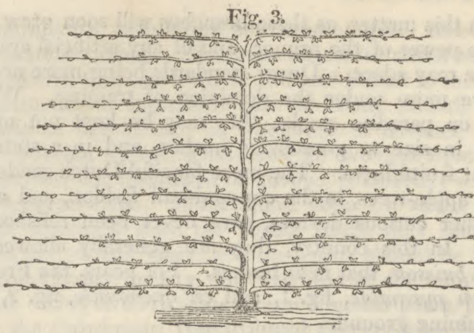
Training of Wall-Trees.—A fruit-tree planted against a wall is evidently in a constrained and artificial situation, from which it makes continual efforts to escape. Much attention is necessary to repress this tendency, which, were it permitted to act, would disfigure the tree, and neutralize the advantages of a wall, without imparting in their place the freedom of a standard in the open air. To be successful, the operator should be acquainted with the theory of vegetation, should study the mode of growth in different trees, and, above all, remember the purpose of all training, viz. the production of bearing wood.

One great difficulty is to preserve equilibrium in the growth of the several parts of the same tree: for the attainment of this object, excellent hints are to be found in the *Pomone Française:* we shall mention only two or three. A shoot will grow more vigorously whilst waving in the air, than when nailed close to the wall; a weak shoot should therefore be left free, whilst its stronger antagonist should be restrained. A shoot diverging slightly from the perpendicular, will, other things being equal, obtain a more copious supply of sap than one that is laid out horizontally, or is deflected downwards. A luxuriant shoot may be retarded for some time, by having its tender extremity pinched off, and thus allow a weaker brother to overtake it. By these and other expedients, which will suggest themselves to an attentive horticulturist, and by the prudent use of the knife, it will be easy to execute the following forms, which, on account of their simplicity and general excellence, we select out of many to be found detailed in works on gardening.

The *horizontal* form (fig. 3.) has long been a favourite in this country, having been strongly recommended in the excellent work of Mr Hitt. There is one principal ascending stem, from which the branches depart at right-angles, at intervals of ten inches or a foot. In trees of ordinary vigour, the vertical shoot is cut back every winter to within fourteen inches of the highest pair of branches: a number of shoots are produced in the beginning of each sum-

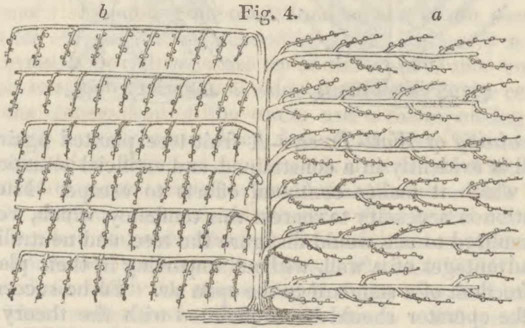
Fruit Garden.

Fig. 3.



mer, out of which three are selected: one is trained in the original direction of the stem, and one on each side of it, parallel to the base of the wall. By pinching off the point of the leading shoot about midsummer, another pair may be obtained in autumn. In luxuriant trees, the vertical shoot may be left two feet in length, by which means, and by summer pruning, we have known four pairs of branches added in one season. The great object, at first, ought to be to draw the stem upwards: when it has reached the top of the wall, it is made to divaricate into two, and the tree, thus completed as to its height, is henceforth suffered to increase in breadth only. Horizontal training is best adapted to those trees which produee strong shoots, as the Ribston Pippin apple, or the Gansel's Bergamot pear. For the more twiggy kinds, the form represented in Fig. 4. is more suitable. In this the horizontal branches are eighteen or twenty inches distant, and the small shoots are trained in between them, either on both sides, as below letter *a* in the figure, or on the under side and downwards, as below *b*. This last is an excellent method of reclaiming neglected trees of this description. Every alternate branch being taken away, and the spurs cut off, the young shoots are trained in, and soon produce excellent fruit. It is rather singular that Thouin, in his account of the *Ecole d'Agriculture pratique du Muséum*, classes the horizontal form among *les tailles hêteroclites ou peu perfectionnées*, and says, that, in consequence of its invariably producing a *tête de saule*, that is, a hedge of young shoots at the top, it has been long since abandoned. From this remark, we must draw the conclusion, that in France the theory of training is in advance of the practice.

Fig. 4.



The other principal form is called *fan*-training. In this there is no leading stem, and the branches are arranged somewhat like the spokes of a fan. Fig 5. represents this shape as it commonly occurs in gardens. It is difficult to say how, in the case of apple and pear trees, this mode, though frequently adopted, is superior or even equal to the horizontal configuration: it is evident, that when the branches reach the top of the wall, where they must be cut short, a *tête de saule* is inevitable. It would be better to adopt the modification of the fan shape used for stone fruits (fig. 6); to establish a certain number of mother branches, and on these to form a series of subordinate members, chiefly composed of bearing wood. The mother branches or limbs should not be numerous, but well marked, equal in strength, and regularly disposed. The side branches should be pretty abundant, short, and not so vigorous as to rival the leading members. To ensure regularity, training should commence with maiden plants; leaders of equal strength should be selected, and encouraged to grow out longitudinally as much as possible, and all crowding among the inferior shoots should be prevented. In *riders* this form passes into the stellar arrangement. The French have made considerable improvements in this mode of training, some of which are noticed, *infra*, under the article Peach.

Fig. 5.

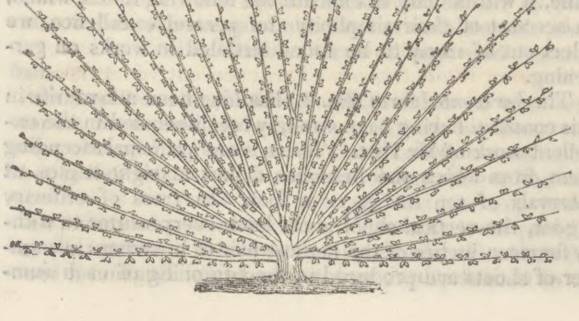
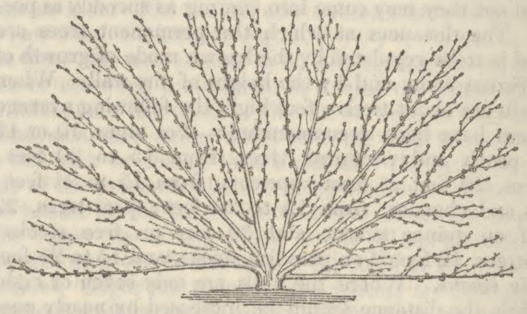
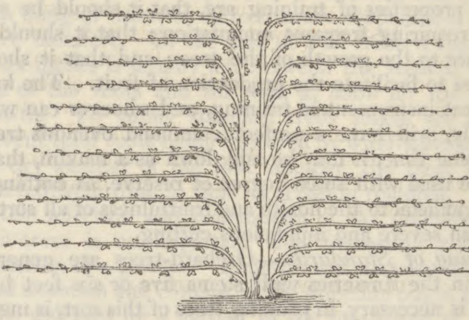


Fig. 6.



Intermediate between horizontal and fan training, is the *half-fan*, described in the first volume of the *Caledonian Horticultural Society's Memoirs*, by Mr Smith, gardener at Hopetoun-House, and practised by him with great success. It is nearly allied to the horizontal form, but the branches form an acute angle with the stem, and are supposed thus to favour the equal distribution of the sap. In the winter pruning, three and sometimes four central branches are cut back; the shoots which arise from these are arranged in the fan order, and, as they elongate, are gradually brought into the horizontal position. The tree is finished at top as in the horizontal form. Sometimes, as in fig. 7., two vertical stems are adopted. For vigorous trees, this figure seems to combine the advantages of both the foregoing varieties.

Fig. 7.



The choice of particular modes of training is too often determined by mere fashionable prejudice, which leads to the application of the same form to all sorts of trees. Thus the French are apt to reduce every thing to the *fan* system, whilst some English horticulturists are inclined to force trees of the most rambling growth into the pillory of a *horizontal* arrangement. Such a uniformity cannot possibly be in accordance with nature. The enlightened cultivator will employ various forms, and will determine for himself which is the most appropriate, not only for every species, but even for each particular variety of fruit-tree. By attentive observation and rational experiment, more knowledge in this department may be attained in a few years, than by a whole life spent in routine practice.

As supplementary to the preceding remarks on training, we may mention some of the expedients for inducing a state of fruitfulness in trees. Of these, the most common is the cutting back of the roots to within three or four feet of the stem; an operation which is generally found efficacious, when barrenness proceeds from over-luxuriance and too copious a supply of sap. To attain the same end, recourse is sometimes had to *ringing* the branches or stem, that is, removing a narrow annular portion of the bark. The trees, it is said, are thereby not only rendered productive, but the quality of the fruit is at the same time apparently improved. The advantage is considered as depending on the obstruction given to the descent of the sap, it being thus more copiously afforded, in its elaborated state, for the supply of the buds. The ring should therefore be made in spring, and of such a width that the bark may remain separated for the season. It ought to be observed, however, that none of the stoned fruit-trees are benefited by ringing. Analogous to this practice is decortication, or the removing of the old cracked bark from the stems of apple and pear trees, a practice warmly recommended by Mr Lyon of Edinburgh, and some other cultivators, but which has never been extensively adopted. Sometimes barrenness proceeds from defect of climate and poverty of soil; in which case, a warmer situation and more generous treatment are the most effectual remedies. Fruit-trees should never, if possible, be allowed to become stunted; for in this state they produce only worthless fruit, and acquire a habit which scarcely admits of amelioration.

Protection of Blossom.—In our variable climate, and particularly in the northern and eastern parts of the island, it is very desirable that the horticulturist should be provided with the means of defending the blossom of his fruit-trees from the late frosts in spring. For this purpose, some cultivators partially cover their walls with branches of fir or beech, or the fronds of the common *braken* fern (*Pteris aquilina*), fastened firmly by several points of attachment, to prevent rubbing. Others recommend frames covered with bunting, osnaburg or similar light fabrics, set in a sloping position in front of the trees. Screens formed of reeds have been used, and nettings of worsted-yarn or of straw-ropes have been employed with good effect. Whatever contrivance serves to interrupt radiation, though it may not keep the temperature much above freezing, will be found sufficient. Standard fruit-trees must be left to their fate, and, indeed, from the lateness of their flowering, they are generally more injured by blight, and by drenching rains, which wash away the pollen of the flowers, than by the direct effects of cold.

CULTURE OF HARDY FRUITS.

We now proceed to the more special culture of the inmates of a British fruit-garden. We shall begin with the more tender, but for details regarding these, we must, to a considerable extent, refer to the forcing department, in which alone many of the finer fruits can be perfected. The nomenclature of the numerous varieties of the principal fruits is still in an uncertain and unsatisfactory state. Mr Thompson, of the Horticultural Garden at Chiswick, has, however, with much discrimination and judgment, settled the synonyms of many of those chiefly cultivated in our gardens; and we shall therefore (when the contrary is not intimated) adopt the names employed in the second edition of the London Horticultural Society's Fruit Catalogue.

The GRAPE VINE (*Vitis vinifera*) can scarcely be said to be a hardy fruit in our climate. In every case it requires a good aspect; and north of York, a crop of *dessert* grapes cannot be expected without the aid of a hot wall. In the extreme south-west districts of England, indeed, grapes fit for the manufacture of wine, perhaps equal in quality to those in the north of France, might be produced on dwarf standards; and there is abundant historical evidence that productive vineyards once existed in that part of the country.

In the Lond. Hort. Soc. Catalogue, 182 varieties of grapes are enumerated. Some of these, however, have not as yet been well ascertained; some are pronounced indifferent, and others worthless. We shall name only a few of those most deserving the attention of the cultivator.

Miller's Burgundy. This sort is distinguished by the hoary pubescence of its leaves. It is a black grape, with short compact clusters, small round berries, and clear, high-flavoured juice. It is hardy, ripening completely on a south wall.

Black Damascus. Bunches large, with round berries and sweet juice. This valuable late variety does not set well, and the bunches are improved by the blossom being dusted with the pollen of some hardy kind.

Frankenthal. A valuable grape, resembling the black Hamburgh. Bunches moderate in size, berries obovate, flavour excellent. Succeeds best in a warm vinery.

Frontignan (or *Frontignac*). Five varieties under this appellation, and distinguished by the names of *black, blue, grizzly, red, white,* are mentioned in horticultural catalogues. They vary in colour and form of the cluster. The berries are round, the skin thick, and the juice of a rich muscat flavour. They are all of the highest excellence.

Black Gibraltar, or *Red Hamburgh* of Lindley. This is an excellent grape, with large clusters, and large dark-red berries, full of a sweet juice.

Black Hamburgh. This is a well-known grape, of great value, and perhaps more generally cultivated for the dessert in this country than any other sort. It ought to be in every collection.

Black Lombardy (or *West's St Peter's*). Bunches large, berries round, skin thin, with a sweet flavour; an excellent late sort. The fruit will hang on the vines till March.

Royal Muscadine, L. Hort. Cat. or *White Muscadine* of Lindley. Usual Chasselas of Paris. This, though not a first-rate grape, is a favourite with many. Bunches large, berries white, round, with sweet flavour.

Muscat of Alexandria. Bunches long, berries white and oval, with a delicious muscat flavour. This most admirable variety requires a high temperature, and should properly have a small vinery for itself.

Pitmaston White Cluster. This excellent variety sprang from a seed of the small black cluster grape. The bunch is compact, the berry is round, when ripe of an amber colour, bronzed with russet on one side. It comes to perfection on the open wall in England, and is also well suited for forcing.

White Sweet Water. Bunch loose, berries round, flavour sweet. It ripens early, generally from the middle to the end of September; and in the south of England it suc-

Fruit Garden.

ceeds against the open wall. The bunches should be allowed to hang until they be perfectly ripe, when the berries acquire a slight russet colour. It has long been a favourite grape.

Stillward's Sweet-Water is a recent variety, of equal merit.

Black Morillon, or *Burgundy Grape*, or *Small black cluster*, ripens in England against a south wall.

The *Black Prince* is of easy cultivation in a common vinery, and the berries are of a pleasant flavour.

The *Zante*, or *Corinth Grape*, is often called Zante Currant. In general it is a shy-bearer, and the berries are small; but Mr Gow, gardener at Tulliallan, having fertilized some bunches with the pollen of the Black Hamburgh, found that they set more freely, and that the berries were larger and better flavoured; a hint worth attending to in other cases.

Verdelho. Bunches loose, colour greenish-yellow, berries small, oval, numerous; when fully ripe, of a rich saccharine flavour. It is the principal grape cultivated in Madeira for making the celebrated Madeira wine. The plant grows vigorously; and Mr Knight has observed of it, that the same degree of shade which would render the greater number of sorts wholly unproductive, scarcely affects the fertility of this; a convenient property, which adapts it for the back wall of a glazed house. The same horticulturist mentions another economical property of the verdelho: it bears plentifully when planted in very small pots: a few pots of it may therefore be introduced among green-house plants in early spring; the almost leafless stems do no injury till the end of May, when some of the more hardy ornamental plants can be set abroad; and during the warm months which follow, when the green-house is otherwise empty, abundant crops of these grapes may be procured.

Esperione, or *Turner's Early Black.* The bunches are large and shouldered, not unlike those of the Black Hamburgh. The berries are of a fine dark colour, with a bluish farina: the pulp adheres to the skin; and though neither highly flavoured nor melting, it is very pleasant. This grape ripens on the open wall near London.

The *Syrian Grape* is remarkable for the extraordinary size and beauty of its bunches; but it is a late variety, and the berries have not much flavour. This is generally regarded as the kind produced in the valley of Eshcol, a cluster of which was brought to the camp of Israel swung on a staff between two of the spies; not probably on account of its weight, but (as Dr Clarke observes) to prevent the berries from being bruised.

In addition to the above, the editor of the *Lond. Hort. Cat.* mentions the following as excellent grapes:—Ciotat, or Parsley-Leaved; Genuine Tokay, or White Morillon; Chasselas Musqué; Chasselas précoce; Elford; Lunel; Mignonne White Cluster; Black Morocco; Black Muscadine; Petersburgh; Raisin des Carmes; White Tokay, and Black Tripoli.

The kinds commonly grown on the open wall in England are the Miller Burgundy, Esperione, White Muscadine, and White Sweet-Water. In the north of England, and in the south of Scotland, vines always require hot walls. At Erskine-house, on the Clyde, Black Hamburgh grapes are every year produced against a hot-wall, equal in size and flavour to those of the vinery or hot-house. In some gardens, an entire wall is dedicated to vines, but, in general, they occupy only the interstices between other trees. Mr Williams of Pitmaston trained a vine under the coping of a wall to the extent of fifty feet, and bent down the shoots at intervals to fill up the spaces between the fruit-trees, and he found that the grapes were the finer the farther they were distant from the stem. The culture of grapes on a wall does not differ materially from that practised in a moderately worked vinery; we shall therefore defer any further observations, till we resume the subject in treating of the forcing department.

The Fig-Tree (Ficus Carica) is not a great favourite in this country, the fresh fruit not being much relished, and our tables being supplied with a vast abundance of dried figs imported from the Mediterranean. Every good garden ought, however, to contain a few trees, to furnish an occasional dish; and we doubt not that the fresh fruit, if it were more common, and better grown, would be more liked. The foliage of the tree is large and elegant; and the mode of fructification is curious: the pulpy part, which we call the fruit, being, in fact, a common receptacle, and the anthers and stigmata being produced inside. The nomenclature of figs is still very uncertain, and it is with some hesitation that we give the following names:—

1. Black Ischia.
2. Black Genoa.
3. Large Blue, or purple.
4. Brunswick or Madonna.
5. Brown Ischia or Miller's chestnut fig.
6. Murrey-coloured or Brown Naples.
7. Pregussata.
8. Lee's Perpetual.
9. Early White.
10. Marseilles or Figue blanche.

Of these the Marseilles, the Early White and Black Ischia, and Large Blue, are best adapted for forcing; the others are suitable for walls. Lee's perpetual answers well for either mode of culture; but it is not mentioned by Loudon or by Lindley, being probably regarded by them as a sub-variety of the Large Blue.

Fig-trees may be propagated by cuttings put into flower-pots, and placed in a gentle hot-bed. They are, however, most speedily obtained from layers. The shoots laid down should be two or three years old; and these, when rooted, will form plants ready to bear fruit the first or second year after planting. Suckers ought never to be used.

In some places in England fig-trees are planted out as standards; and in Kent and Sussex, a few small fig orchards exist. In Scotland a south wall is indispensable, trained to which, in good situations, and when the trees are old enough, they bear remarkably well. The best soil for a fig border, is a rich friable loam, on a subsoil not retentive of moisture, or which has been effectually drained. It is advantageous to have a lofty wall, and the trees should be planted at considerable distances, perhaps not nearer than forty feet, to allow them full space to exhaust their luxuriance.

It is of the nature of the fig-tree to produce two sets of shoots, and two crops of fruit, in the season. The first shoots generally shew young figs in July and August, but those in our climate very seldom ripen. The late or midsummer shoots likewise put forth fruit-buds, which, however, do not develope themselves till the following spring, and then form the only crop of figs on which we can depend in this country.

Various modes of training fig-trees have been proposed. Mr Lindley recommends the horizontal form. Mr Knight carries up a central stem perpendicularly to the top of the wall, and then radiates the side-branches horizontally and pendently, in close contact with the wall. Luxuriance of growth is supposed thus to be checked, and the branches thrown into a bearing habit. The finest fig-trees which we have seen in Scotland, are trained in the old fan form. The shoots are laid in, thinly, at full length, and encouraged to extend themselves as fast as possible, precaution, however, being taken to leave no part of the tree bare of young wood. Much of the pruning is performed in summer by pinching off unnecessary shoots, and the knife is seldom employed, except in removing naked branches, or in cutting back to procure a supply of young wood. Some cultivators break off the points of the spring shoots, in order to produce laterals, but this must be done at an early period, not later perhaps than mid-summer, otherwise the young shoots will not ripen. The Rev. G. Swayne recommends rubbing off all the young figs which appear in autumn on shoots of the same year; observing, that for every young fig thus displaced, the rudiments of one, or perhaps two others, are formed before winter, and developed in the following year.

The winter dressing of the fig-tree takes place immediately after the fall of the leaf. The immature figs which may remain are removed, irregularities are corrected, and the shoots nailed neatly to the wall. Various modes of protecting the branches during winter have been adopted. As Argenteuil, where figs are cultivated on standards for the Paris market, the lower branches are bent downwards, and buried about six inches deep in the soil; while the upper branches are tied together, and bound round with straw and litter. Mr Swayne mentions that he wraps up the young shoots with waste paper. Mr Forsyth recommends covering wall fig-trees with the spray of laurel or yew, and then tucking in short grass or moss (*hypnum*) among the spray. Mr Smith, first at Ormiston Hall, and afterwards at Hopetoun-house, has found (*Cal. Hort. Soc. Mem.* vol. ii.) a covering of spruce-fir branches to be very effectual. The branches are so placed as to overlap each other, and to form a layer nearly equally thick on every part of the tree. The foliage of the spruce branches remains green till March, and as the light and heat increase, the dried leaves gradually fall off, and admit air and sun to the fig-branches below.

Mr Monck (*Lond. Hort. Trans.* vol. v.) states, that the same fig-tree seldom produces fruit containing both perfect stamens and pistils, and conjectures that this is the cause of the fruit being so often prematurely shed. *Caprification*, or assisting the fructifying and maturation of figs, has often been sneered at; but here we see reason in that kind of it which consisted in hanging or shaking the branches of the wild fig (*caprificus*) over the cultivated tree at the time when both were in blossom.

The Peach (*Amygdalus Persica*) is a stone-fruit of oriental origin, said to have been brought from Persia by the Romans, about the beginning of the empire; but the precise period of its introduction into our gardens, of which it has long been the pride and ornament, is not well ascertained. There are two principal varieties: the Peach, properly so called, with a downy skin; and the Nectarine, with a smooth skin. These, following the authority of Linnæus, we consider as one species; and as their culture is precisely the same, we shall speak of them as distinct only when referring to their sub-varieties. Each of these varieties is again divided by gardeners into *freestones* or *pêches*, and *clingstones* or *pavies*, according as the stone parts freely from the pulp, or adheres to it. We shall here treat chiefly of the freestones, as being most hardy, and fittest for the open wall in Britain.

Mr George Lindley, whose arrangement is the best that has hitherto been published, enumerates 60 kinds of peaches, and 28 of nectarines. In the Horticultural Catalogue, the names of 183 peaches, and of 65 nectarines, are recorded. We doubt not but that in America, where the trees are commonly raised from kernels, and grown as standards, several thousand varieties and sub-varieties might be collected. To enumerate even the limited number existing in Britain, would far exceed our limits: we shall therefore notice only a few of those which are most distinct, and best adapted to our climate.

Peaches.

Red Nutmeg, or *Avant rouge*. This is one of the earliest peaches, ripening about the beginning of August. The fruit small; colour pale yellow towards the wall, bright vermilion next the sun; pulp white, but red at the core; the juice rich and musky. The tree is an abundant bearer.

Acton Scot. This was raised by Mr Knight between the noblesse and the nutmeg peach, in 1814. The fruit is red next the sun, and white on the other side; the pulp rich, juicy, and saccharine; the tree is a good bearer, and not apt to be affected with mildew. It ripens in August.

Spring-Grove. This is another of Mr Knight's peaches, raised from the grosse mignonne crossed with the pollen of the nutmeg. It is dark red on one side, and bright yellow on the other; pulp firm, but melting, and of excellent flavour. The tree is a good bearer, but succeeds best on an apricot stock. The fruit ripens in the beginning of September.

Grosse Mignonne, L. Hort. Cat., or *Neil's Early Purple.* Fruit large; skin pale yellow, and deep purple next the sun; flesh melting; juice plentiful, and of delicious flavour. This excellent peach is a good bearer, and forces well, but the fruit does not bear carriage. It ripens in the end of August and beginning of September.

Madeleine de Courson; Red Magdalene of Miller. Blossoms large; fruit rather below the middle size; colour yellowish white next the wall, beautiful red next the sun; flesh white, with very little red at the stone; juice rich and vinous. Tree a good bearer; fruit ripening about the beginning of September. "An excellent peach," says Mr Lindley, "and ought to be found in every collection."

Royal George. This is a well-known peach, much cultivated. By nurserymen it is often given out as the Red Magdalene; but it is at once distinguished from the Red Magdalene of Miller, by the blossoms being small. Against a good wall it ripens in the beginning of September, even in indifferent seasons. Fruit large, purplish red next the sun, whitish where shaded; flesh white, varied with red next the stone which is free; melting, rich, with an abundant sugary juice. It is also one of the best kinds for a peach-house, fruiting freely, and ripening well. The foliage is, however, rather subject to mildew.

Noblesse. This has long and deservedly been a favourite in our gardens. It is a very large fruit; the skin pale red when ripe, the flesh juicy and rich. The tree is a good bearer, and the fruit ripens in September.

Bellegarde; the *Galande* of the nurseries. Fruit large and globular; skin deep red, with purple streaks on the sunny side; flesh pale yellow, very melting; juice rich. An excellent peach; the tree forces well, and the fruit ripens on the open wall about the middle of September.

Late Admirable, or *La Royale*. Fruit large; skin pale green next the wall, pale red on the sunny side; flesh greenish white, red at the stone; juice abundant, and, when well ripened, of a high flavour. "One of the very best late peaches," says Mr Thompson, "and ought to be in every collection: it is very proper for the peach-house, to succeed the earlier sorts."

Nearly allied to the preceding is the *Teton de Venus*, a beautiful fruit, but requiring a warm situation. In a good season, it ripens at the end of September; is saccharine, and at same time of fine flavour.

George the Fourth. L. Hort. Cat. 65. American Orchardist, p. 223. This is a fine large peach, of American origin; bears forcing well, and is a semi-clingstone. It is too tender for the open wall in this country.

Among other excellent peaches may be mentioned:—*Freestones*, Barrington, Chancellor, Knight's Early, Downton Early, Malta, Morrisania Pound, Royal Charlotte, Royal George Mignonne, William's Early Purple; *Clingstones*, Catharine, Heath, and Old Newington.

Nectarines.

Fairchild's Early. A beautiful little freestone, chiefly,

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however, cultivated for its earliness. It ripens about the middle of August.

Elruge, L. Hort. Cat., 21. *Lind.* p. 287 (not of Miller). It is an excellent fruit, of a moderate size; flesh white almost to the stone, which is free. The tree forces well, and is a good bearer. Fruit ripens about the beginning of September.

Hunt's Tawny. Size moderate; skin pale orange next the wall, russet-red towards the sun; flesh deep orange, juicy and well flavoured; a freestone. A very distinct sort, worthy of cultivation for its earliness.

Early Newington. A fine large clingstone; pale green on the shaded side, bright red next the sun; juice saccharine and well flavoured. Ripens in August.

Red Roman. An excellent old clingstone, now seldom to be met with genuine, but worthy of re-introduction.

A few other first-rate nectarines may be enumerated:—*Freestones*, Brinion, Downton, Murrey (*i. e.* murrey-coloured), Pitmaston Orange, Violette Grosse, Violette Hâtive; *Clingstones*, Imperatrice, Newington Late Tawny. A very good nectarine was raised by the late Mr Henderson at Woodhall, in Scotland. It approaches the Elruge. The fruit is early, and of excellent flavour, and the tree bears plentifully. It has been named the *Woodhall nectarine.*

For information respecting the best modes of raising new varieties of peaches and nectarines, the reader may be referred to Mr Knight's papers in the first volume of the Transactions of the Horticultural Society of London. That ardent horticulturist entertains the hope, that, by repeated sowings, the peach may acquire so robust a habit as to be capable of succeeding as a standard in favourable situations in England and Ireland. But with this desirable object in view, we would rather see the number of the kinds diminished than increased; and it would be well for the country, were all the indifferent sorts banished from the nursery catalogues.

To perpetuate and multiply valuable varieties, peaches and nectarines are budded upon plum or almond stocks. For dry situations, almond stocks are preferable; and for damp or clayey loams, it is better to use plums. The peach border should be composed of a light mellow loam, such as is suitable for the vine and the fig. It should be quite free from all stagnant water, or latent dampness. It need not be of great depth, as the peach tree thrives best, and is most productive, when the roots are near the surface of the ground. In this country, nothing is a greater obstacle to success in peach culture than trenching the borders, and cropping them with vegetables. We believe that, in many instances, all that is required to remedy sickly and unfruitful trees is to bring up their roots within five or six inches of the surface.

The fruit of the peach is produced on the twiggy shoots of the preceding year. If these be too luxuriant, they produce nothing but leaves; and if too weak, they are incapable of maturing the fruit. To produce these, then, in sufficient abundance, and of requisite strength, is the great object of peach training and pruning. All twiggy trees naturally fall into the fan form; and accordingly this has generally been adopted in the culture of peaches. Some have followed the horizontal arrangement, and Mr Knight has recommended a method, the principal purpose of which seems to be to thwart the usual mode of growth of the tree. In reference to such arrangements we can only say:

> Naturam expelles *furca*, tamen usque recurret.

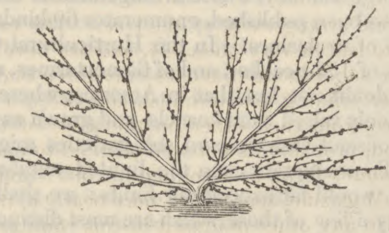
We shall first notice the old English method, and then briefly the French, and other new varieties of training.

The *old an* form is very nearly that which we have already given (*supra*, p. 638,) as a specimen of fan training for twiggy trees. The young tree is often procured when it has been trained for two or three years in the nursery, but it is generally better to commence with a *maiden* plant, that is, in the first year after it has been budded. It is then headed down to five or six buds, and in the following summer two or four shoots, according to the vigour of the plant, are trained in; the laterals also being thinned out, and properly nailed to the wall. Suppose there are four branches, in the following winter the two central ones are shortened back to produce others, and the inferior ones are laid in nearly at full length. In the following season additional shoots are sent forth; and the process is repeated till eight or ten principal limbs or *mother branches* be obtained, forming, as it were, the frame-work of the future tree. These mother branches are occasionally raised or depressed, so as to maintain their equilibrium, and are as much encouraged to grow outwards as is consistent with the regular filling up of the tree. The laterals are carefully thinned out (by pinching off with the fingers) in summer; and the remainder are nailed in, to afford subordinate members and bearing wood. When the centre of the tree has been filled up, all the training necessary is merely to prevent the inferior members from acquiring an undue ascendency over the mother branches. It is highly advantageous to have abundant space, and to draw the tree outwards, so that it be thin, but nowhere destitute of young shoots.

Meanwhile the pruning for fruit has been going on. This consists in shortening down the laterals which had been nailed in at the disbudding, or summer pruning. Their length will depend on their individual vigour, and the luxuriance of the tree. The buds, which are generally double, or rather two together, with a fruit bud between them, seldom occur quite close to the insertion of the shoot. Perhaps two or three pairs are left with a wood-bud at the point to afford a growing shoot, in order to act as its lungs, for it is necessary that there should be leaves above the fruit. When the fruit begins to swell, the point of this leading shoot is pinched off, that it may not drain off the sap. Any young shoot from the wood-eyes at the base of the bearing branch is carefully preserved, and in the following winter it takes the place of the branch which has borne fruit and is cut out. If there be no young shoot below, and the bearing branch be short, the shoots at the point of the latter are pruned for fruit; but this must be done cautiously; and if the bearing branch be long, it is better to cut it back for young wood. It is the neglect of this which constitutes the principal error of the English fan system as it is usually practised. Several times during summer the trees are regularly examined; the young shoots are respectively topped and thinned out; those that remain are nailed to the wall, or braced in with pieces of peeled willow, and the whole trees are occasionally washed with the force-pump.

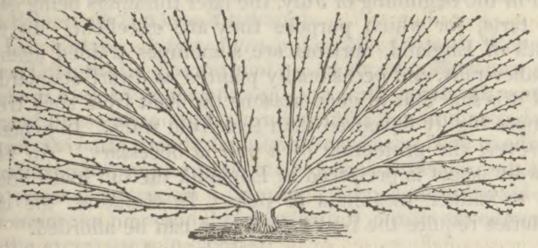
The *Montrueil form* is described at length in the Horticultural Tour, p. 429, or in the *Cal. Hort. Mem.* vol. iv. p. 145. The principal feature constitutes the great principle of all French training, the suppression of the direct channel of the sap. Four, more commonly two, *mère branches* are so laid to the wall that the central angle contains about 90°. The other branches are all treated as subordinate members.

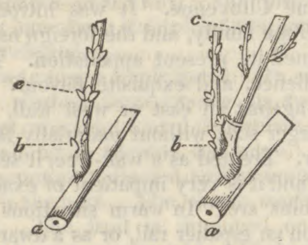
Fig. 8.



The form *à la Dumoutier* (so called from its inventor, and described at great length by Lelieur), is merely a refinement on the Montrueil method. It will be sufficient to mention to the experienced trainer (and none other can be expected to execute this form), that the formation of the tree commences with the inferior limbs, and proceeds towards the centre, the branches being lowered from time time, as the tree acquires strength. What is most worthy of notice in this method, is the management of the subordinates in the pruning for fruit. When a shoot promises blossom, it is generally at some distance from the point of insertion into the old wood, and the intermediate space is covered with wood buds. All the latter, therefore, which are between the old wood *a* and the blossom *c*, in the outer figure, except the lowest *b*, are carefully removed by *ebourgeonnement.* This never fails to produce a shoot, *b* in the inner figure, the growth of which is favoured by destroying the useless spray above the blossoms, and pinching off the points of those which are necessary to perfect the fruit. A replacing shoot is thus obtained, to which the whole is invariably shortened at the end of the year. The branch thus treated is called the *branche de reserve.*

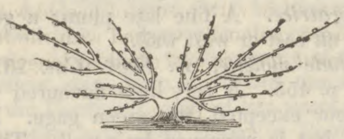
Fig. 9.





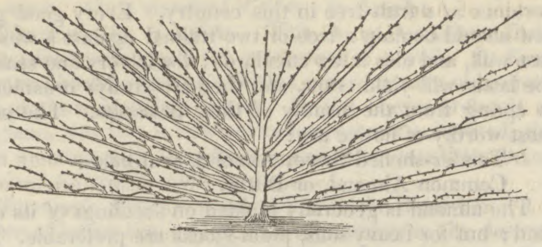
The form *à la Sieulle* is another modification of the Montrueil training, for an account of which we must again refer to the Horticultural Tour. Fig. 10. will give an idea of the general arrangement of the tree. The two mother branches are laid in very obliquely, and are never shortened. On the subordinate branches only three buds are left, at the winter pruning, one terminal, and two at a considerable distance from each other on the sides of the shoot. This method, probably, is not well adapted to our climate.

Fig. 10.



Mr Seymour's form, as described in vols. i. and ii. of the Gardener's Magazine, approaches more nearly to the French methods than any other practised in this country. It will be seen, however, from the annexed figure (fig. 11), that he does not suppress the direct channel of the sap. This circumstance, although considerable stress seems to be laid upon it, is not essential to the plan, nor is perhaps the best part of it. The principal novelty is, that the bearing shoots are all on the upper sides of the mother branches, and that these bearing shoots are wholly reproduced once a-year. The one side of this figure represents the tree *after* the winter pruning, the other side before it has undergone that operation. It will be observed, that on this last side there are pairs of shoots on the upper parts of the mother branches. The lower shoot, that, namely, which has borne fruit, is cut out, and the other is brought down into its place. This replacing shoot is shortened to about eight or nine inches, care being taken to cut at a wood-bud; and at the time of disbudding, the best situate buds, and those nearest the base, are left for the future year's bearing. To this plan it is objected, by a writer in the Horticultural Register, that the annual excision of the bearing shoots produces a series of rugged and increasingly ugly protuberances at their base and along the upper surface of the principal members; an objection which also militates against Dumoutier's form. Mr Loudon, on the other hand, declares that Mr Seymour's mode is the most perfect in theory that has been described. For ourselves, we are inclined to prefer the old fan form, when well executed, as nearest the natural habit of the tree, and as best adapted to our uncertain climate. In the training of peaches, "whatever is best administered is best;" and there is no doubt that many ingenious gardeners have only partial success, because, from the multiplicity of their engagements, their trees can receive only partial attention.

Fig. 11.



For cold and late situations, Mr Knight has recommended the encouraging of spurs on the young wood; such spurs, when close to the wall, generating the best organized and most vigorous blossoms, and ensuring a crop of fruit. They may be produced, by taking care, during the summer-pruning, or disbudding, to preserve a number of the little shoots emitted by the yearly wood, only pinching off the minute succulent points. On the spurs thus procured, numerous blossom-buds form early in the following season.

Peach-trees, particularly in the north of England, and also in Scotland, require protection from atmospherical influences, especially at the period of blossoming. As already noticed, branches of spruce or silver fir, or other spray, are sometimes woven into frames, which are fixed in front of the trees, and removed during the day in fine weather (*Cal. Hort. Mem.* i. 276). Canvass or bunting screens are equally effectual, and perhaps more easily moveable. Straw-ropes, straw-nets, and a variety of other expedients, have been proposed, and may be used according to circumstances. If the screens be applied early in the season, great benefit may be derived from retarding the blossom till the frosty nights of spring be past. If the night frost have been severe, a copious sprinkling of water over the whole tree, before the influence of the morning sun be felt, has been found by Harrison to be very useful in gradually raising the temperature of the foliage and blossoms, and thus preventing injury from the sudden transition. To trees trained against hot-walls, if fire be used in spring, screens are indispensable; but perhaps hot-walls are most beneficially employed in ripening off the fruit of the late sorts of peaches in autumn; and, what is equally important, ripening the young wood of such sorts.

The Almond-Tree (*Amygdalus communis*), a native of China, may be noticed here rather on account of its affinity to the peach and apricot, than because of its importance as a fruit-tree in this country. Every good garden should contain a tree or two trained against a west or east wall, and also a few standards; for in very fine seasons the latter will yield crops, and they are always ornamental in spring from the beauty of their blossoms. The sorts most worthy of notice are:

Tender-shelled Sweet Almond, or Jordan.
Common Almond, or Bitter.

The almond is generally budded on seedlings of its own kind; but for heavy soils, plum-stocks are preferable. The training and pruning of almond-trees on walls are much the same as in the peach or the apricot.

The Apricot (*Prunus Armeniaca*) is a native of the Caucasus and China; it was cultivated by the Romans, and was introduced into England from Italy in the reign of Henry VIII. It has always, and deservedly, been a favourite fruit. The principal varieties are:

Red Masculine. Flowers small; fruit small, roundish, yellow, and red; flesh sweet and juicy; stone impervious; kernel bitter. This is a very early sort. The tree is tender, and requires a good aspect.

Breda. Flowers large; fruit roundish, sometimes almost four-cornered, orange-coloured; juice rich; stone small, impervious; kernel sweet. The true Breda is an apricot of first-rate excellence, and in the south of England the tree bears well as a standard.

Roman. Flowers large; fruit oblong, compressed, pale yellow; flesh soft; stone impervious; kernel very bitter. The tree is a good bearer, but the fruit is fit only for preserving. It is sometimes called the Brussels,—a name also occasionally given to the preceding.

Moorpark. Flowers large; fruit roundish, compressed, orange and red; flesh parting from the stone, juicy and rich; stone pervious; kernel bitter. This is generally considered the best apricot in this country: there are several sub-varieties known under different names, and it scarcely differs from the *Abricot Pêche* of the French.

Turkey. Flowers large; fruit middle-sized, spherical, deep yellow; flesh juicy and rich, parting from the stone, which is impervious; kernel sweet. This is an excellent late variety.

Besides these, we may mention the Large Early, the White Masculine, Hemskirke, Musch-musch, and Royal. The last is a French variety of recent origin; it is excellent, and ripens earlier than the Moorpark.

Apricots are propagated by budding on muscle or common plum-stocks. Mr Knight recommends the wilding apricot as a stock for the Moorpark variety. Some gardeners have adopted the horizontal form of training, but the most usual, and certainly the best, is the common fan-arrangement. The fruit is produced on shoots of the preceding year, and on small close spurs formed on the two-year old wood. The apricot is a tree of much stronger growth than the peach, and therefore requires more room; this and the peculiarity of the spurs being kept in mind, the observations made on the training and pruning of the peach may be readily applied to this tree. It requires a summer and winter pruning. The former should begin early in June, at which period all irregular fore-right and useless shoots are pinched off; and, shortly afterwards, those which remain are fastened to the wall to become bearers. At the winter pruning, all worn-out branches, and such as are not duly furnished with spurs and fruit-buds, are removed. The young bearers are moderately pruned at the points, care, however, being taken to leave a terminal shoot to each branch. The most common error in the pruning of apricots, is laying in the bearing shoots too thickly.

The blossom comes early in spring, but is more hardy than that of the peach; the same means of protection, when necessary, may be employed. The fruit often sets too numerously; and in this case it is thinned out in June and in the beginning of July, the later thinnings being used for tarts, for which purpose they are excellent. In the south of England, apricots are sometimes trained against espalier-rails, and occasionally planted as dwarf standards; and it is said that in good seasons the fruit from such trees is more highly flavoured than that from walls. In general, however, the protection of a wall is necessary. An east or west aspect is preferred in England, the full south being apt to induce mealiness of pulp. In Scotland, the late varieties require the best aspect that can be afforded.

The Plum-Tree (*Prunus domestica*) is considered by Sir J. E. Smith as a native of England. Many of the best cultivated varieties, however, have been introduced from France. The Horticultural Society's Catalogue enumerates 274 sorts, though probably all of these are not well ascertained. We shall first notice a few of the best dessert plums, and then give a list of select kitchen sorts.

The *Green Gage* is the *Reine Claude* of the French. Being a great favourite at Paris (as it is every where else), during the ferment of the Revolution, when all allusions to royalty were proscribed, it retained its popularity under the title of Prune Citoyenne. It was introduced into England by the *Gage* family, and the foreign name having been lost, it obtained its present appellation. It is a fruit of first-rate excellence, and exquisite flavour. The tree deserves a place against an east or west wall, where the fruit acquires a larger size, without materially falling off in richness of flavour. Treated as a wall-tree, it seldom bears well till it be old; and it is very impatient of exact training, as indeed most plums are. In warm situations it may be profitably grown on an espalier rail, or as a dwarf standard.

Drap d'Or. This is a small yellow plum of high flavour, ripening in the beginning of September. On a light soil the tree is a tolerable bearer; but on a heavy soil it seldom succeeds. The fruit precedes the green gage in ripening, and resembles it in quality.

Coe's Golden Drop. A fine large oval plum, excellent either for the table, or for preserving. It keeps well; and Mr Lindley informs us, that he has eaten it exceedingly good twelve months after it had been gathered. It requires the best aspect of a wall; and will scarcely answer in a bleak climate.

Precoce de Tours. An early sort; of a dark-blue colour, with a violet bloom; pulp yellow, and of a very pleasant flavour. The tree succeeds as a standard.

Blue Imperatrice. A fine late plum; a good bearer, but requiring an east or west wall.

Reine Claude violette, L. Hort. Cat. 232. *Purple Gage, Lind.* p. 455. A very high flavoured variety, resembling, colour excepted, the green gage. It succeeds on standards, but is improved by a wall. The tree is a good bearer.

Washington, L. Hort. Cat. 266.; *Amer. Orchard.* p. 268. Fruit rather large, roundish oval, pale yellow on the shaded side, and of a fine glaucous light purple on the exposed side; of excellent quality, scarcely inferior to the green gage. The tree is vigorous, and bears well against a wall, ripening about the middle of August. Being an early plum, it will, in favourable situations, succeed as a standard. It is, as the name imports, of American origin. It ought to be in every collection.

Couper's Large Red. This is described by Mr Barnet of the Experimental Garden, Edinburgh, as of large size, oval; suture deeply cleft on one side; skin of a bluish-glaucous purple on the exposed side, the other side dull red; flesh firm, adhering to the stone; ripens in the beginning of September on a south wall (in Scotland). Although

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this is only a plum of the second quality, yet the tree well merits a place, on account of its great productiveness.

The following are also first-rate plums: D'Agen, Coe's Late Red, Downton Imperatrice, Kirke's, Nectarine, Blue Perdrigon, and White Perdrigon.

The Cheston, Fotheringham, Goliath, Orleans, Wilmot's New Orleans, La Royale, Sharpe's Emperor, Morocco, and some of the Damasks, though generally regarded as only second-rate plums, deserve notice, and should always have a place in large gardens. The Early Violet is an excellent bearer, and strongly recommended by Lindley to be planted in cottage gardens. Lucomb's Nonsuch plum should not be omitted; for when well ripened, it makes an approach to the green gage in flavour.

As kitchen and preserving plums we may specify the Damson, Shropshire Damson, Imperial Diadem, Isabella, White Magnum Bonum, Red Magnum Bonum or Imperiale; the Caledonia or Nectarine Plum, a large and handsome fruit; the Mirabelle, St Catherine, Wine Sour, and Bullace.

The finer dessert plums are propagated chiefly by budding on Muscle or St Julian stocks. They are sometimes grafted, but gum is apt to break out at the place of junction. The damson, wine sour, and other varieties, planted as standards, are generally increased by suckers, which the old plants afford plentifully. For placing against walls, trees which have been trained for two years in the nursery are to be preferred.

Plum-trees require ample space. On common walls they should be allowed from twenty to twenty-five feet of breadth over which to extend themselves. The horizontal mode of training is adopted by many. The fan form is also very commonly followed, and undoubtedly where there is room, it is the best. The shoots ought to be laid in at full length. The fruit is produced on small spurs, on branches at least two years old. The same spurs continue fruitful for several years.

Standard plum-trees require only to have a portion of their wood thinned out occasionally while they are young. The hardy kinds grown in this way are very productive, and in some places in the North of England, their produce forms a considerable article of food for several weeks, and also an article of commerce, particularly the wine sour, which is in great request for preserves. It is matter of regret that this branch of fruit culture has not, as yet, met with due attention in Scotland.

The Cherry-Tree (*Prunus Cerasus*), is said to have been introduced into Europe from Pontus, by the celebrated Lucullus, A. C. 73. From the "London cries" of Lydgate, it appears that "cherries in the ryse," or in twigs, were hawked in London at the beginning of the 15th century. Excellent sorts have at various times been introduced from the Continent, and, of late years, several first-rate new varieties have been raised in England. Geans included, the Horticultural Society's Catalogue enumerates no fewer than 219 varieties; the following may be accounted some of the best.

The *Early Purple Griotte* may be first mentioned, as being the earliest of all cherries, generally ripening in the end of May. It was introduced from Geneva a few years ago, and is not yet generally known in this country.

The *May-Duke* is one of the most common, and, at the same time, one of the most valuable cherries. In fine seasons, and on a good aspect of wall, it begins to colour in May; and in such situations it is generally ripe from the middle to the end of June. The tree also bears well as a dwarf standard, but against a wall the fruit gets larger, and does not fall off in flavour.

The *Late Duke* is a rich sweet cherry, with most of the qualities of a May-Duke. It has a very close affinity to the variety called the Arch-Duke, if it be not absolutely the same. On a standard it ripens in August.

Bigarreau or *Graffion*. This is an excellent fruit, especially when it gets the protection of a wall. In Kensington Gardens are trees of this sort a century old, which still produce abundant crops. In the cherry orchards of England, this sort is now pretty extensively cultivated, the fruit meeting with a ready sale, and vast quantities being required for the London market.

Harrison's Heart is nearly allied to the Bigarreau; it is rather of larger size and of fine appearance in the dessert, but inferior in flavour. The fruit has this advantage, that it is not liable to crack in wet weather.

Belle de Choisy, an excellent cherry. The fruit come in pairs, red, mottled with amber colour, tender and sweet. The tree bears well as a standard.

Black Tartarian, or Ronalds's Black Heart, *L. Hort. Cat.* 198; *Lind. p.* 149. Fruit large, obtuse heart-shaped; flesh half tender. "The quality is good, and in appearance it is one of the finest." It is a good bearer, and well adapted for forcing.

Waterloo. Raised by a daughter of Mr Knight, from the Bigarreau and May-Duke. Fruit black, large, obtuse heart-shaped, pulp tender. It ripens in July, and the tree is a free bearer.

Elton. Raised by Mr Knight from the Bigarreau and White Heart. Fruit large, heart-shaped, pale red, with a sweet delicious juice. The tree is a good bearer and hardy; the fruit ripens shortly after the May-Duke.

Kentish Cherry. One of the oldest and most prevalent cherries in England, abounding in the orchards of Kent. When ripe, it is of a full red colour, and its subacid flavour is very agreeable. It is commonly grown on standards, and ripens in the end of July. The *Hort. Cat.* distinguishes this from the *Flemish* or short-stalked, also a good cherry, to which it is certainly closely allied.

The *Morello*. This is a well-known late cherry, much in request for confectionery. The tree is a copious bearer, and on a south wall the fruit acquires a peculiarly rich subacid flavour. It succeeds perfectly well on a north aspect, where its fruit may be retarded to the end of October.

The *Amber*, or yellow Spanish, is a late fruit, and useful in prolonging the cherry season till the beginning of September. It requires a west wall.

Among other excellent varieties may be mentioned the Black Eagle, Black Heart, Bowyer's Early Heart, Carnation, Downton, Florence, Knight's Early Black, and the White Heart.

What are called *geans* or *guignes*, are cherries less removed from their natural state. They are usually grown as standards, and bear abundantly, particularly when old. The principal sorts are the Amber gean, a plentiful bearer, with sweet tender fruit; and the Lundie gean, a small black cherry of high flavour, which originated at the ancient seat of the Erskines in Forfarshire, but is also sometimes called the Polton gean, from a place near Lasswade in Mid-Lothian.

It may be noticed that, in the Jardin des Plantes at Paris, the black-fruited cherry-tree, or *Guignier*, is considered as a variety of Prunus Cerasus. The forest cherry-tree, P. avium, is named *Merisier;* and, besides varieties with red and with black fruit, there is a marked variety called *Bigarotier*.

The great quantities of pale-coloured cherries yearly sold in the London market are chiefly of the kinds called White Heart and Bigarreau. The dark coloured cherries are chiefly the Courone, which is often passed upon buyers for the Black Heart.

The stock preferred for cherries is the wild gean. Mr Lindley recommends that dwarf cherry-trees should be grafted, and two or three year-old stocks will do for them.

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For standard trees the stocks should be at least four years old, and they should be budded or grafted five or six feet from the ground. High stemmed cherry-trees, or *riders*, are often temporarily employed to fill up the vacant spaces on newly planted south walls, till the dwarf trees make sufficient progress; for these, stocks six or seven feet high are required.

Cherries are generally produced on small spurs which appear on the wood of the second year, and these spurs continue productive for an indefinite period. Any form of training may therefore be adopted; but, as the fruit is always finest on young spurs, perhaps fan-training, which admits of the frequent renovation of the bearing branches, is the most advantageous. A succession of young shoots should be laid in every year. For the Morello, which is of twiggy growth, and bears on the young wood, the fan form is absolutely necessary. Whatever method be adopted for general practice, care should be taken not to crowd the branches: nothing is more injurious to the productiveness of the trees than crowding of branches.

The Pear Tree (*Pyrus communis*) is considered by botanists as a native of England. Many cultivated varieties seem to have been introduced by the monks; remains of perry orchards attached to monasteries of the 14th and 15th centuries being not uncommon even in Scotland; and very ancient trees of the finer dessert pears, such as the Colmar and Longueville, occasionally occurring.

The list of cultivated pears amounts to more than 600 names; but the number of those truly desirable is not large. We shall specify some of the best dessert fruit, following the usual division of Early and Late; the former class being in season in the months of August, September and October, and the latter in November, December, and January. It is to be premised, however, that even within the limits of Britain, climate makes an important difference in the culture and ripening of pears, of which a remarkable and extreme example may be seen in the Chaumontelle,—a fruit which is produced abundantly, and ripened on standards in the west of England, and in the environs of London, while it requires a south wall near Edinburgh.

I. *Early.*

Citron des Carmes, L. Hort. Cat. 190; Madaleine, *Lind.* p. 344, in Scotland often called the Premature. This is the earliest pear; it ripens in July, acquiring a yellowish green colour; it is sweet, but without much flavour. One tree, or at most two trees, may suffice. It requires a sheltered situation.

The *Green Chisel*, called also the Hastings, and, in the market, the Green Sugar. This is not a first-rate pear: but the tree is hardy and a great bearer. It ripens in August.

The *Summer Rose*. A handsome round pear, of a russety red colour, much resembling an apple, flesh white, rich, and sugary. This is an excellent variety, succeeds on a standard, and ripens in August.

The *Jargonelle* of Britain is the *Grosse Cuisse Madame* of French horticultural writers, and the *Epargne* and *Beau-present* of French practical gardeners. This is the most common and most esteemed of our early autumn pears. Against a wall the fruit attains a large size and a beautiful appearance; but it is not of so high a flavour as from standards or espalier-rails. The fruit does not keep well, and the tree should therefore be planted in various situations to prolong its season, as it is rather difficult, when it disappears, immediately to supply its place. Beautiful dwarf trees may be formed by grafting on the common white thorn, which, however, are not very patient of transplanting. The French jargonelle is green on one side and red on the other, and is a fruit of inferior quality.

The *Ananas d'Eté* is scarcely noticed by our horticultural writers; but it seems a good variety to succeed the jargonelle. In the Experimental Garden at Edinburgh, it ripens on a standard in the second week of September. Mr Barnet describes it as of middle size, about two and a half inches broad, tapering a little towards the stalk, round at the top, eye small, slightly sunk in a cavity; red on the exposed side, green and somewhat russety on the other; flesh white, melting, with a pleasant sweet juice.

The *Summer Francréal*, or the *Yat* of Holland, may be noticed as another pear to follow the jargonelle, as it ripens about the middle of September. The tree proves, in general, a great bearer.

The *Longueville*. Some very ancient trees of this variety exist at Jedburgh: and, in the garden of the Regent Murray at Edinburgh, there are several which apparently are coeval with the times of the Regency. Though the name is now unknown in France, it is conjectured that the tree was brought over from that country by the Douglas, when Lord of Longueville, in the fifteenth century. The fruit is large, of a thick conical shape, green, and of considerable flavour. It ripens in September.

The *Green Pear of Yair*. This variety is of Scottish origin. The fruit is obovate, green, and of a middle size; flesh juicy and well-flavoured. It is sometimes placed on a wall to succeed the jargonelle; but it is always better from standards. On old trees, in light soils, it sometimes acquires a lemon colour, with a high musky flavour. Ripens in September and October.

The *Duhamel* is a good autumn pear, with a delicate flavour. It comes in immediately after the green yair, and helps to fill up a gap in the pear season, especially in Scotland.

The *Seckle*, of American origin, deserves a place; for the tree is of dwarfish size, and suited for a border standard, and it seldom fails to yield a crop. The fruit is small, but melting and well-flavoured. It does not keep.

The *White Doyenné*. This is an excellent sort, when used at its perfection. In warm situations, it is well adapted for dwarf standards. Ripens in September and October.

The *Red Doyenné*, or, as it is sometimes called, Gray Doyenné, is also an excellent autumn pear, doing best on a quince stock.

The *Elton*. Capital as a standard, and strongly recommended by Mr Knight. The tree produces healthy wood, and the fruit ripens in September and October.

The *Early Bergamot* was introduced from France in 1820. It is one of the very best early pears, as the tree bears freely on an open standard.

The *Autumn Bergamot*, or English Bergamot, has been long known as one of the most highly flavoured pears. It is not the Bergamotte d'Automne of the French, which is liable to canker in this country, while the English bergamot is not liable. In England the tree succeeds perfectly well as a standard; in Scotland it answers in good seasons, but here it is deserving of a west wall. The fruit is of a depressed globular shape, not large; the flesh juicy, sugary and rich, a little gritty next the core. It ripens towards the end of October, but does not keep.

To the list of summer and early autumn pears might be added the Musk Robine, Summer Bonchretien, and Williams's Bonchretien, requiring the protection of a wall; and the Lammas Pear of Scotland, "soon ripe, soon rotten," which succeeds perfectly well on open standards; Ambrosia, Belle et Bonne, Beurré d'Amalis, Bishop's Thumb, Caillot Rosat, and the Hazel Pear.

II. *Late.*

The *Brown Beurré* (Red and Grey Buerré of various

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authors). This is a first-rate melting pear. Against a wall with a good aspect, and with a fresh soil, the tree is an abundant bearer. Ripens in October and November.

The *Beurré de Capiaumont.* This is one of the best new Flemish varieties. The fruit is beautiful and well-flavoured. It ripens in October and November. The tree is a great bearer and hardy.

The *Moorfowl Egg.* There are two varieties, both of Scottish origin, of which the Galston Moor-fowl Egg is the best. The fruit is not attractive in appearance, but it is of admirable quality. The tree is hardy, and should be grown as a standard.

The *Gansel's Bergamot* (sometimes called Brocas' Bergamot). This noble pear, which has scarcely been rivalled, certainly not surpassed, by any of the imported varieties, is of English origin. Its blossoms are too tender to enable the tree to succeed as a standard; but it deserves a wall, and it should be placed on various aspects to prolong its season. The fruit ripens in November and December.

The *Marie Louise.* This excellent and large pear was raised by the Abbé Duquesne, and named after the Ex-Empress of France. "It is," says Mr Thompson, "one of the very finest, even as a standard, on which it bears abundantly; it succeeds also well on a north wall." In Scotland it is the better for an east or west aspect; but on a standard in a sheltered garden at Luffness, East Lothian, the fruit has attained the weight of 15 ounces. It ripens in October and November.

Beurré d'Aremberg. This most excellent pear was first brought into notice and recommended by the Caledonian Horticultural Society's deputation in 1817 (*Hort. Tour.* p. 321). It is perfectly melting and without grittiness, and rich, sweet, and high-flavoured. The tree succeeds either trained against an east or a west wall, or as a standard in any sheltered situation.

Crasanne. An old French sort, of excellent quality, with a tender and finely flavoured pulp. The tree deserves an east or west aspect on the wall, and it succeeds also on an espalier-rail. The fruit ripens in November and December.

The *Urbaniste* is a very good variety, of a large size, and ovoglobular shape; skin of yellowish colour, with small russety spots; flesh white, melting, with a sweet well-flavoured juice. In Scotland ripens against a south wall by the beginning of November.

Colmar. This is a first-rate pear, with a white flesh, and of high flavour. In Scotland the tree requires a south wall. From this the Poire d'Auch of the Continent seems scarcely to differ. It keeps till February or March.

Passe Colmar. An admirable Flemish variety lately introduced into this country; of excellent flavour; hardier, and a more abundant bearer than the preceding, and more easily ripened. It is in maturity in December and January.

Poire Neill was raised by M. Van Mons of Louvain, about the time of the visit of the Caledonian Horticultural Society's deputation to Belgium (in 1817). It is a large handsome fruit, with a very white pulp, mellow, and abounding with a saccharine and slightly musky juice. It is in season during the month of October, and should be gathered a few days before it be ripe. The tree succeeds as a standard at Edinburgh, and bears freely.

The *Easter Beurré.* Fruit large, obovate, green and brown; flesh whitish-yellow, buttery, and extremely high-flavoured. "It is," says Mr Thompson, "hardy and a good bearer; one of the most valuable spring sorts, compared with which the early pears of short duration deserve not a wall; its extensive cultivation for a long and late supply is, without hesitation, strongly recommended." In season from January to March. As the tree ripens its wood readily, it succeeds as a standard, even in Scotland, and yields fruit superior in flavour to that from the walls.

Beurré Rance. A Flemish variety raised by the late M. Hardenpont; "the best very late sort yet known," *Hort. Cat.* It ripens with difficulty in Scotland; but was found to be the best pear produced in competition at the meeting of the Caledonian Horticultural Society in the month of March 1835.

The following, respecting which our limits will not permit us to go into detail, may be considered as highly valuable sorts as late autumnal and winter pears:—Autumn Colmar, Aston-town, Echassery, Delices d'Hardenpont, Beurré Bosc, Beurré Diel, Beurré Spence, Bezi Vaet, Bezi de la Motte, Chaumontelle, Sylvange, Downton, Glout Morceau, St Germain, Duchesse d'Angoulême, Louise bonne, Hacon's Incomparable, Winter Nelis, Black Auchan, Swan Egg, Doyenné gris, Flemish Beauty, and Napoleon.

Some excellent new varieties of dessert pears have, of late years, been raised by Mr Taylor, gardener at Dunmore Park, under the directions of the noble proprietor, who is a scientific horticulturist. These have not yet been described or published; but the Dunmore Brown Beurré and Taylor's Seedling have been found to be of the first quality.

Of the *Kitchen Sorts,* or stewing pears, we may name the Bellisime d'Hiver, Catillac, Uvedale's St Germain, Warden or Black Worcester, and the Gilogil. These are placed on inferior walls, or upon espalier-rails, or kept as dwarf standards. The Uvedale's St Germain fruit often attains a large size, especially against a wall.

Pear-trees are grafted either on what are called free-stocks or on dwarfing stocks: for the former, which are intended for full-sized trees, the seeds of the wilding pear should be sown; but frequently the pips of the perry pears, and sometimes of the common cultivated sorts, are used. For dwarfing, the quince is preferred; but the white-thorn, as already mentioned, is occasionally employed. Where the space is limited, or the ground is damp, the dwarfing stocks are the more suitable. It is a favourite doctrine with some, that by budding or grafting on quince or hawthorn, pears of too melting and sugary a quality acquire firmness and acidity; to what extent this holds good has not been correctly ascertained, but that the stock exerts a certain degree of influence on the fruit is beyond dispute. Some of the finer pears do not take readily on the quince. In this case double working is resorted to. For example, the Virgouleuse may be easily budded on the quince, and the Beurré d'Aremberg will afterwards succeed freely on the Virgouleuse. It may be mentioned in passing, that the ancient horticulturists seem to have supposed that a fruit was improved by double working; and that the term *reinette,* a name applied to a class of apples, is considered as having been derived from the Latin *renata,* that is, a tree grafted upon itself.

In selecting young pear-trees, some prefer *maiden plants,* that is, plants one year grafted; but if good trees, trained for two or three years, can be procured, so much the better. It is important to ascertain that the stock and stem be clean and healthy, and to take great care that no injury be done by bruising or tearing the roots, in lifting and removing. The young trees may be planted at any time, in mild weather, from the fall of the leaf to the beginning of March. Wall-trees require from 25 to 30 feet of lineal space when on free stocks, and from 15 to 20 feet when dwarfed. Standards on free stocks in the orchard should be allowed at least 30 feet every way, while for dwarfs 15 feet may suffice. Where the trees are trained *en pyramide* or *en quenouille,* (see p. 637) they may stand within eight feet of each other. It is very desirable that the pear orchard should be in a warm situation, with a soil deep, substantial, and well drained, or free from injurious latent moisture. Without attention to these circumstances, pear-trees seldom succeed.

The fruit is produced on spurs, which appear on shoots more than one year old; the object of the pruner, therefore, ought to be to procure a fair supply of these spurs. The mode of training wall pear-trees most commonly adopted is the horizontal; but each of the forms already mentioned (p. 638), has its advantages, and is peculiarly adapted to some particular habit of growth in the several varieties. For the St Germain, and other twiggy sorts, we should prefer the fan form; for the Gansel's Bergamot, and other strong growers, the half-fan, or the horizontal. In the latter forms the trees may often be found fifteen, twenty, or even thirty years old, during which time they acquire an undue projection from the wall, and become scraggy and unmanageable. On the other hand, the finest fruit is produced on young spurs, clearly indicating the necessity of a frequent renovation of the spurs. This would lead us to prefer the fan-form, not, indeed, that which is commonly practised, and represented in fig. 5. p. 638, for in it the spurs are as immovable as in any other arrangement; but rather that recommended for peaches, in which there is a continual renewal of the branches. Or if we did adopt the horizontal form, which has certain advantages, it would be that modification exhibited in the right side of fig. 4. *a*, p. 638. This is the method followed by Harrison in treating the Jargonelle.

The summer pruning of established wall or espalier-rail trees, consists chiefly in the timely displacing or rubbing off of the superfluous shoots, retaining only those which are terminal, or well placed for lateral branches. Where spurs are wanted on the older wood, about two inches of a foreright shoot are left; and if this be done early, that is before the shoot has become ligneous, it seldom fails to form fruit-buds. In horizontal training, the winter pruning is nothing more than adjusting the leading shoots, and thinning out the spurs, which should be kept close to the wall, and allowed to retain only two, or at most three buds. In fan-training, the subordinate branches must be regulated, the spurs thinned out, and the young laterals, which were loosely nailed in, during summer, must be finally established in their places. No crowding of branches should be permitted. Where horizontal trees have fallen into disorder, they may be renovated in the manner represented by fig. 466, left side, a procedure patronized by Mr Knight: or all the branches may be cut back to within nine inches of the vertical stem and branch, and trained in afresh, as recommended by Mr Lindley.

When some of the finer pear-trees produce an abundance of blossom, but do not *set* well, as not unfrequently happens, artificial impregnation may be partially resorted to; that is, the blossom of some other kind of pear, plentifully provided with pollen, is taken, and the farina is dusted over the best looking blossoms of the unproductive tree.

Summer and autumn pears should be gathered before they be fully ripe, otherwise they will not in general keep more than a few days. The Jargonelle, as Forsyth rightly advises, should be allowed to remain on the tree, and pulled daily as wanted, the standard fruit thus succeeding the produce of the wall trees. In reference to the Crasanne, Mr Lindley recommends gathering the crop at three different times, the first a fortnight or more before it be ripe, the second a week or ten days after, and the third when fully ripe. The first gathering will come into eating latest, and thus the season of the fruit may be considerably prolonged. It is evident that the same method may be followed with the Brown Beurré, Gansel's Bergamot, and any other which continue only a short time in a mature state.

The APPLE-Tree (*Pyrus Malus*), under the name of the Crab, is a native of Britain. Most of the cultivated sorts, however, are of foreign origin, and it does not seem probable, that we possess at present any good variety which is more than two hundred years old. The finer, high-flavoured apples are prized for the dessert; the juicy and poignant sorts are in request for tarts and sauce; whilst those of a more austere nature are manufactured into cider. In the second edition of the *London Hort. Society's Catalogue*, no fewer than 1400 varieties are enumerated; many of them doubtless not well ascertained, but about 175 are pronounced to be first-rate sorts. With such a multitude before us, it would be vain to attempt detailed descriptions: we shall therefore do little more than give a classified list of those most worthy of attention, referring the reader for further information to the Catalogue itself, to Mr Lindley's *Guide to the Orchard and Kitchen Garden*, and to Mr Rogers' *Fruit Cultivator*.

Table Apples.

The earliest of these are the following:—The Juneating, or White Geniton, which begins to ripen in the end of July, and, being sugary and slightly perfumed, forms a welcome addition to the dessert. The Early Red Margaret is often cultivated; it is sometimes called Red Juneating, and in Ireland Peach Apple. The Summer Crofton, or White Crofton, is of Irish origin: the tree bears abundantly; and if the fruit be scarcely equal to the Juneatings for the dessert, it is very desirable for culinary purposes in August. The Thorle, originating in the Carse of Gowrie, is an early apple of considerable merit, although not mentioned by Mr Lindley. The Oslin or Arbroath Pippin, and the Early Julien of Clydesdale, also deserve notice. The Summer Golden Pippin, the Red Quarenden of Devonshire, and the Summer Calville, are likewise excellent early dessert apples.

To succeed these in the autumn we have many fine sorts, such as the Early Nonpareil or Hick's Fancy; the Red Ingestrie and Yellow Ingestrie, raised by Mr Knight; the Doonside, a capital Ayrshire production; Autumn Pearmain or Royal Pearmain of the London nurseries; Shepherd's Fame; Baird's Favourite; Pomme de Niege; and Bourassa; Franklin's Golden Pippin; Old Golden Pippin; King of the Pippins or Hampshire Yellow; Please Lady; Kerry Pippin, one of the finest Irish apples; and the Cole Apple or Scarlet Perfumed.

The winter dessert apples are very numerous, so that only a few can be mentioned. The Ribston Pippin has long maintained a pre-eminent character for its rich juiciness and highly aromatic flavour. If the tree be trained to a wall, the fruit is much improved in size and beauty; but Mr Rogers, in his *Fruit Cultivator*, is decidedly wrong in thinking that it is heightened in flavour; for, on the contrary, the flavour is deteriorated. The Ribston is an old variety; and there is reason to fear that, like the Grey Leadington (formerly the boast of Scottish orchards), it is verging to decay and extinction. Hubbard's Pearmain is a Norfolk apple of the very finest quality, and too little known, especially in Scotland; the tree does not grow large, is quite hardy, and an abundant bearer, either as a standard, or when trained to an espalier-rail. The Dutch Mignonne is another admirable dessert apple, too little known or attended to. The Golden Harvey, or Brandy Apple of Forsyth, is a beautiful fruit, and Mr Lindley characterizes it as rich, juicy, spicy, and high-flavoured: the tree is not a large grower, is very hardy, and a great and constant bearer; and no garden, adds Mr Lindley, "capable of containing ten trees, ought to be without one of it." The Downton Pippin, raised by Mr Knight from the orange pippin of Herefordshire, dusted with the pollen of the old golden pippin, must not be omitted. The tree is a great bearer; the fruit ripens in the end of October and keeps till January; it has a brisk, subacid juice, which becomes saccharine. The fruit should not be gathered until it

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has acquired a bright yellow colour, and part freely from the tree. To these may be added the Beachamwell Seedling; Borsdorffer; Court of Wick Pippin; Wood's Transparent; Margil; Newton Pippin; Scarlet Crofton; Golden Pearmain; Scarlet Pearmain; Gravenstein; Paradise Pippin; Old Nonparcil; Ross Nonpareil; Scarlet Nonpareil; Golden Rennet; Reinette de Canada; Sykehouse Russet; and the Sam Young, an excellent Irish apple, brought into notice by Mr Robertson of Kilkenny.

Kitchen Apples.

These are very numerous, and the names of a few of the best can only be given. We begin with the Scottish Hawthornden; though the tree is liable to canker, yet it comes early into bearing, and the fruit is excellent. The Codlins may be next named, particularly the Spring Grove, the Kentish or Fillbasket, the Keswick, the Dutch, and the Manks. Dumelow's Seedling, the Fulwood, the Green Fulwood of Mr Mathew, the Nonsuch, Minshul Crab, Hanwell Souring, Cat's-head, Alexander, Brabant Bellefleur, Blenheim Pippin, Hunt-house of Yorkshire, Norfolk Beaufin, and Forman's Crewe, are all good. Among the best long-keeping apples are the Scottish Gogar Pippin or Stone Pippin; and the Yorkshire Greening and Northern Greening, particularly the latter; Winter Strawberry Apple; Winter Lud; Cambusnethan Pippin; Tower of Glammis; the Alderstone Pippin of East-Lothian, and the Lady Wemyss of Fifeshire. An apple called the French Crab (but which is of considerable size, notwithstanding this name), keeps firm in pulp till the return of the apple season; and the subvariety of this, called Hambledon's, is described in Ronalds' Pomona as still superior.

Some excellent new varieties of apples have of late years been produced both in England and Scotland. Mr Hardy of Bothkennar, by crossing the Court of Wick Pippin with the Nonpareil, has raised seedlings partaking of the good qualities of both parents, and these have received the warmest approval of the Scottish Horticultural Society.

It may be mentioned, that information respecting the fruits cultivated for the manufacture of cider and perry, may be obtained in the Pomona Herefordiensis, published by Mr Knight, and illustrated with engravings by the late Mr W. Hooker. Cider is principally made in Herefordshire and Gloucestershire, which are called the cider counties; but much is also produced in Devonshire. For the encouragement of its manufacture in Scotland, premiums have been offered by the Caledonian Horticultural Society, but little good Scottish cider has hitherto appeared.

Several kinds of stocks are used for apple-trees. The Dutch *Paradise*, propagated by layers, has long been used as a stock for dwarf apple-trees, whether intended for the wall or for standards. The *Doucin* of the French seems closely allied to this, if not identical with it. The bur-knot varieties increased by cuttings, or young codlin plants procured from layers, furnish stocks for the trees from which it is desired to raise new seedlings. For common purposes, the stocks raised from the pips of crabs or of cider apples are preferred. Stocks kept one or two years in nursery lines are fit for grafting upon; but if a considerably tall stem is wished, they must remain three or four years in the nursery, or till they attain five or six feet of height. In the Dutch nurseries, where apple-trees are trained for some years to the cup-shape, the table, the pyramidal, or the round forms, before they are sold to the public, the trees are repeatedly transplanted; but with us, where such forms are less sought after, the utility of more transplantations than from the seed-bed to the nursery lines, and thence to the garden, may, in Mr Knight's opinion, be questioned. Any common soil, provided the subsoil be dry, suits the apple-tree. Shallow planting should in all cases be practised.

The fruit, as in the pear-tree, is produced on spurs, which come out on the branchlets of two or more years growth, and continue fertile for a series of years. There is, therefore, no material difference in the pruning and training of the pear and of the apple tree. On walls, the horizontal mode of training is commonly followed, as best calculated to repress the vigorous growth of the tree; but for the nonpareil, and other twiggy varieties, perhaps the fan-form, or some modification of the fan-form, is preferable. For standards, where the soil is rich and the growth rapid, all that is necessary in pruning is to thin out the branches, and to prevent their crossing each other. Where there is little luxuriance, and in the case of all dwarfs, it is useful to shorten the branches occasionally, and to remove useless twigs. Dwarfs on paradise stocks may be treated almost like currant bushes, to the great advantage both of the size and beauty of the fruit. The winter pruning may take place any time from the beginning of November to the end of March. Cankered or diseased wood, and all unfruitful snags or rugged spurs, are then to be neatly cut out.

If the American blight, or woolly aphis (the *Eriosoma Mali* of Leach) make its appearance on a tree, the utmost care should be taken to clean every part of the bark with a hard brush and some searching wash; for, should the insect be left unmolested, it will speedily spread over all the apple-trees in the neighbourhood. Indeed, the pest is so grievous, that the sacrifice of two or three trees is a small price to pay for its removal.

For the *storing of Pears and Apples*, there should be attached to every considerable garden a commodious fruit-room, well ventilated, furnished with fire-places or stoves to exclude frost, and fitted up with a variety of shelves. A northern aspect is the most suitable; and it is also desirable that there should be a dry, cool cellar under it, to be employed in retarding the ripening of some of the fugitive varieties. All the fruit intended for keeping should be plucked with the hand, or with such an implement as the fruit-gatherer invented by Mr Saul of Lancaster. The finer dessert fruits should be laid on shelves made of hard wood, not of fir, and covered with cartridge or writing paper, to prevent their imbibing any taint from the wood. The kitchen fruit may be kept in layers two or three deep, but not in heaps, and should be occasionally examined, when decaying fruit is to be removed. The *sweating* of apples and pears, formerly much practised, is now abandoned, as being attended with no useful effects.

The Quince (*Pyrus Cydonia*), allied to the apple, is a native of the south of Germany. It is but little cultivated in Britain. The fruit, which is austere when raw, is used to give flavour and poignancy to stewed or baked apples. The two principal sorts are the Portugal Quince and the Pear Quince, of which the latter is the most productive, while it serves the usual culinary purposes equally well as the other. Quinces may be propagated by layers or cuttings, or by grafting. Two or three trees planted in the slip or orchard, are in general sufficient. In Scotland, the fruit seldom approaches maturity, unless favoured by a wall.

The Medlar (*Mespilus Germanica*) is a native of the south of Europe, but has been naturalized in some parts of the south of England. The varieties worth notice are, the Dutch Medlar, with broad leaves; and the Nottingham Medlar, with narrow leaves: of these, the latter is considered the best. The fruit is gathered in November, and kept till it begin to decay, when it is served up in the dessert, and highly relished by some. The treatment recommended for the quince may be applied to the medlar.

The Service-tree (*Pyrus domestica*) is a native of the mountainous parts of Cornwall, and, though not much cultivated, may here be noticed. The fruit has a peculiar acid flavour, and is used only when thoroughly mellowed by keeping. There is a pear-shaped, and also an apple-shaped variety, both of which may be propagated by layers, and still better on seedling plants of their own kind. Two or three trees may have a place in the orchard, or perhaps in a sheltered corner of the lawn. The tree is seldom productive till it have arrived at a goodly age. The fruit is brought to Covent-Garden Market in winter; but it is never seen at Edinburgh. Near Paris, the tree is a good deal cultivated under the name of *cormier;* and there are a number of varieties of the service grown in the north of Italy.

The Mulberry (*Morus nigra*) is a native of Persia, and in this country requires a warm sheltered situation. The fruit is in request for the dessert during the months of August and September, having a rich aromatic flavour, and a fine subacid juice. Where it is abundant, wine is made from it. In Devonshire, a little of the juice added to full-bodied cider, produces a delicious beverage, called Mulberry Cider, which retains its flavour for many months. The mulberry is propagated from cuttings or layers, but, to expedite the production of fruit, it is useful to inarch small bearing branches on stocks prepared in flower-pots. Mulberry standard trees succeed only in the southern counties. These require no other training than an occasional thinning out of the branches. They are generally planted on grassy lawns, so that when ripe fruit falls from the higher branches, it can be gathered without having sustained injury. In the middle districts, espalier-rails may be employed, particularly under the reflection of a south wall. In colder situations, the mulberry must be treated as a wall-tree; and it has been recommended that the bearing shoots should be trained perpendicularly downwards. Mr Knight strongly advises the forcing of this fruit in flower-pots, much in the same way as is done with figs. The mulberry as a fruit is little known in Scotland; but a few aged trees exist in old gardens, and, in favourable seasons, afford their fruit.

The Hazel (*Corylus Avellana*), one of our indigenous fruits, is the original parent of the Filbert, Cob-nut, Cosford-nut, Frizzled, and other improved varieties. These succeed best on a rich, dry loam, carefully worked, and receiving from time to time a slight manuring. They are generally planted in the slips, but thrive best in a quarter by themselves. The varieties are propagated by layers or suckers; but where there are stocks of the common hazel, the other kinds may be grafted upon them. The Cosford is generally preferred, being thin-shelled and having a kernel of high flavour.

The neighbourhood of Maidstone in Kent has long been celebrated for the culture of nuts for the London market; and as the best Kentish practice is scarcely known in other parts of Britain, we may enter a little into detail. The young plants are almost always suckers from old bushes, and are planted about ten or twelve feet apart. They are suffered to grow without restraint for about three years, and are then cut down to within a few inches of the ground. They push out five or six shoots; and these in their second year are shortened one-third. A hoop is then placed within the branches, and the shoots are fastened to it at nearly equal distances. In the spring of the fourth year, all the laterals are cut off close by the principal stems, and from these cut places short shoots proceed, on which fruit is expected in the following year. Those which have borne fruit are removed by the knife, and an annual supply of young shoots is thus obtained. The leading shoots are always shortened about two-thirds, and every bearing twig is tipped. In the early spring pruning, a supply of male blossoms is left, and suckers are carefully eradicated. These Kentish nut-plantations somewhat resemble large quarters of gooseberry bushes, few of their trees exceeding six feet in height. The curious reader may be referred, for additional information, to the paper, on this subject by the Rev. Mr Williamson, in the 4th volume of the Transactions of the London Horticultural Society.

The Walnut (*Juglans regia*) is a native of Persia, and the south of the Caucasus, and the fruit therefore seldom comes to complete maturity, except in the warmer districts of Britain. Besides the common walnut, there are several varieties cultivated, particularly the Large-fruited or Double Walnut, the Tender-shelled, and the Highflyer, which last is said (*Lond. Hort. Trans.* iv. 517) to be "by far the best walnut grown." The varieties can be propagated with certainty only by inoculating; but the operation is rather nice, and not unfrequently fails. Mr Knight's method is described in the London Transactions, vol. iii. p. 133. Plants raised from the seed seldom become productive till they be twenty years old. The fruit is produced at the extremities of the shoots of the preceding year; and therefore in gathering the crop, care should be taken not to injure the young wood. In Kent, the trees are thrashed with rods or poles; but this is a rough, and far from being a commendable, mode of collecting the nuts.

The Chestnut (*Castanea vesca*), like the preceding, has long been an inmate of our woods, in which it grows to a great size; but it seldom ripens its fruit in the northern parts of the island. Several varieties, remarkable for their productiveness and early bearing, have of late years risen into notice; particularly Knight's Prolific, and the New Prolific. These are propagated by grafting upon stocks raised from nuts; and when grafts are taken from bearing wood, fruit may be produced in a couple of years. The tree thrives best on a dry subsoil.

SMALL FRUITS.

The Red, White, and Black Currant, the Gooseberry, the Raspberry, the Strawberry, and Cranberry, are usually cultivated in our gardens, under the title of Small Fruits. Their economical uses in cookery, confectionary, and in the manufacture of home-made wines, attach to them considerable importance, and render a separate, however brief, account of them desirable.

The *Ribes rubrum*, Lin. includes as its varieties our Red and White Currants. The principal subvarieties are:

Common Red,
Red Dutch,
Knight's Sweet Red,
Champagne,
Common White,
Dutch White.

Red and white currants are readily propagated by cuttings. They succeed in any sort of common garden soil; but seem to thrive best in warm moist situations, where they enjoy an abundance of air. A few plants are sometimes placed against walls, on which they are trained perpendicularly. Currants are sometimes planted in single lines in the borders which separate the plots in the kitchen garden; but it is generally better to confine them to compartments by themselves. In these they are arranged in quincunx order, at six feet between the lines, and six feet in the line. They may be transplanted at any time between the fall of the leaf and the first movement of the sap. They are trained *en buisson*, from single stalks of about a foot in height, care being taken to prevent the main branches from crossing each other. In winter the young bearing wood on the sides of the branches is shortened down into spurs, from an inch to two inches in length. The leading shoots are left about six inches long. Some careful cultivators reduce the young shoots to about half their length as soon as the fruit begins to colour, an operation which is found to increase the size and improve the flavour of the berries.

Of *Ribes nigrum*, Lin. or black currant, there are several varieties, of which we need mention only the Common Black, and the Black Naples. The latter is the preferable sort. The black currant thrives in a moist, deep soil, and shady situation. Its culture is much the same as that of the other currants, but the young shoots are not spurred. All the pruning necessary is to keep the branches free of each other, and to promote a succession of young wood.

The Gooseberry.—Botanists distinguish two species: *Ribes Grossularia*, or rough-fruited gooseberry; and *Ribes uva crispi*, or smooth-fruited gooseberry. The gooseberry has always been a favourite fruit in Great Britain, and is said to be produced, in the middle districts, in greater perfection than in any other part of the world. Many very large sorts have originated in Lancashire, where the culture has been carried to a high degree of refinement; but it is to be regretted that *weight* seems, absurdly enough, to be regarded, in the prize competitions, as the sole criterion of excellence. Berries of twenty or even twenty-four pennyweights are boasted of; but such are always inferior in flavour. The following are some of those sorts recommended in the catalogue of the *Lond. Hort. Society*.

Red.—Red Champagne or Ironmonger, Crown Bob, Small Red Globe, Keen's Seedling, Lord of the Manor, Miss Bold, Leigh's Rifleman, Red Warrington, Wellington's Glory.

Yellow.—Yellow Ashton, Yellow Ball, Yellow Champagne, Golden Yellow, Smiling Beauty, Smooth Yellow, Yellowsmith.

White.—Bright Venus, White Champagne, Cheshire Lass, Crystal, White Crystal, White Damson, White Honey, Whitesmith.

Green.—Green Gascoigne, Pitmaston Green Gage, Green Seedling, Langley Green, Late Green, Green Laurel, Gregory's Perfection, Green Walnut.

Some admirable new varieties have of late years been raised in Scotland, particularly in Perthshire: the Delvine Porcupine and Delvine Ironmonger are not surpassed by the finest of the English productions.

In forming his collection, the horticulturist should especially select a few early and a few late sorts, and, by properly disposing the bushes in various situations in his garden, he may prolong the fruit season by several weeks. The same object may be further promoted by defending the late sorts from the attacks of wasps, by surrounding the bushes with bunting (the thin stuff of which ships' flags are often made), and by covering up the bushes with mats. This contrivance, however, answers better with currants than with gooseberries.

The gooseberry-bush affects a loose rich soil, which readily imbibes, but does not retain much moisture. We have seen it succeed perfectly well on little more than pure sand which was free from gravel. It thrives in any common garden soil. Gooseberries, like currants, may be grown in lines or compartments. They are propagated by cuttings, and are transplanted, in open weather, during any of the winter months. They are trained with single stems, from six inches to a foot high; and all suckers, which are apt to spring up from the roots, are carefully removed. Formerly it was the practice in Scotland to spur all the annual wood; but now the black currant system of pruning is more generally and advantageously followed. The ground on which the bushes stand is carefully digged once a-year; and manure, when necessary, is at the same time added. Nothing more is requisite than to keep down weeds, and to prevent the attacks of caterpillars, by picking them off on their first appearance. Gooseberry plants are sometimes trained on walls or espaliers, to accelerate the ripening, or increase the size of the fruit.

The Raspberry (*Rubus Idæus*) is, like the preceding small fruits, a native of Great Britain. The principal varieties are:

Red Antwerp,
Yellow Antwerp,
Barnet,
Common Red,
Cornish,
Williams' Double-bearing.

Of these, the first two have never been surpassed, and are generally sufficient for all common purposes. Raspberries are propagated from suckers, which are planted in rows five or six feet apart, and at three feet from each other in the rows. The fruit is produced on small branches which proceed from the shoots of the former year. Every year they throw up a number of shoots from the root, which bear fruit the subsequent year, and then die. In dressing the plants in winter, all the decayed stalks are cut away, and of the young shoots only three or four of the strongest are left, which are shortened about a third. These, as they are too weak to stand of themselves, are sometimes connected together by the points in the manner of arches, and sometimes they are attached to a stake. Perhaps the best support is obtained by fastening the points of the shoots to a slight horizontal rail or bar about four feet high, and placed a foot and a half on the south side of the rows. By this means the bearing shoots are deflected from the perpendicular to the sunny side of the row, and are not shaded by the annual wood. The ground between the rows is well digged in winter, and kept clean. Fresh plantations of raspberries should be made every six or seven years. The double-bearing varieties, which continue to bear during autumn, require light soils and warm situations. It may be mentioned that the crop of any of the varieties may be retarded by breaking off the points of the bearing shoots at an early period in spring; but, like all other fruits, its flavour is highest when it is allowed to ripen at its natural season.

The Strawberry (*Fragaria*) belongs to the same natural family as the raspberry. Amongst the numerous kinds cultivated in our gardens, botanists have distinguished several *species*, but as these distinctions imply no difference in culture, and as it is difficult to trace them amid the "sportings" of the hybrids, we shall not pretend to enumerate them. Scarcely any plant more readily slides into seminal varieties; and indeed, till lately, in consequence of the irregular prevalence of local names, their whole nomenclature was a chaos of confusion. At the instance of the Horticultural Society of London, Mr Barnet, now of the Experimental Garden, Edinburgh, undertook a revision of the subject, and, with great acuteness and discrimination, has removed much ambiguity, and, as we hope, has finally settled the names of the existing varieties. His paper, which is well worth the perusal of every student of horticulture, is in the 6th volume of the London Transactions. In the second edition of the Catalogue of the Lond. Horticultural Society no fewer than 112 varieties are enumerated. But the following are sufficient, and an asterisk is prefixed to those most worthy of cultivation in small gardens.

American Scarlet,
Coul Late Scarlet,
* Grove End Scarlet,
* Old Scarlet or Virginian,
* Roseberry,
Black Roseberry,
Elton,
* Knevett's,
Sweet Cone,
* Keen's Seedling,

Taylor's Incomparable,
* Old Pine or Carolina,
Wilmot's Superb,
Black Hautbois,
* Large Flat Hautbois,
* Prolific Hautbois.
* Alpine, red and white,
Wood, red and white.

The strawberry plant is propagated from runners or from seed. When runners are employed, they are sometimes planted in autumn, or rather as soon as they have struck root into the ground. Most commonly, however, they are permitted to remain unseparated from the parent plants till spring; a practice which debilitates the old plants, and prevents the earth between the rows from being stirred. As, upon the whole, spring planting seems preferable, it would perhaps be well to adopt the practice of some gardeners, who are at pains to prick out the offsets, as soon as they are rooted, into beds of rich soil, from which they are transplanted into their proper places early in the spring.

The desire of new varieties has encouraged the practice of propagating by seed; and Keen, Knevett, and others, have been extremely successful. Mr Knight having observed that the young runners of the alpine strawberry flower and ripen fruit the first year, was led to adopt this mode of reproduction, and has followed it with the happiest success. Early in spring he sows the seed in flower-pots, which are put into a hot-bed; and as soon as the plants have attained a sufficient size, they are transplanted into the open ground. They begin to blossom soon after midsummer, and continue to produce fruit till they be interrupted by frost. Thus Mr Knight is inclined to treat the alpine strawberry as an annual plant. The same practice has been recommended in France by M. Morel de Vindé (*Cal. Hort. Mem.* vol. iii.), but he very properly preserves his plants for three years, sowing every year a successional crop. Mr Keen has applied this method of culture to the wood strawberry, and we doubt not but it might be extended with beneficial effects to the Old Scarlet and others of the less artificial varieties.

A clayey soil or strong loam is considered as best suited to strawberries. On a sandy or very light soil they seldom succeed; and in close situations, and over-manured ground, most varieties produce little else than leaves. Before planting, the ground is manured and trenched or digged over deeply, and when stiff and compact, is very carefully worked. Keen and others in the neighbourhood of London, grow their strawberries in beds, three rows in each, with an alley between them. The market gardeners of Edinburgh, who, in the culture of this fruit, are perhaps not excelled by any, plant in rows two feet asunder, and from a foot to fifteen inches in the rows. When the weather is dry, the young plants are watered till they be well established. As little fruit is produced the first year, a line of carrots, onions, or other vegetable, is often sown between the rows for one season. In May the runners are cut off, with the view of promoting the swelling of the fruit. During dry weather, careful cultivators water their plants while in flower, and particularly after the fruit is set, and occasionally till it begin to colour. The old practice, from which the fruit derives its name, of putting straw between the rows to prevent the soiling of the fruit, has been recently revived; and where there are lawns, the short cut grass may be employed for the same purpose. As soon as the fruit season is over, the runners are again removed; the straw or grass is taken away, and the ground hoed and raked. In October the runners, the reclining, but *not the erect*, leaves are cut away, and the surface of the earth is stirred with a three-pronged fork, great care being taken not to injure the roots. Strawberries may be raised from the same ground for an indefinite space of time, but the plants should be renewed every third or fourth year. In the garden they are generally put in a quarter by themselves, and it should be one fully exposed to the sun and air. The alpine and wood varieties may be placed in situations rather moist and shady, as edgings in the slips, or in rows behind walls and hedges, in which situations they succeed perfectly well, and produce fruit late in the season.

Strawberries have always been a favourite dessert fruit. They likewise form an excellent preserve; and from their freedom from excess of acid, seem well adapted to the manufacture of native wine. To this purpose they have been only partially employed; but the samples of strawberry wine which we have tasted had more of the vinous flavour, than any other of our home-made wines. The culture of strawberries is the most lucrative part of the employment of the market gardener, at least near large towns. It is not uncommon for him to realize a clear profit of L.30 or L.40, or even more, per acre, of strawberry ground. The greater the diligence and assiduity of the cultivator, the greater will be his returns. It is a common and just remark, that too little labour is, in general, expended upon strawberries, and by the ignorant and unskilful gardener least of all.

Strawberries are easily forced. The Old Scarlet, Grove End, and Keen's Seedling, are most suitable for this purpose. They are potted in April, with rich soil, two or three young plants being put into each pot eight or ten inches in diameter. During summer they are kept in a warm situation and encouraged to grow, the flowers and runners being carefully picked off. In the beginning of winter they are sheltered in cold frames, and are afterwards successively placed into hot-beds or forcing-houses, so as to keep up a succession. The air is kept moist, and they are plentifully supplied with water. Where the means are abundant, a moderate supply of fruit may be maintained during the late winter and the spring months.

Cranberry. The culture of the American Cranberry (*Vaccinium macrocarpon*) was introduced by the late Sir Joseph Banks, and deserves particular notice, for it is altogether overlooked by Lindley and other horticultural writers. The plant is distinguished by the smoothness of its stems, and the largeness of its fruit. It grows freely, and produces its fruit readily in any damp situation; but where there is a pond, it may be cultivated with the greatest success. On the margin of the pond stakes are driven in, a short way within the water line; boards are so placed against these as to prevent the soil of the cranberry-bed from falling into the water. A layer of small stones is deposited in the bottom, and over these, peat or bog earth, mixed with sand, to the extent of about three or four inches above, and half a foot below the usual surface of the water. Plants of the American cranberry placed on this bed, soon cover the whole surface. There is a variety which is very shy in yielding its fruit, and this should, of course, be avoided. From a bed thirty or forty feet in length by five or six in breadth, a quantity of berries may be procured, sufficient for the supply of a family throughout the year. The fruit is easily preserved in bottles. The native Cranberry (*Vaccinium Oxycoccos*) may be treated in the same manner, and in some places is very successfully cultivated. At Culzean Castle, the seat of the Earl of Cassilis, in Ayrshire, the cranberry ground is surrounded by a ditch, the water from which is made to filter through among stones and stakes to the interior, so as to keep the cranberry plants constantly supplied with moisture. In the same garden a second compartment is dedicated to small fruits of this class, having in the centre a rock-work planted with Whortle-berries (*Vaccinium vitis-idæa*), and around the rock-work beds of American Cranberry, of Scottish Cranberry, and of Crowberry (*Empetrum nigrum*), also native.

The following plants produce fruit, some of them abundantly in a wild state; others sparingly in our gardens, but they can scarcely be said to come within the province of Horticulture: *Berberis vulgaris*, the Barberry; *Sambucus nigra*, the Elder; *Prunus spinosa*, the Sloe; *P. insititia*, the Bullace; and *Rubus Chamæmorus*, the Cloudberry.

THE FORCING GARDEN

Is only a department, but an important one, of the Fruit Garden. The term *forcing* is strictly applicable only to those artificial processes by which vegetation is in a considerable degree accelerated; but in common language it has been applied to all those operations in which glazed frames or houses are concerned, though they may be employed merely in aiding the common progress of nature. For the sake of convenience, we shall adopt the term in its broadest acceptation. After some preliminary observations we shall first speak of the structures, and then of the fruits and vegetables which are cultivated in them.

The principal object of hot-houses, and other structures of a similar nature, is to produce an artificial temperature and humidity of the atmosphere, which shall resemble, as nearly as possible, the climate in which the fruits or plants naturally grow. A command of heat is obviously a primary requisite. A regulated admission of air, and the presence of a certain degree of moisture, are in the next place necessary. Lastly, without the free access of light, plants become blanched or are destroyed by the moisture which they generate. These, then, are the conditions which limit the form of hot-houses; when these are attained, any form may be adopted which invention can devise, or wealth execute; but every true lover of the art will aim at simplicity, and will deprecate useless expenditure, so often exhibited in this department, as injurious to the character as well as to the progress of horticulture.

Artificial Heat. Forcing-houses are heated by means of *flues* conveying smoke and heated air; by *pipes* conducting steam or hot-water; by so constructing the glazed house as to increase the action of the rays of the sun; and sometimes by the fermentation of vegetable substances.

Flues are generally constructed of common brick, though occasionally fire-brick is employed in the *neck*, or that part of the flue immediately adjoining the furnace. The bricks in the side walls are placed on their edges, and the top covering is of tile an inch and a half in thickness. In districts where sandstone-flag abounds, the covers are often formed of it. Horticultural writers have recommended that flues should be about eighteen inches deep, and of nearly equal breadth; but to obtain the greatest quantity of heat, it clearly appears from the experiments of Mr Stevenson (*Cal. Hort. Mem.* i. 143), that, where possible, the breadth should be nearly double the depth. It is advantageous to detach flues as much as possible from the walls of the building which incloses them, in order that the heat may be communicated to the air only. Formerly they were often built, sometimes one above another, with only one side exposed, a practice which, as it occasioned great waste of heat from conduction, has been generally abandoned. When it is necessary to lead one flue above another, or to make it return upon itself, spaces should be left between them, to allow the free emission of caloric from every side.

With a view to economy of fuel, can-flues and cast-iron cylinders have been proposed, and occasionally adopted, but their use has not hitherto become general. The arrangement of flues depends upon the nature of the house; it may, however, be remarked generally, that as heated air has a tendency to ascend, they should be placed as near as can be done with convenience to the front of the house, where, of course, the sloping roof is lowest. It is likewise useful to introduce a flue at that part of the structure which is most exposed to any refrigerating influence.

The furnace is most properly situate behind the house, and is generally covered by a shed. For the most part it is constructed so that the upper part of its arch shall be on a level with the top of the flue; but where a considerable heat is required, as in pine stoves, it is found preferable to sink the furnace, in order to produce a *neck* or rise of about a foot and a half in height, which moderates the intensity of the heat on its first entrance, and, by increasing the draught, causes the fire to burn freely. The size of the furnace depends upon the kind of fuel employed. Where coke or charcoal is used, it may be about eighteen inches square; but where small-coal, turf, or peat is to be burned, it should be two feet or even two and a half square, by two feet in height. A large furnace ensures the continuance of the fire, a fact which in practice has received too little attention. To resist the effects of heat, the interior should be lined with fire-brick. The roof should be strongly arched. The door may be about a foot square, and when it is double, as it ought always to be, the outer half should be a little larger than the inner. The grate is of the same breadth as the door, and may extend about two-thirds of the length of the furnace. The ash-pit is equally wide, and from fifteen to eighteen inches deep; it is furnished with a ventilator in the door to regulate the admission of air. In practice the furnace, and especially the ash-pit, should be kept clear of ashes; as by this means, coals of an inferior quality may be burnt with ease. We know an instance in the neighbourhood of Edinburgh, where a number of large furnaces were maintained for several years by the mere refuse of a coal-yard attached to the mansion of a considerable family.

In Plate CCXC. fig. 1 and 2, are given a longitudinal section and plan of the common garden furnace. It is surrounded by a double wall to prevent the escape of heat.

Mr Witty has invented a new furnace, which is possessed of valuable qualities. A vertical section of it is given in Plate CCXC. fig. 3. The fuel is supplied by the door at *a*, and is pressed down the inclined plane towards the grate *c*, by an apparatus placed at the head of it; but this method being complicated, has given way to several modifications, in which the door *a* has been found the most useful, the fuel being pressed forward by the common tools used for feeding furnaces: *b* is the door for regulating the fuel on the grate *c*. In its progress, the whole surface of the coal along the inclined plane is constantly kept in a state of inflammation, the flame having naturally a tendency to burn upwards. In this way the greater part of the fresh coal is carbonised, that is, the gas is separated from it and inflamed, leaving only coke. The strong combustion of the coke at the grate produces heat enough to carbonise the coal, and air enough to inflame the gas. This furnace, therefore, not only consumes the smoke, but effects a considerable saving of fuel.

Steam. Of late years steam has been applied with success to the production of an artificial climate in glazed houses. It is more genial than fire-heat from flues, being less contaminated, and more equable and pliant in its distribution. In steam hot-houses the plants can scarcely ever be liable to suffer from scorching heat; the air continues pure and untainted, and persons visiting the house are much less liable to be annoyed by the smell of smoke and soot. It is neater in all its arrangements within doors, and precluding, without, the necessity of more than one furnace, and one chimney top, in a great measure removes the unseemliness of the heaps of coals and ashes with which common furnaces are usually surrounded. In districts where coals are dear, the saving of fuel is an object; and it has been found that seven bushels of coals go as far in keeping up steam heat, as ten bushels do in maintaining an equal temperature in the ordinary way. By merely opening a valve, the house may at any time be effectually *steamed*, that is, filled with the steam or vapour, and the warm moisture thus applied to the plants, is observed to contribute remarkably to their health and vigour. To counterbalance these advantages, we are not aware of any defects, except such as may arise from the greater complexity of the apparatus, or at least its liability to disrepair and accident.

Steam is generated in a cast or wrought iron boiler, of an oblong form, furnished with safety-valves, and heated by a smoke-consuming furnace. As in the common steam-engine, the boiler is supplied from a cistern above, and is made to regulate itself by a simple contrivance. In the feed-head is a valve, which is opened by the sinking of a float, which descends in proportion as the water is dissipated in steam; and, being balanced by a weight, whenever a sufficient quantity of water is admitted, rises again, and shuts the valve. As steam may be conveyed, without materially impairing its calorific powers, to the distance of several thousand feet, one boiler is sufficient for heating all the glazed houses which are ever erected together; but a second is generally kept in readiness, to act as an auxiliary in case of accident, or in very severe weather. Steam is conducted from the boiler in a single main pipe, or in two parallel pipes, which, according to Mr Tredgold, may be only one inch in bore. The divarications of the pipes into particular houses are arranged somewhat in the manner of flues, and, indeed, are sometimes placed within these, or on them, when they already exist, as in Plate CCXCIII, fig. 3, below the passage *d*. These interior pipes are from three to six inches in diameter, in order to afford a greater radiating surface, and are supplied with sets of valves to admit, regulate, and exclude the heated vapour, according to circumstances.

The most perfect and extensive examples of steam-apparatus exist at Syon-House, the princely seat of the Duke of Northumberland, near Brentford, and in the nursery-garden of Messrs Loddiges at Hackney. At the latter place, glazed houses, to the extent of almost a thousand feet in length, and forming three sides of a square, are heated solely by steam from one boiler. The boiler is of an oblong shape, measuring eleven feet by four, and is made of malleable iron. In certain narrow houses, intended by Messrs Loddiges for greenhouse plants, a single steam-pipe is found sufficient. In other houses of considerable height and breadth, or where a higher temperature is required, as in the palm-house, the steam flue is made to describe two or three turns.

Water, contained in large vessels or pipes, is sometimes heated by steam, and so made the medium of conveying caloric to the atmosphere of glazed houses. Fig. 13, Plate CCXC., represents an instance of this arrangement. A small steam-tube, one inch in diameter, enters a water-pipe eight inches in diameter, and twenty-eight feet long, wholly within the forcing-house; it passes into the larger pipe at the centre, and after traversing its whole length and returning, it issues out immediately below the point at which it entered. It then forms a siphon, by which the condensed water is conveyed away. A more detailed description may be found in the *Lond. Hort. Mem.*, vol. iii. Applications of it are given in Plate CCXCII., fig. 6, *a*, and Plate CCXCIII., fig. 3, below the passage *c*.

Steam is sometimes employed to furnish bottom heat. In the garden of Mr Sturge, near Bath, a shallow cistern of water is heated by a steam-pipe, in the manner exhibited in Plate CCXC., figs. 15, 16. The cistern is covered with pavement, over which is a bed of small stones, then ashes or sand, into which the pots containing plants are to be plunged.

Steam has also been employed to heat flues. Plate CCXC., fig. 14, is a side view and section of a flue filled with small stones or broken bricks, and heated by means of a small steam-pipe passing along the lower part of the flue. Along the upper side of this pipe are a number of small holes, becoming more frequent towards the farther end, to allow the escape of steam: there are, besides, a few perforations in the under side, to clear away condensed water. The flue has a slight inclination to that end of the house from which the water can be most easily drained.

Similar expedients were long ago employed, in the heating of forcing pits, by Mr John Hay of Edinburgh, a garden-architect of great judgment and experience. Plate CCXC., figs. 17, 18, represent a recent variety of this mode of supplying surface and bottom heat, by discharging steam into flues and chambers filled with stones. The steam is admitted by small pipes running along the central pit, in channels about four inches deep, and of the same width. These channels are crossed by others at right-angles; and at the points of intersection the steam is permitted to escape by two small holes, one on each side of the pipe. The pits must have a water-tight paved bottom, with a declivity of one inch in ten feet. The sides and covers of the channels are loosely jointed, and are permeable by the steam. Stop-cocks are attached to the pipes, so that the supply of vapour can be adjusted. Another mode of adapting steam to the production of bottom heat, may be seen in Mr Macmurtrie's Pine-Pit, to be afterwards described.

Hot Water. More recently the circulation of hot water in iron pipes or vessels has been successfully employed in producing artificial warmth. The temperature derived from this source has all the properties of steam-heat, with these additional advantages, that it is more steady, not being liable to interruption by the bursting of vessels, and more lasting, as water does not cool so rapidly as aqueous vapour.

The following explanation of the principle of the hot-water apparatus is given by the late Mr Tredgold, in an excellent paper in the *Lond Hort. Trans.* vol. vii. "We may select the simple case of two vessels placed on a horizontal plane, with two pipes to connect them; the vessels being open at top, and the one pipe connecting the lower parts of the vessels, and the other the upper parts. If the vessels and pipes (Plate CCXC., fig. 4) be filled with water, and heat be applied to the vessel A, the effect of heat will expand the water in the vessel A; and its surface will, in consequence, rise to a higher level *a*, *a*, the former general level being *b*, *b*. The density of the fluid in the vessel A will also decrease, in consequence of its expansion; but as soon as the column *c*, *d*, of fluid above the *centre of the upper pipe* is of greater weight than the column *f*, *e*, above that centre, motion will commence along the upper pipe from A to B, and the change this motion produces in the equilibrium of the fluid will cause a corresponding motion in the lower pipe from B to A; and, in short, the motion will obviously continue till the temperature be nearly the same in both vessels; or if water be made to boil in A, it may also be boiling hot in B, because ebullition in A will assist the motion."

The figure referred to in the preceding quotation, representing the common tank boiler surrounded by a flue, with a cistern at the extremity of the pipes, exhibits the form in which the apparatus was first erected; but as in this arrangement the process of heating was very slow, and many changes have been made, the cistern has generally been abandoned, and boilers of various configurations have been adopted. In fig. 5, Plate CCXC., a longitudinal section, and in fig. 6, a transverse section, are given, of a flued tank boiler, in which the surface exposed to the heat being increased, the effect required is accelerated, and at the same time a considerable saving of fuel is effected. Fig. 7. represents a section of an oblong, close, semi-cylindrical boiler, in which the action of the fire is still more increased. Fig. 8. is a section of a greenhouse boiler, constructed by the Shotts Foundry Company. The fire is placed entirely within the lower curved surface. This form is easily heated; but as there is no surrounding brick-work or masonry, it speedily cools. It is unnecessary to describe all the numerous modifications of this apparatus; but it may be proper to direct the attention of the reader to the close boiler, fig. 9, in which is shewn how the circulation may be conducted over a door or other obstacle. In this case the upper pipe must not ascend and descend twice: air-tubes ought also to be placed in a boiler, and on the highest part of the pipes; and the whole must be made considerably stronger than on common occasions. Fig. 12. is an isometrical elevation of a hot-water apparatus, for a vinery thirty feet long by eleven wide. A is the boiler, as in figure 4; B the upper or delivering pipe; C the principal part of the upper pipe, of a flat form, presenting a greater radiating surface, in proportion to the quantity of heat; D the descending limb; E the returning pipe, of a cylindrical form.

Mr Fowler has employed the siphon as a part of the hot-water apparatus; and in his tract on the *Thermosiphon*, as he calls it, has shewn how its various modifications may be employed in warming hot walls, as well as in heating glazed houses. The following statement of the principle is given in the Gardener's Magazine, vol. v. "Any one may prove that hot water will circulate in a siphon, by taking a piece of lead pipe, say of half an inch bore, and four or five feet long, bending it like a siphon, but with one leg a good deal more bent than the other, in order to give the descending water time and space for giving out its heat; and then, filling this tube with water, and placing one hand on each end to retain it full, immerse the extremities in a pot of water over a fire, (Plate CCXC., fig. 11). Supposing the water of an uniform temperature in both legs of the siphon, no circulation would take place; but supposing it to cool sooner in the long leg *a* than in the short leg *b*, then the equilibrium would be destroyed, and the water in the long leg *a* would descend, and draw up water through the short leg *b*; and this circulation would continue as long as the water *c* was maintained at a temperature above that of the surrounding atmosphere."

Mr Kewley's adaptation of the siphon is one of the simplest and most efficient that has been proposed. In Plate CCXC., fig. 10, *a*, *c*, *e*, are the two legs of a siphon, through the upper of which the heated water ascends, and by the lower descends. Immediately over the descending bend, a pipe connected with an air-pump is inserted, in order to fill the pipes, or remove the air which collects in the superior limb. Instead of the air-pump, a funnel with air-tight valves is sometimes employed. This mode of circulation has been adopted in some of the principal nursery-gardens near London.

Mr Charles H. J. Smith, in a communication to the Scottish Horticultural Society, has clearly shewn that the system of heating by the circulation of hot water in metallic pipes, is easily applicable, not only to any glazed house constructed with flues, but to any select portion of an existing fruit-wall, although already clothed with peaches, vines, or figs. In the last case, a small furnace and boiler are, of course, placed at the back of the wall; the expanding water rises to a cistern near the top of the wall; horizontal pipes, making three or four turns, are inserted into the south front of the wall (which is an easy operation, as the wall is usually faced with brick); and through these the water circulates, to the great increase of the temperature of the air surrounding the tree. The operation should be accomplished late in the autumn; the tree being carefully unnailed, bent forward, and secured from breaking, and as carefully replaced.

Mr A. Perkins has constructed an apparatus of small tubes hermetically sealed, in which water circulates, of a temperature varying from 300° to 400° Fahrenheit. The contrivance is very ingenious, and has been pretty extensively employed in the neighbourhood of London, in heating warerooms: but as the opinions of horticulturists respecting its merits, as applicable to the forcing garden, are still divided, and as it has not as yet stood the test of much experience, it may be sufficient to give it this cursory notice. For further information, however, we may refer to the Gardener's Magazine, vols. viii. and ix.

To mention *the rays of the sun* amongst the sources of artificial heat, may excite a smile; yet it happens that, from the stagnation of air, the reflection of light from walls, and other circumstances, they often produce a very considerable proportion of the increased temperature of a hot-house. This species of heat, however, is materially affected by the admission of the air necessary to the growth and healthy state of the plants. We are not aware of its having been employed as a primary source of heat, except in the case of Dr Anderson's patent hot-house, in which heated air was kept, bottled up as it were in separate chambers; an arrangement too irregular and unmanageable to be of much utility in our variable climate.

Vegetable substances in a state of fermentation evolve a considerable quantity of caloric, and are much employed to produce *bottom heat* in hot-beds, pine or melon pits. In a few instances they have been applied to warm the atmosphere of vineries and peach-houses, in which, however, they have been found to be a poor substitute for the other means already explained.

In the management of artificial heat, some degree of caution is required. All the operations of nature are gradual; and in *forcing*, it is well to follow these as the safest examples. The judicious gardener will therefore apply his heat very gradually at first; he will increase it by degrees for several weeks, and, in particular, he will guard against any sudden decrease of warmth, as nothing is more necessary to success than that the course of vegetation be continued uninterruptedly through foliation, inflorescence, and fructification. He will cause the temperature to increase by day and decrease by night, to rise in summer and fall in winter. He will, in short, imitate as much as possible the natural and varying influence of the sun.

The admission of Air.—The deteriorating influence which all living plants are supposed to exert on the atmosphere, must operate with tenfold force in a glazed house, where the proportion of air to vegetable substance is infinitely smaller than under the open sky, and where the corrective agitations of the wind, and the changes of temperature, are much less perceptibly felt. The respiration of plants, and the exhalations of putrescent vegetables, require a constant circulation of the aërial fluid, and this is maintained by means of moveable sashes, and ventilators in the roof of the house. Of these, sashes seem preferable, as less apt to produce cold currents of air, which are always injurious to vegetation. It is, indeed, a disadvantage that, by sliding down over one another, they diminish the influx of light. In winter, however, when light, from its scarcity in our high latitude, is most valuable, they are seldom drawn down to any extent; and by having all the sashes moveable, the gardener, with a little attention, may correct, in a great measure, any inequality in this respect. Sliding sashes require a depth of rafter which greatly augments the shade in oblique sunshine, an evil which cannot easily be obviated. With fixed roofs, and more especially those which are curvilinear (to be immediately described), numerous ventilators are the only means by which a proper circulation of air can be obtained. Some very intelligent gardeners prefer having all the sloping sashes fixed, and ventilate chiefly by means of large windows at each end of the house, aided by small ventilators in front.

The quantity of air to be admitted from time to time, must vary with the season, the temperature required to be kept up, and the kind of plants cultivated. It should be given and withdrawn by degrees, particularly in the colder portions of the year. The sashes or ventilators, for instance, may be partially open by eight A. M., top air being given before front air; full air may be allowed about ten; a reduction should take place before three P. M., and the whole closed between four and five in the afternoon. In summer less caution is necessary, as in many cases the external air differs little in temperature from that within the house. Most commonly air is given only during the day, and is excluded at night, with perhaps an increase of fire heat. Judicious horticulturists will sometimes reverse this process. Knowing, for example, that in the West Indies chilly and cold nights usually succeed the hottest days, they will imitate nature, by shutting up the house by day, and throwing it open at night. This practice, however, supported as it is by analogy, is subject to many limitations, and can only be followed in our climate during the summer and autumn months. It is useful, notwithstanding, to remember the principle, though it admits only of partial application.

The admission of Light.—In addition to the heat with which natural light is always accompanied, there seems to be another property necessary to vegetation which, from some cause hitherto unexplained, is partly deranged by its transmission through glass. The fact, however, is evident, from the circumstance that plants thrive better near glass than at a distance from it, though the intensity of light is apparently undiminished. Hence gardeners have been anxious to distribute their finer plants in situations as close as possible to the roofs of hot-houses.

Connected with the admission of light, is the determination of the pitch or angle of elevation of the roofs of glazed houses. It is evidently of advantage that the rays of light should fall upon glass perpendicularly, as loss by reflection is then a minimum, or indeed little or nothing.[1] The angle necessary to obtain this result is easily deducible from the sun's place in the ecliptic. At the equinoxes, the sun's meridional height above the horizon, at any point of the earth's surface, is equal to the complement of the latitude of that place; and hence, in order that the sun's rays may be perpendicular at that period, it is only necessary to make the elevation of the roof of the hot-house equal to the latitude of the place. The angle for any other season may be obtained by subtracting, from the latitude, the declination of the sun, if at that time to the north of the equator, or by adding it, if to the south. These periods are of course selected in accordance with the time at which the direct rays are most required. Mr Knight proposes a general elevation of 34° for the latitude of London, an angle which corresponds to the 20th of May and the 21st of July. This would afford four months, from the 20th of April to the 21st of August, during which the angle of incidence at mid-day would not at any time amount to 9°, while the deviation at the winter's solstice would be 43°, and the loss of light from reflection would be little more than $\frac{1}{30}$. The Rev. Mr Wilkinson recommends 45°, a pitch extremely suitable for early vineries and pine-stoves. In this case the midsummer deviation would be 19°, and the loss $\frac{1}{40}$, and the midwinter deviation 30°, while the loss is nearly the same. From these statements, however, and from an inspection of the table already referred to, it is manifest that much greater exactness has been required in this matter than is at all necessary. The reduction of the opacity of the roof, arising from the breadth and depth of rafters and astragals, is of much greater consequence. Accordingly, in some glazed houses, particularly those constructed of metallic substances, rafters have been omitted altogether; but this kind of structure leads to considerable difficulties in the admission of air.

We have taken it for granted that the frame-work is composed of wood; and if prime Baltic timber be procured, it will endure for nearly half a century. But in some cases rafters and sashes made entirely of metal, generally either malleable or cast iron, have been employed; and in others, a middle course has been steered, by adopting wooden mortices and metallic tenons. The great objections to the use of metal for rafters and sashes is, that it is too rapid a conductor of caloric, and too liable to contraction and expansion for the alternations of heat and cold; the expansion tending to render the sashes immoveable, and even to loosen the walls; and the contraction being apt to fracture the glass, and to produce openings between the sashes at which hoarfrost may enter.

In order to secure the greatest possible influx of light, scientific horticulturists have proposed hot-houses with curvilinear roofs. It was remarked by Sir George Mackenzie, to whom the merit of the proposal is primarily due, that if we could find a form for a glass roof, such that the sun's rays should be perpendicular *to some part of it*, not on two days, but during the whole year, that form would be the best. Such a figure is the sphere, and he therefore proposes a quarter segment of a globe or semidome, the radius of which is about fifteen feet. The frame for the glass-work is formed of equal ribs of hammered iron, fastened into an iron plate in the parapet wall, and fixed at top into an iron ring connected with the back wall. There are no rafters or sliding sashes, but air is admitted by ventilators in the parapet and back walls.

This form of hot-house roofs has been warmly patronised by Mr Knight, who, however, is of opinion, that the house proposed by Sir George Mackenzie is too high in proportion to its length and breadth, and therefore recommends a smaller section of a sphere with a greater radius. His dimensions are forty feet long, fourteen wide in the centre, and, including the front parapet, twelve feet high. Mr Loudon, who, it is understood, was the first that actually erected hot-houses on this principle, has proposed, and in part executed, many other forms. He describes (*Encyc. of Gard.*) with great exuberance of invention, the *acuminated semidome*, the *acuminated semiglobe*, the *semiellipse*, and the *parallelogram with curved roof and ends*. With Mr Loudon we should certainly prefer the last mentioned. A considerable number of curvilinear houses have been erected in the southern part of the island, particularly as repositories for ornamental plants, such as in Messrs Loddiges' nursery-gardens at Hackney, the London Horticultural Society's garden, the Manchester Botanic Garden, and in various private gardens.

As far as we are aware, no extensive experimental investigation of the comparative merits of curvilinear houses has hitherto been made. A writer in the Gardener's Magazine (vol. ii.) found it necessary, during the summer months, to shade his pines growing in such a house, from nine, ten, or eleven o'clock in the morning, to three, four, or five in the afternoon, in order to prevent the plants from assuming a rusty tinge and unhealthy appearance. Another practical gardener complains (vol. v.) that " the circular

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[1] The following is part of Bouguer's Table of Reflexions.—Of 1000 incidence rays, when the

Angle of incidence is	rays are reflected.	Angle of incidence is	rays are reflected.
75°	299	40°	34
70	222	30	27
65	157	20	25
60	112	10	25
50	57	1	25

Forcing Garden.

roof concentrated the sun's rays so immoderately, that the tops of the vines were actually scorched, even when the doors and ventilators at the back were all open. This was always the case in summer; and in winter, it was with the greatest difficulty, and only with the assistance of mats, that they could keep out frost; the thermometer frequently indicating only 40° when strong fires were burning." A considerable portion of the superior lightness of the curvilinear houses is due to the absence of rafters, and as these may also be dispensed in plain roofs, the effect of these ought to be deducted in making a comparison. Perhaps, when every thing else is rightly arranged, there is enough of light in common houses. Scarcely any species of fruit, when cultivated in the open air, is exposed during the whole day to the action of the solar rays, but must unavoidably be shaded at times by leaves and branches. It is difficult to suppose that, in respect to illumination, there is any remarkable deficiency in pits and glazed houses, in which have been ripened pine-apples and clusters of grapes, at least rivalling, if not surpassing, the produce of the most favoured of their native climes. In the admission of air, in the quantity and convenience of trellises, and in other interior accommodations, it cannot be disputed that the old forms have the advantage.

It has already been said, that hot-house roofs of the common kind, are sometimes constructed without rafters or moveable sashes. A considerable increase of light is thus obtained; but this benefit is attended with an almost insuperable defect, namely, the difficulty of producing a free and equable circulation of air. It is indeed probable that the common or plain roofed hot-house will always continue the favourite form with gardeners. In it the rafters are arranged at equal distances, and are made of a deep and narrow form, with their under edges rounded off. Nicol recommends that they should be made two and one-fourth inches broad, by ten inches deep. Perhaps they might be a little broader and shallower with advantage. The size of the sashes depends on the magnitude of the house; their breadth, however, ranges from three and a half to four feet. Except in very large houses, sashes are always disposed in two tiers, the upper row sliding down over the under one. Where there are ventilators in the front wall or upright glass, the sashes in the upper tier alone require to be moveable, and, for the sake of convenience, they may be made considerably shorter than the others. They are furnished with cords, pulleys, rollers, and weights, though the last, with no very prudent regard to economy, are sometimes omitted. Formerly all hot-houses were constructed with upright sashes in front. One of the most eminent garden architects of the present day (Mr Atkinson), has discontinued the practice; and, except in ornamental structures, it is hard to say why it should not be laid aside altogether. Such sashes serve only to weaken the fabric, and increase its expense.

Formerly the panes of glass employed were of large size; but small panes are found to be more economical, being less liable to break, and more easily replaced. It is believed that a pane seven inches in breadth by six in length, is the cheapest form in which glass can be obtained. In glazing, it is important to keep the overlaps of the panes of small dimensions, perhaps from one-fourth to one-eighth inch in breadth. This diminishes the breakage which arises from the expansion, in freezing, of the water detained between the laps by capillary attraction. As a further preventive, the interstices are sometimes filled with putty, and occasionally with laps of lead or copper. This effects a considerable saving of glass and of heat, but imposes on the gardener the duty of increased attention in preventing the stagnation of air. The frame-work of houses should be well coated with oil-paint; the colour is usually white.

In closing these preliminary remarks, it is proper to observe, that although the construction of a forcing-house is always a matter of considerable importance, it is not the only, nor even the most important condition necessary to ensure success. Much care in management, skill in pruning, and knowledge in physiology, must be possessed and applied, in order to obtain abundant and regular crops of fine fruit.

The more minute details respecting the structure of glazed houses, we shall notice along with the peculiar culture required in each; and we shall take them in the following order: The Vinery or Grape-house, the Peach-house, the Cherry-house, the Fig-house, the Pinery, the Orangery, and the Melonry. The greenhouse and other botanical structures, will come more appropriately under review in treating of the Flower Garden.

The Vinery. *Structure.*—The vinery is susceptible of a great variety of form; and, indeed, in this respect, seems more pliable than any other forcing-house. That form, however, which has been most commonly used, is the plane roof with sliding sashes; and such is the success with which it has been employed, and such its convenience for every purpose, that it is not probable it will soon be generally supplanted. The section of the Peach-house, Pl. CCXCI. fig. 4, will give an idea of the usual configuration of the vinery. Fig. 3. of the same plate is a section, and fig. 6. a ground plan of a curvilinear vinery, heated by hot-water. A vinery, with flues and two furnaces, is generally fifty feet long, twelve or fourteen wide within, the height of the back wall being ten or twelve feet. Where there is only one furnace, or where a hot-water apparatus is employed, the length of the house should not exceed thirty-five or forty feet. Small divisions are to be preferred; for where there is a considerable extent of glass, the cultivator, by applying his fires to the different divisions in succession, can prolong the crop from May to December. The parapet wall in front is commonly arched or built on lintels, supported by stone pillars; so that the vines, which are planted inside the house, close by the parapet, may send abroad their roots in search of nutriment. Sometimes the vines are planted without, and introduced into the house by slanting apertures in the front wall; but the former method, where possible, is the more eligible. The trellis used for training, is generally formed of wires drawn across the rafters, at the distance of a foot from each other. Of late the trellis has been divided into portions of a moderate breadth, which are placed vertically under the rafter. This form, exhibited in fig. 1, Plate CCXCI., is called the hanging trellis, and is described at length in the *Lond. Hortic. Trans.* vol. vi. It leaves the middle of the sash open to the sun's rays, and allows the back wall to be covered with bearing wood, a thing which, in other circumstances, can scarcely be done with any beneficial effect. It must, however, be admitted, that, according to the experience of some, this arrangement is inferior to the common trellis.

It is of importance that the included soil and front border of a vinery should be fresh and rich, and of a considerable depth. Mr Griffin (in *Lond. Hortic. Trans.*) recommends as a compost, "one-half of good loamy soil with its turf, one quarter of rich old dung, and one quarter of brick and lime rubbish; the turf well rotted, and the whole well incorporated." Plants raised from cuttings, and prepared for two or three years in pots, are preferred for the furnishing of a vinery; and when planted inside the house, there should not be fewer than two plants to each sash.

It is scarcely necessary to enumerate the particular varieties of the grape-vine, as adapted for a vinery, for every good variety deserves a place where there is room, and all those which have been already mentioned are occasionally planted. It may be remarked, however, that the kinds should be assorted according to the order of their ripening.

The early grapes, such as the Muscadines, should be planted in a house by themselves; those of a medium character, the Frotignacs, for example, may occupy a second; while the late Tokay, the Muscat of Alexandria, Nice, Syrian, and others, would be fit inmates for a third. This would produce a regular succession, and admit a uniformity of treatment in each house. Where there is not a suite of vineries, but only one large house, the late varieties should be planted near the entrance of the flues.

Pruning and Training. Very numerous have been the directions given in reference to these particulars; but we cannot here go into such details, nor is it necessary. The great object is the reproduction of bearing, that is, annual wood, over the whole surface of the house. When this is accomplished, the next matter to be determined is the number of eyes or buds to be left on each shoot, that is, whether we shall adopt the *short* or the *long* system of pruning. The former is most allied to the practice of foreign vineyards, and has been most successfully employed in this country. According to this method, all the lateral shoots are cut down to single eyes, as described in *Lond. Hortic. Trans.* iv. 104. For a particular description of the *long* system, we refer to the same vol. p. 246, or to Loudon's Encyclopædia of Gardening, second edition, p. 548. To these references, we add a few general remarks. (1.) In this country, it ought to be the great aim of the gardener to make his vines grow as luxuriantly as possible; for the quality of the grapes, when properly ripened, is generally commensurate with the size of the berries. The borders should therefore be made rich; but they ought to be rather wide than deep, deep planting being adverse to the ripening of the fruit. (2.) In order to secure a proper degree of vigour, vines should be limited in extent, and pruned rather severely than otherwise. To enable us to circumscribe the plants, it would be well to introduce as many separate plants into the vinery as can be done without confusion. For an illustration of this principle, we may refer to the practice of the *vignerons* of Fontainebleau, as described in the *Pomone Française*, or in the *Lond. Hortic. Trans.* vol. vii. (3.) From the peculiar mode of growth in the grape-vine, the bearing branches have a tendency to recede from the centre to the extremities, and are often found in abundance only at the top of the trellis. Every young shoot near the front of the house should therefore be carefully husbanded, and cut back by way of reserve. Old wood ought to be removed as frequently as possible; and the skilful pruner will look at least two years before him. Nothing contributes more to regularity in the succession of bearing wood, than simplicity in pruning and training; and therefore all bending, and twisting, and traversing of branches should be avoided.

The summer pruning consists in removing with the fingers the useless lateral shoots, and pinching off the tender points of the bearing branches. The extent to which these bearing branches are allowed to run will depend on their vigour, and the position which they hold in the plant. Sometimes it may be needful to leave them ten or twelve feet long, but, in general, two or three feet will be sufficient. The shorter the better. They seldom or never fail to send out secondary laterals from their points: these and the others which succeed them are stopped at the second or even first eye, and the operation is continued until vegetation ceases. When the young grapes begin to swell, the bunches are thinned out, that is, berries are removed wherever they are too much crowded together; and the shoulders or sides of the bunches are supported by slender threads of bass-mat. The quality and weight of bunches should be regarded rather than their number. Nothing seems more contemptible than numbers of small and ill-ripened bunches of grapes, smeared, as they frequently are, with dust and honey-dew. Avarice not unfrequently cheats itself in this matter; and it generally happens in the vinery, as elsewhere, that not he who desires most has most. The ripening, colour, and flavour of grapes on the tree are promoted by removing a portion of the foliage; this is to be done, however, only after the fruit has attained full size.

The forcing of the earliest vinery may commence in January. At first the temperature may vary from 50° to 55° Fahrenheit in the mornings and evenings. When the buds have burst, it may be raised to 70°, and in the flowering season it may be kept at 75°. At this season it is necessary that the air should be preserved moist by frequent steamings. Upon the appearance of colour in the fruit, the waterings cease, and air is copiously admitted. In the early vineries, it is necessary to continue the fire-heat without intermission: in the later houses this is not required, but it must be used occasionally, even in warm weather, to obviate the effects of damp.

The PEACH-HOUSE.—A peach-house, intended to be commanded by one furnace, is generally about forty feet long, ten or twelve feet wide, and fourteen feet high; but these dimensions may be varied considerably, according to the time at which the crop is desired to come into season. For early forcing, perhaps twenty-five or thirty feet in length, and seven or eight in breadth, are sufficient; while a house, in which the operations of nature are only to be slightly accelerated, may be extended to fifty feet. As in the vinery, the front wall is arched, to permit the egress of the roots. Upon this is usually placed a range of upright sashes, which are surmounted by the sloping rafters of the roof. A common form of a peach-house is represented in Plate CCXCI., in which fig. 4. is a vertical section, and fig. 5. is the ground plan; *a*, *a*, are the flues, *b* is the table trellis, *c* the trellis on the back wall; along with which, a hanging trellis, as in fig. 1, is sometimes employed, although this is not approved of by many. The flue, which is built on pillars, and returns on itself, occupies the centre of the house. The trees are trained to the two trellises *b* and *c*, and to the hanging trellis, if such be in use. Against the back wall three or four dwarf trees are planted, with intermediate *riders*, the latter being taken out at the end of four or five years at furthest. These, with three for the front trellis, make in all nine or ten trees for each house.

Plate CCXCII. fig. 1, represents another form of the peach-house, not so generally used as the former, but of equal if not superior merit. We have supposed it heated by a water apparatus *a*, *a*, but that is not an essential matter, as a common flue is equally admissible. There is no front glass, nor any trellis on the back wall, the trees being planted in front, and trained on a wire trellis *b*, attached to the rafters, and covering the whole surface of the roof. As the peach-tree is not found to extend much more than twelve or thirteen feet on the open wall, the length of the rafter, inside measure, need not do more than approach to fourteen feet. It is obvious that in such a house the trees must enjoy an equable, and, from their proximity to the glass, an advantageous degree of light. Besides being planted close to the front wall, they are not exposed to have their roots stunted in passing under flues, and through the interior soil of the house, which, in spite of every assiduity in watering and manuring, becomes hard and impoverished. Further, it has been estimated, that as far as roof and glass are concerned, four or even five such houses may be erected, at the same expense as three of the common form.

In Holland, peaches are forced in pits resembling the common hot-bed or melon-pit. The trees are trained on a trellis-work near the glass, and the air is heated by the fermentation of dung-linings. The method has been partially adopted in this country, with, however, the use of hot water. When garden-architects shall cease to be anxious about making all forcing houses ornamental structures, this will probably be the general form in which early and tender peaches will be cultivated.

The pruning and training of peach-trees in the peach-house does not differ materially from the practice out of doors. Fire-heat is commonly applied about the beginning or middle of February; but where there is a large suite of houses, and an extended succession is wanted, forcing, as it then truly becomes, may begin a month sooner. At first the temperature is kept about 45°, but it is afterwards gradually increased to 50° or 55° Fahrenheit. While the trees are in flower, and till the fruit be set, the house is occasionally steamed, either by sprinkling water on the warm flues, or by admitting the vapour from the pipes, where steam is employed for heating. After this period, the foliage is washed, from time to time, with the garden-engine. When the fruit has stoned, or the kernels have been formed, the temperature is raised to about 60°. Water is now copiously supplied to the border; the fruit is thinned out; the various operations of disbudding and tying are performed, and air is admitted in abundance. After the end of April, little fire-heat is required for the peach-house. The trees often suffer from mildew: the best preventives consist in keeping the borders of the peach-house clear, and in good condition as to fresh soil, and in observing that nothing be permitted to obstruct the free circulation of air and full admission of sun.

It may here be remarked, that by curious cultivators several uncommon kinds of exotic fruits are occasionally grown with success in conservatories, vineries, hot-houses, or other glazed structures, along with the more regular or usual inmates. Among these may be mentioned the Loquat, *Eriobotrya japonica;* the Jamrosade *Eugenia jambos;* the Purple Granadilla, *Passiflora edulis;* the Granadilla vine, *P. quadrangularis;* the May-apple, *P. incarnata;* the Water-lemon, *P. laurifolia;* and the Sweet Calabash, *P. maliformis;* the Papaw, *Carica Papaya;* and the Banana, *Musa sapientum.* The Leechee, *Nephelium Litchi,* has ripened in our stoves; the Long-yen, *Euphoria longana,* has yielded its fruit at Syon-House; and the Mango, *Mangifera indica,* at the garden of Earl Powis. The China Guava, *Psidium cattleianum,* fruits freely in the vinery of the Experimental Garden at Edinburgh: the fruit is round, about the size of a small plum; of a fine claret colour; the pulp soft, only a little firmer than that of a strawberry, and of a delightful subacid flavour, making a most desirable preserve. The Carambola, *Averrhoa Carambola,* of the East Indies, has of late been added to our exotic fruits, by Mr Bateman of Knypersley, near Congleton: the fruit is of the size and shape of a duck's egg, but with longitudinal ribs on the sides; either in tarts or as a preserve, the flavour is described as exquisite. It may be noticed, that, both from the descriptions of intelligent travellers, and from the preserved fruit being sent to Britain, we know that numerous species of exotic fruit-trees exist, which have not yet reached us in a living state; and the introduction of these might form an object of innocent, pleasing, and commendable ambition to enterprising and wealthy horticulturists.

The CHERRY-HOUSE, in its general arrangements, resembles the peach-house, with the exception of the front trellis, the place of which is commonly occupied by a stage for pots of early strawberries or kidney beans. The cherry-trees are trained against the back wall: the house should therefore be narrow, and the roof steep. The operation of forcing generally commences early in January, with a very moderate temperature. Air is admitted freely till the flowers begin to expand, when great caution becomes necessary. When the fruit is setting, the temperature is kept as steadily as possible at 50°: after it is set, abundance of water is applied to the roots and foliage of the trees. When the fruit is colouring, water is almost entirely withheld, and air is now freely admitted. During the whole process of forcing cherries, any excessive heat from the sun's rays must be carefully guarded against, by shading or by admitting of air. The kind of cherry usually preferred for forcing is the Common May-duke. A cherry-house ought to form a part of every large garden establishment; for nothing better distinguishes the tables of the opulent, in March and April, than ripe cherries and strawberries appearing in the dessert at that season of the year.

The FIG-HOUSE scarcely differs in form and management from the Cherry-house, the trees being trained to a back trellis, with the addition, however, of dwarf standard trees in front. At Kew there is a fig-house fifty feet long. Here the second crop is often the most productive. In 1810, we are told the royal tables were supplied with more than 200 baskets of figs, 50 of which were from the first crop, and 150 from the second. It is seldom, however, that a separate house is erected for this fruit. The fig succeeds very well as a dwarf standard between the front flues of a vinery, provided the roof be not too closely covered with the foliage of the vines. Of late, small standard figs have very commonly been grown in large pots, fourteen or fifteen inches in diameter, and placed in any of the forcing houses. In this way considerable crops of fruit have been raised. The *Figue blanche* and the *Marseilles* are the sorts best adapted for forcing.

The ORANGE TRIBE (*Citrus*) are cultivated in Britain, rather as objects of curiosity and beauty, than for the purpose of affording a supply of fruit. Commerce with Portugal, Spain, Italy, and China, has brought this class of fruits within the reach of every one; and the copious importations which annually take place, have no doubt discouraged the cultivation of the plants. A few orange trees are nevertheless to be met with in most collections, and in large and sumptuous gardens, it is not uncommon to meet with glazed houses set specially apart for their reception.

The following brief notices of some of the cultivated species of the genus Citrus are derived principally from Mr G. Don's General System of Botany and Gardening, a work evincing singular accuracy and unwearied research, and from M. Risso's excellent paper in the *Annales du Muséum,* vol. xx.

C. Medica, the Citron, the Cedrate of the Italians, is a small evergreen tree. The fruit is large, of an oval form, and covered with a rough skin or rind, which is charged with a highly fragrant oil. The citron is generally used in confections. It is supposed to be a native of Media, and will scarcely ripen without protection in Britain. Three subvarieties of citron are described by Risso.

C. Limetta, the Sweet Lime. This is rather a tall tree, with diverging branches. The flower is of a fine white colour, composed of five oblong petals. The fruit is globose, with a black nipple-like protuberance at the apex, having a firm rind, and sweet pulp. The colour is pale yellow. It is a native of Asia, but cultivated in Italy. Seven varieties have been described.

C. Limonum, the Lemon. The petioles of the leaves somewhat winged; fruit oblong, with a thin rind adhering closely to the very acid pulp. This, like the preceding, is a native of Asia, but is cultivated in the south of Europe. There are numerous varieties.

C. Aurantium, Sweet Orange. The petioles almost naked; fruit globose, with a thin rind, and sweet pulp. Risso has enumerated nineteen varieties; of which the principal are, the China, the Portugal, and the Maltese.

The last has a blood-coloured pulp, with rich juice, and is now in much request.

C. vulgaris, Seville or Bitter Orange. The petioles winged; fruit globose, with a thin rind, and bitter juice. This sort is employed in making marmalade, and is also used in medicine. Twelve varieties have been described.

C. Decumana, the Shaddock. The petioles broad, with cordate wings; fruit large, weighing from ten to fourteen pounds, with a thick rind. This fruit was carried by Captain Shaddock from China to the British West Indies, where it first acquired the name which it now bears. It is now cultivated not only in the West India Islands, but extensively in South America. Four sorts are enumerated. Of all the Citrus tribe, this has the most beautiful foliage, and it is therefore not improperly selected for filling the back wall of a vinery.

The orangery, in this country, seldom differs in form, even where it is a separate structure, from that of the greenhouse. Most commonly the few orange plants which are kept, are grown in pots or boxes, and occupy a place with other exotics on the greenhouse shelves. At some places the orange trees are planted in conservatories erected for the purpose. In the neighbourhood of Paris, the orangeries are little better than dark sheds, in which the trees are kept protected during the winter months, light and air being given when the weather permits. At Woodhall, in Lanarkshire, they are trained against trellisses, under glass, and in this way produce abundant crops of fine fruit. We have there seen a single plant of the St Michael's orange, twenty-four feet wide and eighteen feet high, clothed with fruit.

Middle-sized plants are frequently imported from the Italian nursery-gardens, and this is the readiest way of procuring large specimens at a cheap rate. The plants are closely packed in boxes, with some grass or moss around the roots. Upon their arrival they are in a withered and dead-like state, and require considerable care and management to recover them from the effects of the voyage. When propagated in this country, they are budded on citron or Seville orange stocks; the former recommended by Miller as preferable. The seeds of the stocks are sown in pots, and the growth of the seedlings is aided, during the first and second summer, by the application of a slight bottom heat in a hot-bed frame. These are usually budded in August. The late Mr Henderson, gardener at Woodhall, used to graft his trees, employing scions formed of the wood of the second year. He also propagated by cuttings, considering this the quickest mode of obtaining plants. We may add, that this most successful cultivator of the orange tribe made it a rule to keep his trees rather cool, and with plenty of air in mild weather, till the fruit was fairly set; after which he found that he could apply more heat without the risk of the fruit failing.

The orange tree prospers in a rich, fresh, and rather strong soil; and in this country it is the practice to mix with it a considerable portion of well rotted dung. When grown in pots or boxes, the plant should be shifted, and the earth partly renewed every spring. In summer, copious waterings are given, and the leaves are syringed once or twice a-week. The heads are kept thin, and the branches which inconveniently cross each other are removed. When planted against trellisses, they are trained in the fan form; and in laying in the shoots, allowance is to be made for the size of the leaves in the different species.

The Pine-apple (*Bromelia Ananas*) is comparatively of recent introduction into Britain. It was nearly unknown to our horticulturists in the beginning of the eighteenth century; for Thoresby, the antiquary, kept a leaf of the pine-apple in his museum as a curiosity. It is now largely and successfully cultivated in all the principal gardens in this country. Its culture requires all the ingenuity, judgment, and watchfulness of the skilful and diligent horticulturist. We shall, therefore, treat of it at considerable length. It derives its name from the general resemblance of its fruit to a large cone of a pine-tree. The fruit is a kind of pulpy strobilus, formed of coadunate berries, and crowned at top with a tuft of fine green pointed leaves. The flavour of the pulp is of the most exquisite kind. The plant is herbaceous, and the fruit-stem, which generally appears in the second or third year, is surrounded with long serrated leaves, resembling those of some species of aloe. The fruit grown in Britain is considered equal in all good qualities, and generally superior in size, to that reared in tropical countries. The *Lond. Hortic. Catalogue* enumerates 56 varieties: of these the following may be deemed most worthy of notice.

The *Queen Pine* is very generally cultivated. Its fruit is of a cylindrical or tankard shape, of a yellowish colour inclining to orange, and sometimes weighs three pounds: it is, at the same time, of excellent flavour. This kind produces with greater certainty than most others, and the fruit may be easily ripened in fifteen or eighteen months, from the planting of the crown or offset. It is, therefore, the most useful of all the pines. A subvariety called *Ripley's Queen* is also excellent.

The *Black Antigua* has leaves armed with large spines; the flowers are purple; the fruit cylindrical, averaging five pounds weight. It should be cut a little before it be quite ripe.

The *Black Jamaica*, or *Old Jamaica*. In this variety the spines on the leaves are small; the flowers purple; the fruit oblong, averaging about four pounds. This is an excellent kind, and is considered the best sort for fruiting during the winter months.

The *New Jamaica* is rather an inferior kind, but is pretty good when ripened in the summer time.

The *Brown-leaved Sugar-loaf* is a capital black variety; and the *Enville* a large, shewy, and useful pine.

The *St Vincent's*, or, as it is sometimes called, the *Green Olive*, has middle-sized spines, purple flowers, and pyramidal fruit, which average about two pounds and a half. It succeeds well to come in as a winter fruit.

The *White Providence* has small spines, dark purple flowers, and oblong fruit of a large size, averaging, when well grown, seven pounds weight, and sometimes exceeding twelve pounds. The colour of the fruit is at first brownish-grey, but at ripening it becomes of a pale yellow. The pulp is yellow, melting, and abounds with quick lively juice, but is not equal in flavour to some of the other kinds.

The *Trinidad* is remarkable for the great size of its fruit, which are said to attain sometimes to the weight of twenty-six pounds. Its average is stated in the *Hort. Cat.* to be twelve pounds. The spines are middle-sized, the flowers lilac, and the fruit pyramidal. Apart from its magnitude, it is, like the preceding, only a secondary fruit.

The following may also be named as first-rate sorts: Bagot's Seedling, Russian Globe, Green King with smooth leaves, Striped Queen, Sierra Leone, Brown Sugar-loaf, and Orange Sugar-loaf. And three or four more, though of inferior quality, may be noticed for their beauty, or curiosity, viz. the Blood-red, Otaheite, Scarlet, Welbeck Seedling, and the Havannah, the fruit of which last keeps long, and has sometimes been imported into this country from Cuba.

Structures for growing Pine-apples. The ananas plant has generally been found to require cultivation for two or three years before it perfects its fruit: its culture has, in consequence, been divided into three periods,—propagation, successional preparation, and fruiting; and each of these periods has its corresponding structure, viz. the nursing-pit, the succession-house or pit, and the fruiting-house.

The *nursing-pit* has occasionally assumed a great variety of forms, respecting which, however, it is not necessary to go into minute detail. For summer use, a large glazed frame, placed upon a hot-bed of stable litter and tanners' bark, is perhaps the best hitherto devised. The Alderston Melon-pit, and Atkinson's Melon-pit, described under the head Melonry, are likewise very suitable for this purpose. In winter, it is desirable to have the assistance of fire heat, either from flues, or, what is better, from hot water; though this fire heat is not indispensable.

The *succession-pit* performs the same functions as the nursing-pit, but at a more advanced stage of the growth of the plant, and consequently requires an increase of size. With this difference, Atkinson's Melon-pit does very well for summer use. In colder seasons, we should prefer a pit similar to that represented Plate CCXCII, figs. 2 and 3, in which a hot-water apparatus on the siphon principle is employed. The plants are plunged in *a* (fig. 2), being a bed of sand or fine gravel; *b* is the boiler; *c* pipes for supplying the bottom heat; *d* exposed pipes for warming the included air. If the common bark-bed is preferred, the pipes *c* may be omitted. This pit may be fifty feet long, and seven wide. The sashes are raised from without, as in the common hot-bed. This plan is from the pencil of Mr Charles H. J. Smith, a young but very promising garden-architect, of whose assistance the writer of this article has had much satisfaction in availing himself in the designing of the plates. Mr Smith also proposes another form of a succession pit, exhibited in Plate CCXCII, fig. 11, entirely heated by hot-water. The surface heat is supplied by pipes in front; the bottom heat is kept up by small pipes from the boiler, passing through cisterns of water extending the whole length of the pit. In this case it would be necessary to apply the heat only during the day. The old succession-house, or that generally in use till within the last fifteen years, does not differ materially from the common pine-stove; but, owing to its great waste of heat, it either is or ought to be entirely laid aside.

In the *fruiting-house*, more room, greater height, and a more powerful temperature, are requisite; and to attain these objects, many varieties of structure have been devised: we shall notice those only which are most worthy of attention. Fig. 4, Plate CCXCII. is a section of Baldwin's Fruiting-pit. The roof is unequally ridged, the north or shorter side being slated and furnished with ventilators, to admit air. The sashes are immovable, and the laps of the panes are closely puttied. There is a path within, and a single turn of a flue behind. We should prefer the form exhibited by fig. 5. of the same plate, in which there are also ventilators *a a*, and a hot-water apparatus surrounding the whole pit. The dimensions of this may be fifty feet long, and nine feet wide; the glass being two feet and a half from the curb of the bark-pit in front, and five feet behind. Fig. 6. is a section of a pine-pit with a curvilinear roof, in which the astragals are parallel. A segment of an elliptical arch somewhat less than a quadrant, the origin of the curve being on the front wall, seems better adapted for a pit than any portion of a circle. This pit is supposed to be heated by a small steam-pipe passing through a large iron tank or cistern *a*, filled with water, on the same principle as exhibited in Plate CCXC, fig. 13. A section of the old-fashioned pine-stove is given in Plate CCXCII, fig. 7. This is a lofty structure, in the vinery form, with front sashes. It used to be forty or fifty feet long, and twelve or fourteen feet broad, and was commanded by two flues. In addition to the pine plants in the pit, the roof is also partly covered with vines, a practice justly condemned by Nicol. We are also disposed to agree with that experienced writer regarding the disuse of the pine-stove itself. Besides other grievous faults, a single house affords too little room; and it is a matter of experience, that where the stock of pine plants is not extensive, certain and abundant crops of fruit cannot be expected. Instead, therefore, of a succession and fruiting-house of the old form, with two fires each, it would be better to have four pits with single fires. There might be two succession-pits of the form of fig. 2. or fig. 11, Plate CCXCII, and two fruiting-pits similar to fig. 5. or fig. 6. These would contain a much greater number of plants than two pine-stoves, would be little more expensive in erection, and, as the number of fires is the same, would not consume much more fuel.

Bottom Heat. As a substitute for the warmth absorbed by the earth, from the powerful rays of the sun in tropical countries, the pots of pine-plants are generally plunged in a bed of tanners' bark, decaying leaves, or other fermenting substances. Tanners' bark is most commonly used. Speechly and Nicol prefer leaves shed by hard-wood trees in autumn. Others form the under and greater part of the bed with stable-litter. Whatever substance is employed, it should not be put into the bed until the first violent heat of fermentation has passed; or if circumstances impose a necessity of using it in a recent state, it should be largely mixed with old materials of the same kind. A layer of exhausted bark, ten or twelve inches thick, should be laid on the surface of the bed. In pine stoves, the curb of the bark-pit is usually elevated about three feet above the common level of the house, and has a gentle slope towards the front; in pine-pits, however, it approaches more closely to the glass. The bark is commonly five or six feet deep; but it may be questioned whether this depth is not excessive and unnecessary. A bed about three and a half feet deep would probably be more convenient, and afford a heat sufficient both in intensity and duration for any useful purpose.

We have already shewn how a system of tubes transmitting steam or hot-water may be made available to the production of bottom heat. There is another method worthy of at least a cursory notice, which is all that we can afford it. Its invention is due to Mr M'Murtrie, and the apparatus is described at length in the *Lond. Hort. Trans.* vol. vi. His contrivance will be understood by an inspection of his pine-pit, of which a section and plan are given in Plate CCXCII. figs. 8 and 9. A shallow bark bed, about two feet deep, rests upon an arched chamber of single brick. 1 is the fire-place; 2 a fire-flue running along the whole length of the chamber 4, which is also kept full of steam by means of the boiler and pipe 3; the apertures 5 admit steam and heat into the air of the pit, and of these there is one, both in back and front, under each sash, capable of being stopped at pleasure. The waste-pipe 6 allows the steam to escape, when the apertures marked 5 are shut. By the return of the flue 2, the atmosphere of the house is heated; and by the joint action of the inclosed part of the flue, and of the steam in the chamber, an abundant and salubrious bottom heat is easily maintained.

The proper management of bottom heat is a matter of some difficulty, and in this there have been more failures than in any other part of the pine-apple culture. The heat arising from violent fermentation, is greater than the tender roots can bear, and if all watchfulness be not employed, the labour of many months may be blasted in a single day. Mr Knight has discarded bottom heat altogether; but he has not succeeded in convincing others that pine-apples can be grown equally well without it. Bottom heat is, however, almost universally kept too high. Perhaps the upper limit of its temperature may be fixed at blood-heat, or at most 100°, while the under or winter limit may be brought down to 70° or 75°. Gardeners are accustomed to judge of the heat of the bed, by means of long sticks pushed into it; these are occasionally drawn out and felt by the hand, and a rough guess at the temperature is thus obtained. A far preferable method is to employ a slow thermometer slightly cased in wire.

Forcing Garden.

Soil. Various nice and minute directions have been given respecting composts for ananas plants. Any compost, however, will be found suitable, which is at once rich, fresh, and simple. Perhaps a mixture of the top-spit, including the turf, of an old pasture, and about a half of good, well-rotted dung, combines these qualities as completely as possible. When it is necessary to lighten these materials, a compost of decayed leaves, and a little sand, may be added. It is of importance that the compost, whatever it may be, should be prepared a considerable time beforehand, and frequently turned over. It should be broken with the spade, but not screened; and when used, it should not be too moist. Pine-apple plants are found to shew fruit more readily in a rich light soil, than in strong loam, but do not produce large fruit. In selecting his compost, the cultivator must make his selection between these advantages. At all events the soil must be rich; it can scarcely be too rich. "The pine," says an intelligent writer in the Gardener's Magazine, vol. ix. "is a gross feeder, and will thrive in vegetable manure, however rich and fresh." Liquid manures have been applied; but these, however useful when recent, prove deleterious in a fermented state.

Propagation. The ananas is propagated by planting the crowns or tufts which grow on the fruit, or the suckers which appear at the base of the stem. These, when removed from the fruit or the stem, are laid aside for a few days, till the scar at the place of separation have dried or healed, a precaution to prevent their rotting; after which they are potted immediately. Sometimes late in the season, they are merely thrust into exhausted tan, without pots, where they remain till the following spring. In general the offsets should be as large as possible. Speechly did not break off his suckers before they were twelve or fourteen inches long, and he reserved only the largest crowns. These large suckers and crowns grow with greater rapidity, and come sooner into fruit, than those of smaller size: and in this, in truth, consists the principal secret of what has been called the short method of culture, by which fruit is obtained in a much briefer space of time than usual. The soil employed in propagation is rather lighter than that afterwards applied. The pots may be from three to six inches in diameter, and, to promote draining, should contain at bottom a layer of shivers or clean gravel. For some time the plants are shaded from the rays of the sun, and in about eight or ten days they receive a little water. As already stated, the older and more common routine of pine-apple culture embraces a period of three years; but recent improvements have reduced these to two years, or even to eighteen months. This has given rise to two modes of preparatory management, which we shall notice separately, premising that the treatment in the fruiting-house is the same in both.

Triennial Course. The plants which were potted in autumn, are kept in the nursing-pit during winter, with a mild temperature, a slight bottom heat, and a sparing allowance of water. About the beginning of April they are transferred into larger pots, and are commonly shifted into hot-beds or pits heated with stable dung, in which they are found to prosper exceedingly. Air is given every day, and is copiously admitted, as soon as the sun's rays have acquired considerable power. During summer the average morning temperature may be from 70° to 75° Fahrenheit, but in sunshine it may be allowed to rise to 85°, 90°, or even more. The heat is maintained by adding occasional linings of stable litter, and, when it is exhausted, the plants are transferred into other beds or pits, more recently made up, and in which fermentation is going on. In flued nursing-pits the management is precisely the same. The bottom heat is aided by fresh additions of tan. As nothing is to be dreaded from damp where there is a command of fire-heat, more copious waterings may be given, and the plants may be syringed over head, or slightly steamed, by throwing water on the flues. It is not very common to shift the plants in the nursery during summer; but it is a good rule to have recourse to that operation as often as the roots begin to mat on the sides of the pot. Before the end of autumn, the young plants become vigorous. The lower part of the stalk should then be thick, the centre or funnel formed by the leaves should be upright, open, and rather short, and the leaves themselves not long nor very numerous, but broad, stiff, succulent, and free from contortion and deformity. Towards the end of autumn, the plants are taken into the succession-pit, which, in fact, is only a nursing-pit on a large scale. The temperature for winter should be about 60°. About the middle of March, they are shifted into pots nine or ten inches in diameter. At this period, it is not uncommon, in compliance with the recommendation of Abercrombie and the other older authorities, to cut away the whole of the roots, and to re-pot the plant somewhat in the capacity of a sucker. The reasons alleged for this extraordinary practice are, that the pine-apple plant is continually pushing out roots at the surface, while those below are rapidly dying; that the soil, in the course of three years, becomes completely exhausted; and lastly, that this treatment prevents premature starting in the course of the second year. This last reason is very questionable, and it assumes that ananas plants *must* be treated for three years before they produce fruit. There is some force in the other reasons, but they do not prove the absolute necessity of the practice. Roots may be pruned without being removed altogether. The earth may be shaken almost entirely away, and replaced by fresh compost, at the expense of only a few fibres. Again, if, at every shifting, a small portion of the earth be taken from below, as florists treat auriculas in pots, at the end of two years scarcely any portion of the original soil will remain. The grand objection to the operation is, the great and unnecessary check to vegetation, and the consequent stuntedness of habit, which, in succulent plants of such an age, is scarcely remediable. That it is possible to grow ananas without cutting away the roots, is consistent with our own observation, and is borne out by the testimony and practice of Griffin, Appleby, and other distinguished cultivators. When the roots are removed, the plants must be shaded for some time, and be watered sparingly, till they begin to grow freely. The summer temperature should be comparatively warm, the range being from 65° to 70° of fire-heat, or during night, and from 70° to 85° solar heat. Abundance of air is admitted, and the plants are set widely, that they may have room to swell below, and become stout and bushy.

Biennial Course. The method of culture which we have denominated the biennial course, was first brought into notice by Abercrombie, and more recently has been strenuously recommended by Baldwin. Its chief feature is the acceleration of the growth of the plants by the application of higher temperatures than it was formerly supposed they could bear. They are, in fact, made to attain the growth of two summers in one.

About the beginning of March, the most forward of the plants potted over winter, or the suckers kept in tan, are taken out, the earth or tan shaken away, and the roots shortened. They are then put into pots about five inches in diameter, which are plunged into frames or pits heated with tan or stable litter. They are shaded as usual, and after they begin to grow, receive moderate waterings. When the roots appear around the balls of soil, which will be about the middle of June, the plants are again shifted into larger pots, from six to seven inches in diameter, and, if the heat be declining, are removed into other pits or beds. In the beginning of August they are transferred into larger pots, in which, unless they are intended for early spring forcing, they stand during the winter; and in February they are finally shifted into pots twelve or fourteen inches in diameter. For spring forcing, the last shifting takes place in October, and the pots may be two inches narrower. At every shifting the ball of earth is preserved entire. From March the temperature is gradually increased; little air is admitted, even in strong sunshine, and a lively bottom heat is kept up by means of repeated linings. When there is danger of burning the roots, the pots are partially drawn up, or even set upon the surface of the tan. The following table will give an idea of the temperature (Fahrenheit's thermometer) and its progressive increase:

	During Night.	During Day.
March......	60° to 70°	70° to 80°
April........	70 — 75	80 — 85
May.........	75 — 80	90 — 100
June........	80 — 85	100 — 120

After the beginning of July, the heat is allowed to decline by degrees, until it arrive at the winter temperature of 60°. It is to be understood, however, that these temperatures regard only stable dung or tan heat; and that too applied to crowns, as the larger suckers seldom require more than 100°. Where fire-heat is used, and it should always be through the medium of hot-water, the nocturnal temperature should only approach towards 80°; and there should be some expedient for the *slow* immission of steam into the atmosphere of the pit. During the whole summer care is employed to prevent the plants from being *drawn*, and for this purpose they are allowed much space, and are placed as near the glass as possible. In August and September abundance of air, and more copious supplies of water, are given. In winter the chief care is to preserve the roots from damping off, and for this reason, though it is not the common practice, we should prefer winter pits having at least the command of fire-heat.

This mode of *driving*, as it has been significantly called, is applicable only to the varieties called the Queen, and Ripley's New Queen. The large growing sorts require a longer period. For this reason it is desirable that both courses of culture should be carried on at one time. The large varieties might be consigned to the triennial course, while the vacancies in either might be made up from the other. That this is practicable, at least in gardens where there are two fruiting houses, may be seen from the tabular compendium of culture given below.

Fruiting-House.—About the beginning of August, the plants, now two years old, are shifted for the last time. The pots are from twelve to fourteen inches in diameter, and the balls are preserved entire. About eight or ten days previously, the bark-pit of the fruiting-house has been cleared out, the old tan screened, if necessary, and fresh material supplied. The pots are then plunged into the bark as deeply as can be done with safety, and the plants are so treated as to keep them in a growing state during the whole of autumn. In winter, the nocturnal temperature is kept at 60°; but towards the end of January it is gradually raised to 70°. This rise, however, should follow, and not precede or be a cause of, the vernal growth of the plants. About the middle of February, the second fruiting-house may be prepared, for the reception of the plants in the biennial succession pit. These are existing in a mild temperature, and start during the general progress of the season.

That period at which pine-apple plants first shew their fruit-stalks, or, as it is technically termed, *start*, is the most critical in their whole culture. It is generally desirable that this should happen at a certain age, and at a particular season; but these are circumstances over which the cultivator can scarcely be said to have a direct control, and accordingly, while the most successful can hardly deem themselves beyond the reach of failure, the less skilful are almost sure to err. We are not aware that the *rationale* of starting has been investigated on the principles of vegetable physiology; and it is certain that the most absurd practices have been resorted to, in order to force the plants into fruit. We pretend not to give a theory: but a few practical remarks may be of advantage. It is evident, then, that the plant must be of a certain age, or at least of a certain magnitude, before it will start freely or to good purpose. Suckers of the first year are wholly taken up with the production of roots and foliage; and if any of them happen to start, they exhibit little more than a tuft of leaves where the fruit should be. In the second year a Queen pine is capable of producing a perfect fruit; and in the third year the New Providence and other large varieties arrive at puberty. The solid part of the stem is then observed to have increased in bulk, and to have ascended considerably above the soil. It is of more practical importance, however, to remark, that the fruit-stalks do not appear until the pot is filled with roots. Apparent exceptions there may be to this principle, but in every case where it does not hold good, the plant will be found to be diseased, or the roots to have been violently destroyed. The grower should therefore take care that the roots shall have nearly occupied all the new soil before the end of autumn, and that in the course of the winter the tender fibres be not exsiccated by drought, or rotted by excessive moisture. Again, it is probable that at starting there is a peculiar check in the growth of the plant, which causes it to divert the sap from the formation of leaves, and, like most other vegetables in straitened circumstances, to provide the means of reproduction, by throwing out flower-buds. This diversion of the sap is influenced by the quantity of vigorous fibres, for it is observed that when, from some accident, plants not well furnished in this respect, do shew fruit, they bestow the greater part of the sap upon the leaves. Further, it is not a mere suspension of vegetation, otherwise fruit would be produced by every plant which has had the roots cut from it in the manner noticed above. Lastly, it is probable that the proper check consists in a transition from growth, however slight, to a temporary suspension of vegetation, which again is followed by a copious flow of the sap, circumstances which, as might be easily shewn, occur both in the winter and summer starting. If these imperfect observations be correct, it follows that starting is a natural process, requiring certain conditions in the state of the plant, and therefore not to be forced by violent treatment, or any sudden changes in temperature and watering.

After the plants have shewn fruit, they are never shifted; but the surface soil may be removed, and replaced by a little fresh and rich compost. Water is supplied from time to time as necessity requires; but it is impossible to give any definite rule on this subject. The observant gardener will soon, from experience, discover the proper measure. Water should never be given in a colder state than the average temperature of the house; when, therefore, there is no tank within the house, the watering-pots should be filled, and left in the house for some time before the water be applied. Fire-heat is kept up either continuously or at intervals, during the greater part of the season. It should always be moderate, never exceeding, by itself, 70°. During sunshine, the temperature may range from 70° to 100°. The greater proportion there is of the latter the better. Whilst the fruit is swelling, care must be taken to carry on the growth of the plant with equability and moderation. Violent checks are pernicious: they debilitate the stalk, and cause a stringiness in the fruit. As the fruit approaches maturity, water is gradually withheld, lest the flavour should be injured. Pine-apples should be cut a short time before they attain complete maturity. The

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larger varieties will keep only a day or two; the smaller varieties a week or more.

The following tabular compendium is from Abercrombie, altered, however, in some of its details, to suit the idea of two crops a-year. To execute this plan, two fruiting-houses or pits, and one succession-pit, would be required, together with a variety of hot-beds, or pits for the nursing department. It is necessary to premise, that crowns and suckers are usually potted soon after they are taken off, and that August 15. may be considered the date at which the whole operations of potting should be finished. When there is only a biennial course, it commences from about February 14.

COMPENDIUM OF THE CULTURE OF ANANAS.

TRIENNIAL COURSE.	BIENNIAL COURSE.
Nursing Pit.	*Nursing Pit.*
1833. Aug. 15. Crowns and suckers of the New Providence and other large varieties planted: also small crowns and suckers of the Queen pine. 1834. Feb. 14. Small off-sets of the Queen pine dibbled into the tan. April 1. The above potted, or re-potted; the balls of earth preserved entire. July, Aug. } The intermediate shifting: time determined by expediency.	1833. Aug. 15. Large crowns and suckers of the Queen pine planted. 1834. Feb. 14. Large off-sets of the Queen pine dibbled into the tan. Mar. 15. The above potted, or re-potted; the earth or tan is shaken away, and the roots pruned: the pots transferred into hot-beds or pits. June 15. First intermediate shifting. Aug. 1. Second intermediate shifting.
Succession Pit.	*Succession Pit.*
1835. Mar. 1. The plants from the nursing house are shifted into larger pots: the greater part of the earth is renewed, and the roots pruned. June 1. Second intermediate shifting.	1834. Oct. 1. Plants introduced from the nursing pit; but not shifted unless intended for early spring forcing.
Fruiting House.	*Fruiting House.*
1835. Aug. 15. Between this period and September 15, the plants, after having been shifted into full-sized pots, are introduced from the succession-pit. 1836. March. The surface of the pots are top-dressed. 1836. June, Aug. } Fruit ripens, and the course concludes.	1835. Feb. 15. Plants shifted for the last time, and introduced from the succession-pit. 1835. Sept., Dec. } Fruit ripens, and the course concludes.

The MELONRY—a department deriving its name from the melon, the principal plant cultivated in it—is an important appendage of the forcing garden. After noticing some of the most necessary apparatus employed in it, we shall treat of the melon, cucumber, &c., and their culture respectively.

The *common hot-bed frame* is most usually employed, and is so well known, as scarcely to require description. It is a rectangular box, with sliding sashes, which are single, in pairs, or in threes. The length of the sash is five or six feet, and its breadth about three feet and a half. The back of the frame is about double the height of the front, and the slope is set towards the south. When used, it is placed on a bed of fermenting stable litter, from three to six feet in thickness, according to the purpose to which it is to be applied, or the severity of the season.

The Alderston Melon Pit, of which fig. 6, Plate CCXCIII. is a section, is partly above and partly below ground. The front and back walls *a*, *a*, are of brick, supported on piers or stone pillars: *b*, *b*, are spaces inclosed within outer walls, and covered with boards to contain linings, which communicate, without any object intervening, with the fermenting substances in the interior of the pit. These spaces may be two feet wide: the interior pit should seldom be more than six feet in breadth. A principal quality of this structure is its neatness and cleanliness. *Caled. Hortic. Mem.* vol. ii. p. 217.

West's Melon and Cucumber Pit is also built of brick. It has, Plate CCXCIII. fig. 7, a chamber *a* to contain dung; *b* a square opening by which the dung is introduced; *c* rafters of wood or cast iron, sustaining the interior soil; *d*, *d*, openings to permit the ascent of steam. The walls are nine inches thick, and the pit may be seven feet wide inside measure. *Lond. Hort. Trans.* vol. iv. p. 220.

Atkinson's Melon Pit, Plate CCXCII. fig. 10, is a brick structure. The back wall *a* and the end walls are four inches thick, built in the pigeon-hole fashion, that is, with square interstices between the bricks. The front wall *b* is double: the interior portion is brick in bed, the exterior brick on edge, with piers under each rafter. The included space communicates with the inside of the bed *c*. The pit *d* is filled with fermenting litter or tanners' bark: *e*, *e*, are spaces for linings. This pit, according to the experience of the Horticultural Society of London, has been found "far superior to any other yet constructed." *Trans.* vol. vi. p. 373. The whole is sometimes formed of wood, or sometimes only the part above ground.

Besides these, pits constructed on the principles exhibited in Plate CCXCII. figs. 2 and 11, may also be employed.

The extent of the melonry must depend upon the size of the garden, and the amount of the demand. Where there is a large family, and especially where pine-apples are cultivated (to the forwarding of which some portion of the melonry may frequently be auxiliary), sixty or seventy sashes may be considered as a moderate complement.

The MELON (*Cucumis Melo*) has long been cultivated in Britain, but the period of its introduction and its native country are not well ascertained. The plant is a tender annual, requiring considerable care and skill to rear it in perfection; but it repays the labours of the horticulturist by affording a large, and to most persons a highly palatable fruit. The varieties are numerous, and, from their tendency to sport or vary, are rather fugitive in their duration. Many of the old favourites have disappeared, and those at present in vogue will doubtless take the same course, or will at least assume new forms, while they retain their old names. In these circumstances, it is deemed unnecessary to enter into minute description, or to do more than give a list of the sorts at present deserving of cultivation. It may be premised, that they all belong to the species usually called the Musk-Melon. The Water melon

(*Cucurbita Citrullus*) appertains to another genus, and is seldom reared in this country except as a curiosity.

- Early Cantaloupe,
- Scarlet-fleshed Cantaloupe,
- Early Polignac,
- Smooth Scarlet-fleshed,
- Golden Rock,
- Silver Rock,
- Cephalonian,
- Des Carmes,
- Green-fleshed Egyptian.
- Green-fleshed Italian,
- Daree Persian,
- Green Hoosainee Persian,
- Keiseng Persian,
- Sweet Melon of Ispahan.

It is important that none but such seeds as have been procured from approved genuine specimens of the several sorts should be sown. In general, the fresher or more recent that garden seeds are, the better; but the case is different with the melon. Here it is desirable that the seeds should have been kept in a dry state for some years: it is found that plants produced from recent seeds push too vigorously, sending their shoots to a great length before they shew a single fruit; while those from old seeds are less luxuriant in growth, but more fruitful.

The melon succeeds best in a strong, rich soil. A compost, formed of two-thirds of rotted turf, and one-third of old cow-dung, will be found very suitable. This should be prepared for a year or two before it be employed in the melon frame.

There are generally several, perhaps three, successive crops of melons raised in large gardens. It is seldom expedient to sow before the middle or end of January, and sometimes it is soon enough a month later. A seed-bed capable of receiving a frame with a single sash is previously prepared. This bed, composed of fermenting stable litter, should be of considerable thickness, perhaps about five feet. Immediately upon its formation, the frame and sash are placed on it, and they are kept close till the heat begin to rise, when the hot vapour is permitted to escape. Three or four days after the bed has been formed, it is covered over to the depth of three inches with earth prepared beforehand. Rich, light, dry earth, is best adapted for this purpose; and that it may be dry enough, it is proper to use such as may have been protected from rain during winter. A few small flower-pots are filled with the same earth, and kept in the hot-bed, that the soil in them may acquire a suitable temperature. The seeds are then sown in the flower-pots, and covered half an inch deep; after which the pots are plunged a little way into the earth of the bed.

When hot vapour rises copiously, fresh air is admitted by raising the sash a little. The frame is covered every evening by sunset with mats, and is again exposed in the morning about nine o'clock, sooner or later according to the state of the weather. A single mat is sufficient at first, as the heat in the bed is generally strong. In two or three days after the seed has been sown, the plants appear, when the glasses are raised a little, to admit fresh air, and permit the escape of vapour. Unless this be done, the plants are apt either to damp off or become yellow and sickly. To guard against the casualties of the season, and the chance of miscarriage, it is proper to make two other sowings at short intervals, so that, if any accident befall the first plants, the others may supply their place. Two or three days after the plants have come up, they are transplanted into other small pots, only two or three being put in each pot. If the earth be very dry, it is now moistened with a little tepid water. The pots are then plunged into the earth, and much care and watchfulness are employed to prevent the roots from being scorched. When the transplanted seedlings begin to grow, they are watered occasionally in the warmest part of the day. As the heat of the hot-bed declines, it is supported by linings, applied from time to time, around its outer surface. The lining should not exceed fifteen or eighteen inches in thickness, and should rise above the level of the bed, upon the sides of the frame.

About a month after the seeds have been sown, hot-beds or pits are prepared for the reception of the young plants. For the first crop, it is generally found that hot-beds are preferable. These are formed about three feet and a half thick, and of such extent as to receive several frames of two or three lights each. The same precautions with respect to vapour, and other matters connected with the fermentation, are observed as in the seed-bed. When the violence of the heat has begun to subside, the surface of the bed is covered, to the depth of two inches, with dry, light earth; and under the centre of each sash, a conical heap of the same soil is raised to the height of ten inches. By the following day, the earth generally acquires a sufficient warmth, and the bed is ready for the reception of the plants. The pots containing the young plants should be well watered the day previous to their being *ridged out*, to make the ball adhere together, and come out of the pot entire. After the tops of the hillocks of earth have been flattened a little, in the centre of each a hole is made capable of containing one of the balls of earth which is to be turned out of the pots. Some of the pots containing the strongest plants are selected, and the young melon-plants are plunged out, with balls entire, into the ridges or hillocks already mentioned. After this operation has been performed, they receive a gentle watering. The sashes are replaced, and for some time, unless the vapour be strong, little air is given. Care is taken to prevent the tender fibres from being scorched. When the roots begin to show themselves through the surface of the hillocks, a quantity of fresh earth is applied all around them, and in a week or fortnight after, the whole surface of the bed is covered nearly as high as the top of the hills.

When the plants have got two or three rough leaves, the top of the stalklet, which now begins to elongate, is pinched off, and from the axillæ of the leaves lateral shoots are soon shot forth. These are fastened down with pegs, and are so disposed as regularly to cover the surface of the bed. These laterals will sometimes show flowers at the second or third joints; if they do not, they are topped in their turn, and afford laterals, which seldom fail to be fruitful. As these runners advance, they are trained along the surface, and all weak useless shoots are removed. This should be done frequently, as it is found injurious to cut out a great quantity of shoots and foliage at one time. No plant, as has been shown by Mr Knight (*Hortic. Trans.* vol. i.), is more beholden to its leaves, both as respects health and flavour of fruit, than the melon.

It is seldom proper to leave more than one fruit on each shoot, and in the large kinds perhaps not more than four or five fruit should be left on one plant. When the fruit begins to swell, a slate or piece of tile is laid under each, to separate it from the damp soil of the bed. During the process of growth, the fruit is usually turned about once a-week, to expose all sides to the rays of the sun; but, in turning, care must be taken not to twist the foot-stalk, as this would destroy the fruit altogether. At this period water is given with moderation, and abundance of air is admitted. The fruit should be gathered before it be quite ripe. Its approaching maturity is known by the appearance of a number of cracks near the footstalk, and by the emission of a rich odour. It is cut in the morning, and is kept in a cool place till served up; if this precaution be not attended to, there will be a considerable deficiency of flavour.

The average heat required for the successful growth of melons is about 70° Fahrenheit. In the common hot-bed, this is maintained by defending the bed during the night, and by applying linings from time to time. In pits heated by hot-water circulation, this is easily effected at any season; and were it not that the included air is apt to become too dry, especially in winter, when much heat is required, such pits would doubtless supersede the hot-bed frame altogether. At present the old methods, partly it may be from custom,

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are still principally employed. It is unnecessary to give minute directions respecting the management of melons in pits; as, in these, the mode of procedure recommended for hot-beds, with some trifling variations, will also prove successful.

The Cucumber (*Cucumis sativus*), like the melon, is a tender annual, requiring the assistance of artificial heat. It properly belongs to the class of culinary vegetables, being used in salads and pickles, and has long been cultivated in this country. Its culture, however, requires the closest attention of the gardener. The sorts commonly grown are,

The Early Frame,
Long Prickly,
Short Prickly,
Green Turkey,
White Turkey,
White Spined.

Of these, the long and short prickly are well suited for ridges in the open air.

The culture of early cucumbers so much resembles that of the melon, that it would be useless repetition to enter into minute details. The cucumber, indeed, is somewhat the hardier, and therefore in summer requires less heat; but in every other respect the management of the plants is precisely the same. The first crop of cucumbers is generally sown in the end of December, or the beginning of January; a second in March, and a third in June. In summer, cucumber plants, after they have been fairly established, require scarcely any other attention than to thin them out occasionally, and to supply them with water.

Cucumbers, particularly the prickly sorts, are often raised in the warmer months under hand glasses. A cavity is made in a border in front of a wall or other warm place, and is filled with hot dung. This dung is covered with earth, and two or three plants are put into it, and sheltered with a hand-glass. They are watered and dressed from time to time; and by this means a sufficient supply of small cucumbers, or *girkens*, is obtained for pickling.

In the southern counties of England, pickling cucumbers are easily raised without any artificial heat, being sown in drills in the open ground. The earth is made fine and level, and shallow circular hollows are formed with the hand, a foot wide, and half an inch deep in the middle. The distance between each hollow is three feet and a half, and the distance between the rows five or six feet. Eight or ten seeds are deposited in each cavity. This is done in the beginning of June. When the plants appear, they are thinned out to three or four, the weakest or least healthy being rejected. They are watered occasionally, according to the state of the weather. The cucumbers are gathered chiefly from the middle to the end of August. Vast quantities of these open ground girkens are taken to the London market. The village of Sandy, in Bedfordshire, has been known to furnish 10,000 bushels of drilled cucumbers in one week.

Gourds, species or varieties of the species of the genus *Cucurbita*, may be grown like drilled cucumbers, or trained against walls or on pales. Though occasionally used as esculents, they are regarded chiefly as curiosities. The *Succada*, or vegetable marrow, is a very useful sort, and in request for the table, being eaten stewed with sauce or mashed like turnips. It may be raised in an exhausted melon-frame or pit; or it may be sown under a hand-glass, and afterwards transplanted into a good aspect, and trained against a wall or trellis.

The Mushroom (*Agaricus campestris*), though not properly an inmate of the melonry, may appropriately enough, from the nature of its culture, be taken along with the plants grown in this department of the garden. It is a well-known fungus, a general favourite, and esteemed a delicacy during winter and the spring months.

Mushrooms used to be grown in ridges or prepared beds, in sheds, or covered with litter in the open air. Of late years, the Russian form of the mushroom-house has been introduced into Britain by Mr Isaac Oldacre, and is now in very general use. Its arrangement may be seen by inspecting the back part of the vinery fig. 3, Plate CCXCI. Two tiers of boxes, three in each tier, and supported by a strong frame-work, are constructed round the whole house, with the exception of the spaces occupied by a door and two windows. The boxes may be from two feet and a half to three feet and a half broad, and about a foot deep. The house is supposed to be heated by hot-water circulation. In the centre *d* is a narrow pit, by which the house may be worked by means of fermenting litter instead of the hot-water, or in which rhubarb stalks, &c. may be forced. The windows are furnished with shutters to regulate the admission of light, and are moveable, to permit the ingress of air.

Mushrooms are propagated from what is technically called *spawn*, which is a collection of vegetable threads pervading dried dung or other similar substance, having the smell of mushrooms, and apparently the fungus in its undeveloped state. It may be obtained from old pastures, decayed mushroom beds, or purchased from nurserymen in the form of *bricks* charged with spawn. When once obtained, it may, like leaven, be indefinitely preserved. If not otherwise procured, it may be produced, or in a manner generated, by placing quantities of horse-dung and rich earth in alternate layers, and covering the whole with straw, to exclude the rain and air. Mushroom spawn commonly appears in the heap in about two months after the dung and earth have been laid together. The droppings of stall-fed horses, or of such as have been kept on dry food, are found preferable for this purpose.

The old method of growing mushrooms has been referred to above; and, as it has some conveniences, particularly for those who have not extensive apparatus, it may be proper to give some account of it. The beds are formed of horse-droppings which have been laid out for some time without having fermented, and may be made two or three feet broad, and of any length. A layer of dung about eight or ten inches thick is first deposited, and covered with light dryish earth to the depth of two or three inches; then another layer of dung of the same thickness, covered like the former; and lastly a third layer, with its covering. The whole should grow narrower as it advances in height. When the bed is finished, it is covered with straw to protect it from rain, and from the parching influences of the sun and wind. In ten days the bed will be ready for planting or spawning. Pieces of spawn bricks are inserted in the sloping sides of the bed, about four or five inches asunder. A layer of fine earth is then placed over the bed, and the whole is covered with a thick coat of straw. When the weather is temperate, mushrooms will appear in about a month after the bed has been made; but at other times, a much longer period may elapse. The principal things to be attended to are to preserve a moderate state of moisture, and a proper degree of warmth; and the treatment at different seasons must vary accordingly.

Of the many other methods of raising mushrooms, Mr Oldacre's, already referred to, may deserve to be particularised. In forming the compost, he procures fresh short dung from a stable, or from the path of a horse-mill. To this is added about a fifth part of sheep-droppings, or of the cleanings of a cowhouse, or of a mixture of both. The whole ingredients are thoroughly mixed and incorporated. A stratum of the prepared mixture, about three inches thick, being deposited in the boxes already described, is beat together with a flat wooden mallet. Another layer is added, and beat as before; and this is repeated till the beds be rather more than half a foot thick, and very compact. The boxes are then placed in the mushroom-house, or any out-house where a slightly increased temperature can be commanded. A degree of fermentation generally takes place; but if heat be not soon perceptible, another layer must still be added, till sufficient action be excited. When the beds are milk-warm, or between 80° and 90° Fahrenheit, some holes are dibbled in the mass to receive the spawn. The holes are left open for some time; and when the heat is on the decline, but before it be quite gone, a piece of spawn-brick is thrust into each opening, and the holes are closed with a little compost. A week afterwards the boxes are covered with a smooth coating, an inch and half thick, of rich mould mixed with about a fifth part of horse-droppings. The apartment is now kept as nearly and equably at 55° Fahrenheit as circumstances will allow. When the boxes become dry, a little soft water may be sprinkled over them, but sparingly and with circumspection. The more that free air can be admitted, the flavour of the mushrooms is the better; but the exclusion of frost is indispensable. If a number of boxes have been prepared at first, a few only at a time may be covered with mould and brought into bearing, the rest being covered and cropped in succession, as mushrooms may be in demand.

Mr Edward Callow, in a tract on the artificial growth of mushrooms, describes a method in which the pits are wrought by means of dung heat. His structure somewhat resembles Atkinson's melon-pit, only the roof is covered with thatch, and a suite of air-flues is formed within the interior of the pit, with branches crossing the principal bed which occupies the floor. Linings of fermenting litter are applied on the exterior of the house at the back and front. The atmosphere of the pit, in the earlier stage, is kept at 55° to 65° Fahrenheit, and when the bed is in full bearing, about 70°. The other details of this method scarcely differ from those of Mr Oldacre's.

KITCHEN GARDEN.

In this department those plants are cultivated which, after being subjected to various culinary processes, are used as articles of food. They may be enumerated in the order of their importance, each, for the sake of precision, being accompanied by its botanical name.

Cabbage Tribe.

The *Brassica oleracea*, Lin. is a plant indigenous to our rocky shores; but no one, seeing it waving in its native habitat, could possibly anticipate that it would ever appear in our gardens, disguised as the ponderous drumhead or sugar-loaf cabbage, or on our tables as the delicate cauliflower and broccoli. The cultivated varieties are numerous; but the following are the most important.

Common White Cabbage. The economical uses of this vegetable are well known. Its principal subvarieties are the following:

Small Early Dwarf,
Early May,
Dwarf Vanack,
Early York,
Chinese,
East Ham,
Large Sugar-loaf,
Drumhead,
Scotch,
Tronchuda.

The first three are adapted for early crops; the next three for use in the end of summer and autumn, and the others for winter. The leaf-stalks of the Tronchuda are used like sea-cale.

The Cabbage is propagated from seed, which may be sown in beds four feet wide, and covered over with a thin layer of earth. The proper seasons for this operation are the middle of August, the beginning of March, and Midsummer. By observing these times, and employing different sorts, the succession may be kept up through the year. For the early spring crops, the late sown plants are in October transferred from the seed-bed to some open and well manured ground, where they are arranged in rows two feet asunder. The principal supply may be put out in February, affording the larger sorts more width between the rows. The crops sown in spring are planted out in May and June. For subsequent culture, all that is necessary is, to keep the ground clear of weeds, and to draw up the soil about the stems. In some situations watering in summer is beneficial.

The cabbages grown late in autumn and in beginning of winter are denominated *Coleworts*, from a kindred vegetable no longer cultivated. The object is to have them with open or slightly closed hearts. Two sowings are made, in the middle of June and in July, and the seedlings, when they acquire sufficient strength, are planted out in lines, a foot or fifteen inches asunder, and eight or ten inches in the rows.

The Red Cabbage, of which the large or Dutch red is the common variety, is much used for pickling. It is sown along with the white varieties in August and in spring, and the culture is in every respect the same.

The Savoy. This variety, like the preceding, forms into a close head, but is distinguished by the wrinkling of its leaves. It is a very useful vegetable during the winter months. The principal subvarieties are the Early Green, the Yellow, and the Winter, of each of which there are various forms. The seed is sown in autumn and in the end of spring, and two plantings may take place, in April, and in June or July.

Brussels Sprouts. This vegetable is allied to the foregoing, but does not close or cabbage. From the axillæ of the stem-leaves proceed little rosettes or sprouts, which resemble savoy cabbages in miniature. The seed should be sown in spring, and the seedlings planted out before midsummer, during showery weather. In October the plants should have additional earth drawn to their roots, to firm them, and save them from being destroyed by frost. The earliest sprouts become fit for use in November, and they continue good, or even improving in quality, till the month of March following. Mr Van Mons of Brussels mentions (*London Hortic. Mem.* vol. iii.), that by successive sowings the sprouts are there obtained for the greater part of the year. In spring, when the plants have a tendency to run to flower, their growth is checked by lifting them, and replanting them in a slanting direction, in a cool shady situation.

Open Kale. The principal subvarieties are:

German Greens, or Curlies,
Scotch Kale, or Green Borecole,
Purple, or Brown Kale,
Delaware Greens,
Buda Kale,
Jerusalem Kale,
Woburn Kale.

Of these the three first are considered the most valuable, and are the sorts chiefly cultivated in this country. The seed is sown at various times from February to May, and the seedlings are planted out in moist weather during summer, in rows two feet asunder. The Buda Kale is sown in May, planted out in September, and being hardy, affords a supply in the following spring.

Of the Turnip-rooted Cabbage, or *Kohl-rübe*, there are two varieties, one swelling above ground, the other in it. There is nothing peculiar in the culture, unless that, in the case of the first mentioned, the earth should not be drawn so high as to cover the globular part of the stem, which is the part used. The seed may be sown in the beginning of June, and the seedlings transplanted in July; they are thus fit for use at the approach of winter.

Cauliflower. This variety is cultivated for the sake of the flower-buds, which form a large dense cluster or head, and afford one of the most delicate products of the

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kitchen-garden. There are three subvarieties, the Early, the Late, and the Reddish-stalked; but these seem to present scarcely any well-marked distinction.

The sowing, for the first or spring crop, is made in the latter half of the month of August; and, in the neighbourhood of London, the growers adhere as nearly as possible to the 21st day. A second sowing takes place in February on a slight hot-bed, and a third in April or May.

The cauliflower being tender, the young plants require protection in winter. For this purpose they are sometimes pricked out in a warm situation at the foot of a wall with a southern exposure, where, in severe weather, they are also covered with hoops and mats. A better method is to plant them thickly in the ground under a common hot-bed frame, and to secure them from cold by coverings, and from damp, by giving air in mild weather. For a very early supply, it is useful to be at the pains of potting a few scores of plants; these are to be kept under glass during winter, and plunged out in spring, defending them with a hand-glass, and watering them when needful. Sometimes, as in market-gardens, patches of three or four plants are sheltered by hand-glasses throughout the winter in the open border. It is advantageous to prick out the spring-sown plants into some sheltered place, before they be finally transplanted and committed to the open ground in May. The later crop, the transplantation of which may take place at various times, is treated like early cabbages. Cauliflower succeeds best in a rich soil and a warm situation. After planting, all that is necessary is to hoe the ground, and draw up the soil about the roots.

It is found that this vegetable, being induced to form its large and crowded clusters of flower-buds in the autumn, may be kept in perfection over winter. Cauliflowers which have been planted out in July, will be nearly ready for use in October. Towards the end of that month, the most compact and best shaped are selected and lifted carefully with the spade, keeping a ball of earth attached to the roots. Some of the large outside leaves are removed, in order that the plants may occupy less room, and at the same time, any points of leaves that immediately overhang the flower are cut off. Where there are peach-houses or vineries the plants may be arranged in the borders of these, together, but without touching. Or they may be placed in the same manner in hot-bed frames: In mild dry weather the glass frames are drawn off, but they are kept close in rain; and in severe frost they are thickly covered with mats. In this way cauliflower may be kept in an excellent state for several months.

Broccoli has a close affinity to cauliflower, being, like it, of Italian origin, and differing chiefly in the greater hardiness of its constitution. The subvarieties are numerous, and exceedingly diversified. The following are those which are in most repute at present. The first five produce their buds in autumn, the others in spring:

Purple Cape,
Green Cape,
Grange's Early,
Early Purple,
Early White,
Cream-coloured,
Sulphur-coloured,
Spring White,
Late Purple,
Late Danish.

Of the autumnal sorts there should be two sowings, one in the middle of April, and one in the middle of May. As the plants acquire strength they are shifted into the open ground, where they are placed in lines two feet apart. The Cape varieties are of great excellence, being of a delicious flavour when dressed; but on account of the plants being apt to start into flower, their cultivation has in many places been neglected. With proper management, however, this tendency may be overruled. The first sowing may be made on any border of light soil, scattering the seed very sparingly. In about a month the plants may be transferred directly into a quarter consisting of sandy loam, well enriched with rotten dung. The greater part of the second crop should be planted in pots likewise directly from the seed-bed. These pots are to be sunk in the open ground till the heads be formed; and in the end of November they are to be placed under a glass frame, where very fine broccoli may be produced during the severest weather of winter. Mr Ronalds of Brentford recommends (*London Hortic. Trans.* vol. iii.) that the Early White, which is also a very fine sort, should be sown on a hot-bed, and treated like the secondary crop of cauliflower.

The spring varieties are extremely valuable, as they come at a season when the finer vegetables are scarce. They are sown in the middle of March or the beginning of April, and afford a supply from March to May inclusive of the following year.

To obtain seed of the Brassica tribe, true specimens of the different varieties should be selected, in such a state of advancement as that they will flower as early as possible in spring. They should be planted in an open situation, and kept as far apart from other kinds of the same tribe as may be. As they are very liable to *cross* or hybridize, it is perhaps better, except in the case of some favourite variety, to procure supplies from a respectable seedsman, from whom they are almost uniformly to be had genuine, the extensive seed-growers being at great pains to prevent intermixture of crops.

Leguminous Plants.

Of the Pea (*Pisum sativum*), there are two principal varieties, the Field or gray hog pea, and the Garden Pea. The latter alone requires our attention here. Its chief subvarieties are:

Early Frame,
Early Charlton,
Bishop's Dwarf,
Dwarf Marrowfat,
Tall Marrowfat,
Imperial,
Knight's Tall Marrowfat,
Dwarf Marrowfat,
Prussian Blue,
Prussian Green,
Leadman's Dwarf,
Sugar.

The first three are suitable for early crops, and the others for successional supplies. In the sugar pea, of which there are two sorts, the tall and dwarf, the inner filmy lining of the pod is absent, and the young legumes are used like kidney-beans.

The first crop of pease is sown about the beginning of November, in front of a south wall; and these, after they have appeared above ground, are defended by spruce-fir branches, or other spray, throughout the winter. In January and February other sowings are made, and sometimes the seed is put into flower-pots and boxes, and the young plants afterwards plunged out in spring. From the end of February moderate sowings should be made twice a month till the middle of August, thus ensuring a supply of successive crops of delicate green pease. For the latest crops the early frame and the Charlton are the best. Pease are sown in rows from three to five feet asunder, according to the height which the different sorts are known usually to attain. As they grow up the earth is drawn up to the roots, and the stems are supported with stakes, a practice which, in a well kept garden, is always advisable, although it is said that the early varieties, when recumbent, arrive sooner at maturity.

The early crops come into use in May and June, and by repeated sowings, the supplies are prolonged to November. Pease grown late in autumn are subject to mildew, to obviate which, Mr Knight has proposed the following method. The ground is dug over in the usual way, and the spaces to be occupied by the future rows of pease are well soaked with water. The mould on each side is then collected, so as to form ridges seven or eight inches high, and these ridges are well watered. On these the seed is sown in single rows. If dry weather at any time set in, water is supplied profusely once a-week. In this way the plants continue green and vigorous resisting mildew, and not yielding till subdued by frost.

Of the GARDEN-BEAN (*Faba vulgaris*), amongst many varieties may be mentioned:

The Early Mazagan,
Early Lisbon,
Dwarf Fan or Cluster,
Long Pod,
Green Genoa,
Windsor,
Green Windsor,
White-blossomed.

The Mazagan and Lisbon are sown in November, and are defended during winter in the same manner as early pease, but they are more difficult to preserve. The same sorts should be sown again in January and February. In March the Dwarf Cluster and Long-pod may be put in the ground for a general crop, and subsequently the Windsor and White-blossomed. The latter is a variety of considerable merit, and when the pods are taken at an early stage, they have little of the peculiar bean flavour, or only enough to render them pleasant. During the growth of the bean crop, all the culture that is necessary is, that the earth be drawn up about the roots. Topping the plants is usually practised, being found to promote the filling of the pods.

KIDNEY-BEAN. Under this general title are included the common kidney-bean (*Phaseolus vulgaris*, LIN.) of many varieties; and also the Scarlet Runner (*P. multiflorus*, WILLD.) Kidney-beans are the *haricots* of the French, who enumerate upwards of 200 varieties. The sorts usually cultivated in this country are,

Early Yellow,
Early Red Speckled,
Early Black,
Early White,
White Battersea,
White Canterbury,
Black Speckled,
Brown Speckled,
Scarlet Runner,
Dutch White.

The first four are the earliest; the others are more productive, and better fitted for a general crop. As the plant is of tropical origin, our climate is scarcely sufficient for the extensive cultivation of the ripe beans, which are the principal object in France and Italy. The immature legumes are chiefly used in this country.

It is seldom advantageous to sow kidney-beans in the open ground before the middle or end of April; after which period successive sowings may be made every fourteen days to the end of July. The plants are grown in rows two feet apart, and the earth is carefully drawn to the roots. Kidney-beans are well adapted for forcing, in hot-beds, or in hot-houses; the climate of the peach-house, when it can be obtained, being considered the best. The sowings may begin in January; they are made in pots, and a supply may be thus obtained in the months of March, April, and May. The dwarf speckled is commonly used in hot-houses, and the early white in hot-beds.

Esculent Roots.

The POTATO (*Solanum tuberosum*). This well-known plant is a native of the elevated regions of equatorial America. It was introduced into Europe about the middle of the 16th century, but remained little known or regarded till within the last hundred years: it is now so generally cultivated, as to have effected almost an economical revolution in this country. Most of the original British sorts were derived from Ireland. Its multitudinous varieties now set enumeration at defiance, and many are indeed appearing and disappearing every year. The culture of the late sorts properly belongs to the farm, and when the gardener has to take them under his care, he will find it best to adopt such as are common in the agriculture of the district. Of the early kinds, most of which are supposed to have originated in Lancashire, the following may be esteemed the best:

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Early Royal Dwarf,
American Early,
Early Ash-leaved,
Early Frame,
Early Kidney,
Walnut-leaved Kidney.

Potatoes are commonly propagated by dividing the tubers, leaving to each segment one or two eyes or buds. The sets are then planted by the aid of the dibble or spade, in rows at a distance varying from fifteen inches to two feet. It has been suggested by Mr Knight (*London Hortic. Trans.* vol. vii.), and his views have been amply confirmed by experiment, that by planting whole tubers, and at greater distances, a larger produce will be obtained. Mr Knight proposed to leave four feet between the rows, a distance which, except with the larger varieties, was found to be too great. An experienced horticulturist in Scotland states, that by planting whole tubers, and by leaving in the case of dwarfs two feet, and in the tall varieties two feet and a half, between the rows, a return from one-third to one-half more was obtained than could be had from the old method. Of course a greater quantity of tubers are required for planting, but these bear no proportion to the great increase which results; and besides, early potatoes at the planting season being unfit for eating, there is little economy in sparing them.

The earliest crops should, if possible, be placed in a light soil and in a warm situation, and are planted about the middle of March. Sometimes the eyes of the tubers are made to spring or vegetate on a hot-bed, and the plants are put out as soon as the leaves can bear the open air. Perhaps it is better, as recommended by Mr Saul of Lancaster (*Gardener's Mag.* vol. ii.), to promote incipient vegetation in some warm place, as a house or greenhouse, by laying a woollen cloth or some other covering over them. When the sprouts are about two inches long, he plants them out towards the end of March, and thus procures young potatoes in seven or eight weeks. A secondary planting of tubers should be made before the middle of April. When the stems are a few inches above ground, the earth should be drawn to them; an operation, however, which, while it improves the crop, delays its maturity for two or three weeks. Mr Knight recommends removing the flowers as they appear, and states that by this means the produce is increased by a ton per acre. The fine early varieties, however, scarcely produce any flowers.

An important fact in the cultivation of the potato was observed about the year 1806, by the late Mr Thomas Dickson of Edinburgh, viz. that the most healthy and productive plants were to be obtained, by employing as seed-stock unripe tubers, or even by planting only the wet or least-ripened ends of long-shaped potatoes; and he proposed this as a preventive of the well-known disease called the *Curl.* This view has been confirmed by Mr Knight. An intelligent writer in the *Gardener's Magazine* (vol. ii. p. 171) states a method by which sprouting of the eyes is accelerated. He takes up the seed potatoes a considerable time before they are ripe, and exposes them for some weeks to the influence of a scorching sun. The resulting crop is at least a fortnight earlier; but it is not said how this practice affects the curl.

The forcing of early potatoes on hot-beds has long been practised; but it is attended with considerable trouble and expense. Small supplies of young waxy tubers are now often produced during winter, in boxes placed in a mushroom-house, or in a common cellar, if free from frost. In October, old potatoes are placed in layers, alternating with a mixture of tree leaves and light mould. Vegetation soon proceeds; and there being no opportunity for the unfolding of stems and leaves, the energies of the plants are expended in the production of young tubers. Before mid-winter these often attain the size and appearance of early potatoes; but they are much inferior, being watery and of little flavour.

Jerusalem Artichoke (*Helianthus tuberosus*), or tuberous-rooted sunflower. This plant, which is a native of Brazil, derives its epithet *Jerusalem* from a corruption of the Italian *Girasole*, a sunflower, and *Artichoke* from the resemblance, in flavour, which its tubers bear to the floral receptacles or *bottoms* of the artichoke. It is propagated by means of its tubers in the manner of potatoes. In March they are planted out in rows three or four feet asunder, and in autumn the new tubers are fit for use. For the sake of convenience, it is advantageous to store them, though the roots are hardy enough to bear the winter frosts. Some, indeed, allow them to remain in the ground, and dig them up when required. In this way a sufficient number of sets are generally left in the ground, and the stalks are thinned into rows in summer; but this is a slovenly mode of treatment, and seldom produces well-flavoured crops.

The Turnip (*Brassica Rapa*), like the potato, has, to a great extent, migrated into the fields, and become the care of the husbandman more than of the gardener. The following are the most esteemed garden sorts:

Early White Dutch,
Early Stone,
Green-topped White,
Long White,
Early Yellow Maltese,
Dutch Yellow,
Aberdeen Yellow,
Long Yellow.

Besides these, the *Navet* of the French (*Brassica Napus v. esculenta*) is occasionally cultivated, and more frequently the *Swedish Turnip* (*Brassica campestris v. Napo-brassica*, L.), which is a most excellent winter sort, though it belongs more properly to the farm. For early crops, the white Dutch is the principal variety; the other white sorts, and the beautiful yellow Maltese, are useful in summer and in the beginning of autumn. The yellow Dutch being capable of enduring any degree of frost, affords the best winter supplies.

Turnips succeed best in a rich, well-worked soil, of a light or medium quality. The first sowing is made about the end of March, in a warm situation; and it is usual to put in additional sowings, once a fortnight or three weeks, till the end of August. The early crops are sown *broadcast*, and the later in drills. After the plants have shewn a rough leaf or two, they are thinned out, being left at the distance of eight or ten inches in the drill; and the ground is hoed and kept free from weeds. As turnips which have stood the winter throw up their seed-stalks early in spring, after which their roots become stringy, and are much deteriorated, it is useful to store the turnips in winter, keeping them in a close place, and covering them with straw.

The young plants, while in the seed-leaf, are often destroyed by a small beetle called the turnip-fly (*Haltica nemorum*). Many remedies have been proposed: it has been found beneficial to dust the rows with quicklime; but perhaps the best precaution is to sow thick, and thus insure a sufficient supply both for the insect and the crop.

The Carrot (*Daucus Carota*) is one of our native Umbelliferæ, but has been much transformed by cultivation. The best varieties are the Early Horn and the Orange Carrot, the former for early, the latter for general cultivation. The carrot loves a light, deep, fresh soil, in which it may be at liberty to push down its long spindle-shaped roots. A few Early Horn carrots may be sown in February on a moderate hot-bed. In the beginning of March, the same sort may be sown in the open air. In April, the orange variety may follow as a general crop: it succeeds best in drills. In many old gardens the early plants are liable to the attacks of a small grub, the larva of some insect; it is therefore a useful precaution to sow a moderate crop of the Early Horn variety in July. After sowing, it is only necessary to thin the plants and keep them clear of weeds. The roots are stored in winter in the manner of turnips.

The Parsnep (*Pastinaca sativa*) is now less cultivated than it was in Catholic times, when it was a favourite accompaniment to dried fish in Lent. To some its flavour is not agreeable; but it is a very nutritious vegetable, and of easy digestion. Like the carrot, its root is long and tapering, differing chiefly in being of a whitish colour. Its culture is also very much the same.

Red Beet (*Beta vulgaris*) is a biennial plant, a native of the shores of the south of Europe. The boiled root is eaten cold, either by itself or as a salad: it is also often used as a pickle. The varieties are numerous, but the most common are the Long-rooted, the Short or Turnip-rooted, the Bassano, and the Green-topped. There is a fine French variety called Castelnaudary, from a town in Languedoc; but as yet it is little known in this country.

Red beet prospers in a rich, deep soil, not recently manured, and which has been well pulverized by the spade. During April the seeds may be sown in drills, fifteen inches asunder, and the plants are afterwards to be thinned to eight inches from each other in the lines. In the northern parts of the island, the roots are stored in winter, care being taken not to break them or cut off the leaves too closely, as they bleed when injured.

Skirret (*Sium Sisarum*) is a native of China, now seldom seen in our gardens. Its tubers are used like parsneps. It is a perennial, and may be propagated by separating the roots in spring; but it succeeds better by annual sowings, which may be made in April.

Scorzonera (*Scorzonera Hispanica*) and Salsify (*Tragopogon porrifolius*) are generally associated together in gardens, and are now less cultivated than they deserve. The roots are used in soups, and sometimes as dressed side dishes. They are sown in lines, and treated like the crops of red beet or parsnep.

The Radish (*Raphanus sativus*) is a native of China. There are two principal varieties, the spindle-rooted and the turnip-rooted radish; and of these the subvarieties are numerous. The following may be mentioned:

Early Frame Scarlet,
Short-topped Scarlet,
Scarlet Salmon,
Long White,
White Turnip,
Yellow Turnip,
White Spanish,
Black Spanish.

The first two and the white turnip radish are best suited for early crops; the scarlet salmon for summer, the yellow turnip for autumn, and the white and black Spanish for winter.

Some cultivators sow their earliest crop in November, in a warm situation, at the foot of a wall or in front of a pinery, and continue sowing once a-month, if weather permit, during winter. Others grow their first radishes under frames, aiding vegetation by a slight bottom heat. As the season advances, successional supplies are sown once a fortnight. From the middle of July to the middle of September, the turnip-radishes are sown from time to time; and on the approach of frost they may be stored up in sand like carrots, and kept throughout winter.

Oxalis Roots (*Oxalis crenata*, Jacq.; *O. arracacha*, G. Don) have of late years been cultivated for the table in this country. The plant produces tubers at the root, somewhat in the manner of the potato; but they are of small size, seldom exceeding that of a walnut. By cultivation, however, by manuring, laying down, earthing up, watering, and other helps known to horticulturists, considerable increase of size in the tubers may be effected. From the mode of culture adopted by the most intelligent gardeners, we conclude that a rich light soil is the most proper (although some cultivators have recommended a poor soil); that it is useful to forward the plants in a hot-bed, in the way practised with early pease, so as to have them ready to transplant by the middle or end of May; that in planting out, they should be inserted in a sloping position, so that a considerable portion of the stem may be covered by the soil; that earthing up, or drawing up additional soil to the stems in June and July is important; and that laying down the stems horizontally in August, and covering them slightly (to the depth perhaps of two inches) with mould, tends greatly to promote the productiveness. It should be observed that the tubers continue to swell in size till November, or till stopped by frost. It is believed that the largest tubers, having full eyes or buds, yield the strongest plants; and therefore a portion of the largest should always be reserved for seed-stock. Cut sets of these large tubers are, by some cultivators, preferred to whole tubers. The rest, from the size of a filbert to a walnut, go to the cook. We may remark, that till the plant become more common, the very smallest tubers should not be thrown away, but should be carefully preserved, for increasing the extent of the oxalis bed the following season. The mode of dressing for table is simple. The tubers, after being cleaned, are boiled for about ten minutes, or till they be slightly softened; and they are then served up with white sauce. Some persons merely put them into boiling water for a few minutes; then, pouring off the water, transfer them to a covered saucepan; and place the pan upon hot cinders, drawing some of these near to the lid: in this way the tubers are rendered more dry or mealy. They are of excellent quality and pleasant flavour; somewhat resembling a new potato, with the additional zest of a nut or kernel. The oxalis comes from the same country that afforded us the invaluable potato, and has been extolled as likely to rival it; but this it will never do: a dish of oxalis will form an agreeable variety and adjunct, but no more; bearing to the potato such relation as sea-cale does to asparagus. It may be added, however, that the oxalis crenata is, in other respects, a useful vegetable. The leaves may be used as salad, and form, indeed, the principal salad at Lima. The shoots and young branches are found to make a pleasant purée, having the wood-sorrel flavour; and the larger stems have been used in tarts, in the manner of rhubarb-stalks, and been found more tender.

Alliaceous Plants.

The Onion (*Allium Cepa*) is too well known to require description: it has been cultivated in this country from time immemorial. Among the varieties may be enumerated:

Strasburgh,
Deptford,
Globe,
James's Keeping,
Silver-skinned,
White Portugal,
Blood Red,
Potato Onion.

Besides these, the Welsh Onion or Ciboule (*Allium fistulosum*, L.), a native of Siberia, is sometimes grown for scallions. For a general crop, the Strasburgh and Deptford varieties may be esteemed the best. The White Portugal grows to a large size, but does not keep well. The silver-skinned is chiefly used for pickling.

The onion affects a light, rich. well worked soil, which has not been recently manured The principal crop may be sown in the course of the month of March, according to the state of the weather and the dryness of the ground. Onions are grown in beds, four or five feet in width, and are regularly thinned, hoed, and kept free from weeds. About the beginning of September the crop is ripe, which is known by the withering of the leaves; the roots are taken up, and, after being well dried, are stored in a garret or loft, where they may be perfectly secured from damp.

Towards the end of August a secondary crop is sown, to afford a supply of young onions or *scallions*, as they are called, in the spring months. The Strasburgh and White Portugal may be used for this purpose. Those which are not required for the kitchen being allowed to stand, if the flower-bud is picked out on its first appearance, and the earth is stirred about them, frequently produce bulbs equal in size and quality to the large ones that are imported from the Continent.

Some eminent horticulturists have strongly recommended the transplanting of onions. Mr Knight sows the White Portugal onion in spring under the shade of a tree, where they remain of a diminutive size. They are kept over winter, and are planted out in the succeeding spring. Mr Brown collects all the minute bulbs of the ordinary crop, and uses them in the same way. Mr Macdonald, Dalkeith Park, confines his operations to one summer. He sows in February on a slight hot-bed, or sometimes merely under a glass frame. In the first or second week of April, according to the state of the weather, he transplants the young seedlings in rows, eight inches asunder, and at the distance of four or five inches in the row. Previously to planting, the roots of the seedlings are dipped in a puddle of one part of soot to three parts of earth, an expedient which is found to secure the transplanted onions from the wire-worm. Onions thus treated attain a large size. We have seen autumn-sown onions submitted to a similar management with great success.

The Potato Onion is propagated by the lateral bulbs, which it throws out, under ground, in considerable numbers. It is planted about mid-winter, and ripens in summer. Its flavour is strong, and not unpleasant; but the plant being rather delicate and troublesome in cultivation, is not likely to supersede the common onion.

The Pearl Onion, of recent introduction, and hitherto little known, produces clusters of small bulbs at the root. These little bulbs are of a fine white colour, like the silver-skinned onion, and very fit for pickling.

The Leek (*Allium Porrum*) is a native of Switzerland, but has probably been cultivated in this island for many centuries. The varieties are the narrow-leaved or Flanders leek, the Scotch or flag leek, and the broad-leaved or tall London leek. Of these the Scotch leek is considered as the most hardy.

Leeks are sown in beds in spring; and in June or July are planted out in rows fifteen or eighteen inches apart, and six inches asunder between the rows. The tips of the fibrous roots are trimmed before planting. When the weather is moist, it is found beneficial merely to lay the plant into the hole made by the dibble, without closing the earth upon it, the stem being by this means encouraged to swell out and fill the hole.

Shallot (*Allium ascalonicum*) is a native of Palestine. It is much used in cookery for high-flavoured soups and gravies, and is sometimes put into pickles. It is propagated by off-sets, which are commonly planted in September or October. Some recommend the mixing of soot with the manure as a protection against maggots, by which this plant is greatly infested. Autumn planting, however, is found the best expedient, as the bulbs are ripe before the larvæ commence their depredations.

Garlic (*Allium sativum*) and Rocambole (*Allium Scorodoprasum*), though common ingredients in continental cookery, are comparatively seldom used in this country. A few rows will generally be found sufficient. They are propagated by offsets from the roots, or by the bulbils which grow on the flower-stem. The Chive or *Cive* (*Allium Schoenoprasum*), a pleasant little native plant, is used occasionally as salad and alliaceous seasoning. A single row may be planted as an edging to an onion bed, and it is easily increased by parting the roots in spring and autumn.

Spinaceous Plants.

Spinach (*Spinacia oleracea*) is an annual plant, and is a native of Western Asia. It has long been cultivated for the sake of its succulent leaves, which, when properly dressed, form a pleasant and nutritious article of food. There are two varieties; the round-leaved or smooth-seeded, and the angular-leaved or prickly-seeded. The latter, as being the most hardy, is used for the winter crop.

The first sowing is made in August, in some sheltered situation; the plants, as they advance, are thinned, and the ground is hoed. In the beginning of winter the outer leaves become fit for use; in mild weather, successive gatherings are obtained, and, with proper management, the crop may be prolonged to the beginning of May.

To afford a succession crop, the seeds of the round-leaved variety should be sown in the end of January, and again in February and March. From this period it is proper to sow small quantities once a fortnight, summer spinach lasting only a very short time. The open spaces between the lines of cauliflower, and others of the cabbage tribe, will generally afford enough of room for these transient crops. They are generally sown in shallow drills, and are thinned out and weeded as may be required.

White Beet (*Beta Cicla*) is cultivated for the leaves, which are used as spinach. The midribs and stalks of the great white beet, when separated from the leaves, are stewed and eaten as asparagus, under the name of Swiss Chard. The culture does not differ materially from that of the red beet.

New Zealand Spinach (*Tetragonia expansa*) is a half-hardy annual, a native of New Zealand, from which it was brought by the late Sir Joseph Banks. It is an excellent substitute for spinach; and if well watered, it will continue to afford large quantities of succulent leaves during the hottest weather. It is sown in a pot placed in a melon-frame in March: the seedlings are transplanted into small pots, and kept under cover till the beginning of June, when they are plunged out at two or three feet apart, and treated somewhat like gourds. In gathering the leaves, care must be taken not to injure the leading shoots.

Quinoa Spinach (*Chenopodium Quinoa*). This vegetable is a native not only of Chile, but of the table land of Mexico. It is described and figured by Ruiz and Pavon, and Humboldt informs us, that in Mexico the leaves are universally used as spinach or greens, and the seeds in soups, or like rice, so that quinoa there vies in utility with the potato itself. Although the plant had been known in Britain for a number of years, it was only during the autumn of 1834 that any considerable portion of seed was ripened or saved in this country. This was accomplished at Boyton in Wiltshire, by Mr Aylmer Bourke Lambert, the well known patron of botany and horticulture. Considering the elevated region in America in which the quinoa is successfully cultivated, there can be no doubt that its herbage will be freely produced in this country; but it seems probable that, in order to secure the ripening of seeds, it may be requisite to place some plants close by a wall having a south or south-west aspect, as is practised with seeding onions; more especially since we are warned by Willdenow, that, in Germany, "semina sub dio non semper perficit." There are two varieties, the common white-seeded or green quinoa, and the dark-seeded or red quinoa, the former seemingly the more hardy, or at least germinating most freely.

Garden Orache (*Atriplex hortensis*), Wild Spinach (*Chenopodium Bonus Henricus*), and Garden Patience (*Rumex Patientia*), are sometimes used in place of common spinach; but as, in this country at least, they are deemed rather curious than useful, it may be sufficient to indicate their names.

Asparaginous Plants.

Asparagus (*Asparagus officinalis*) is a perennial plant, a native of the shores of Britain, where it occurs sparingly, and of the steppes in the east of Europe. Though somewhat unpromising while in a state of nature, it affords, in cultivation, an esculent of considerable value, and is therefore grown extensively both in private and in sale gardens. The principal varieties are the *red-topped* and the *green-topped*, of which the latter, while it is less succulent, is considered the better flavoured. There are numerous subvarieties, such as the Battersea, Gravesend, Giant, &c., which differ only slightly or not at all from those already mentioned.

Asparagus, growing naturally on loose sand, loves a light deep soil, through which it may be able to shoot its long stringy roots. Two feet and a half is considered a desirable depth, but in France the ground is sometimes prepared, by sifting, to the double of that depth. A considerable portion of well-rotted dung or of recent sea-weed is laid in the bottom of the trench, which may be from two to three feet deep; and another top-dressing of manure should be digged in preparatory to planting or sowing. The older horticulturists used to grow their asparagus in beds four or five feet wide, with intervening alleys of about eighteen inches in breadth. At present, in Scotland, it is customary to sow or plant in rows from three to four feet asunder; a method which, in every way, is found to be most convenient. Except where the garden is new, when, of course, it is advantageous to procure a supply of ready grown plants, it is thought preferable to keep up the stock of asparagus by sowing.

The sowing is made in March, in slight drills; and, as a portion of the seed often fails to germinate, it is a good precaution to employ about double the quantity of seed that may be ultimately necessary. If the plants come up too thickly, they may be thinned out towards the end of the first summer, to the distance of about six inches in the rows. The ground is hoed, and kept clear of weeds. It is a common practice to take slight crops of onions, lettuce, cauliflower, or turnip, between the lines of asparagus during the first, and, if the rows be wide, also in the second year. The young heads or stalks, the part used, should not be cut before the third spring, and they are not in perfection till the fourth or fifth.

The asparagus quarter can scarcely be over manured. The proper time to perform this operation is in the end of autumn, when the annual flower-stalks are removed, preparatory for winter. When beds are employed, their surface should be stirred with a fork; a layer of well-rotted hot-bed dung is then laid on, and the whole covered with a sprinkling of earth from the alleys. If the plants are grown in rows, the manure is simply dug in by means of a three-pronged fork, care being taken not to injure the roots. This operation is repeated annually. No other culture is required; but it is necessary to observe a due moderation in reaping the crop, as the shoots, when much cut, become progressively smaller and less valuable. Hence a considerable quantity of ground is required for the cultivation of this vegetable, and it is a general rule never to gather it after pease have come into season.

Asparagus readily admits of being *forced.* The most common method is to prepare, early in the year, a moderate hot-bed of stable litter, and to cover it with a common frame. After the heat of fermentation has somewhat subsided, the surface of the bed is lined with turf, to prevent the escape of vapour; a layer of light earth or exhausted tan-bark is put over the turf, and in this the roots of plants five or six years old are closely placed. The crowns of the roots are then covered with two or three inches of soil. A common three-light frame may hold 500 or 600 plants, and will afford a supply for several weeks. After planting, linings are applied when necessary, and air is occasionally admitted. Care must be taken not to scorch the roots. Where there are pits for the culture of late melons or succession pine plants, such as the Alderston pit, or the succession pit with the hot-water circulation, they may advantageously be applied to this purpose.

It has been recommended (*Lond. Hortic. Trans.* vol. v.) to force asparagus on the ground on which it grows. Perhaps the best method is that suggested by Mr Spiers in vol. iv. of the Gardener's Magazine. The seed is sown in beds four feet eight inches wide, and there are four rows of plants, eleven inches asunder in the bed. The beds are lined by a pigeon-hole brickwork two feet deep, an operation which we presume need not be performed till immediately before forcing, that is, when the plants are at least four years old. In October, when the stalks are cleared away, the surface is covered with littery straw. When forcing is commenced, the brick-lined trenches are filled with hot stable-dung, well beaten, to about eighteen inches above the surface of the ground. The bed is also covered with prepared dung. In about twelve days, when the buds have begun to appear, the latter covering is removed, glazed frames are placed upon the brick-work, a little fine soil is sifted over the plants, the linings in the trenches are raised higher, and the whole treated like a common hot-bed. In this way, we are informed, excellent supplies may be obtained, and the plants may be forced every year.

Before leaving this subject, it may be mentioned, that about Bath, the young flower-spikes of *Ornithogalum pyrenaicum,* found native in that neighbourhood, are used like asparagus, under the name of *Prussian grass.*

Sea-kale (*Crambe maritima*) is a perennial plant, growing spontaneously on the shores of the southern parts of the island. The roots are spreading, the leaves waved, glaucous, and covered with a fine mealy bloom, and the stalks rise to about two feet high, bearing white flowers which smell of honey, followed by seed-pods, each containing a single seed.

The country people in the west of England have long been accustomed to use in spring the young shoots, which, by passing through the sand and gravel on which they grow, are somewhat blanched and rendered tender. In conformity with this practice, the cultivation formerly recommended consisted merely in covering the beds on the approach of spring with a little dry earth or sand, in order to the blanching or intenerating of the shoots. These were cut as they appeared in March and April. Now, however, the blanching is not only much more completely effected, but simple means have been devised for supplying the table for half the year, including all the winter months. It has, within these few years, become a vegetable of common occurrence in the markets both of London and Edinburgh.

Sea-kale seems partial to a light dry soil. If manure be added, it should consist of sea-weed or leaves of trees. The plants may be propagated by offsets, or small pieces of the roots having buds or eyes attached to them; but the most eligible method is by seed. We have seen very tolerable blanched stalks produced by plants only nine months old from the seed, and after two summers, seedling plants will have acquired sufficient strength for general cropping. The sowing is made in March, the seeds being deposited in patches of three or four together, the patches being arranged in lines three feet apart, and two feet in the line. In order to secure a succession, and to obviate the bad effects of forcing, it is proper to sow a few lines of sea-kale every year.

Various modes of blanching the shoots have been resorted to. In the first volume of the *Memoirs of the Caledonian Horticultural Society,* Sir George Mackenzie describes a very convenient method. The sea-kale bed is merely covered, early in spring, with clean and dry oat-straw, which is removed as often as it becomes dry and musty. The shoots rise through the straw, and are at the same time pretty well blanched. Others employ dried tree-leaves for this purpose. Another method practised by many gardeners consists in placing over each plant a flower-pot of the largest size inverted; but convenient *blanching-pots,* with moveable lids, have been constructed for the express purpose. It may be proper to provide from thirty to sixty such pots; and it may be expected that each pot will, on an average, furnish a dish and a half of shoots during the season.

With the aid of these pots, sea-kale is *forced* in the open border in the way now to be described. In the latter end of autumn a bed of vigorous sea-kale plants is dressed, that is, the stalks are cut over, and the decayed leaves are removed. The ground is, at the same time, loosened about the eyes, and a thin stratum of gravel or sifted coal-ashes is laid on the surface to keep down earth-worms. A pot with a moveable cover is placed over each plant or each patch of plants. Stable-litter is then closely packed all round the pots, and raised up to about a foot above them; the whole thus assuming the form and appearance of a large hot-bed. When fermentation commences, a thermometer should be occasionally introduced into a few of the pots, to ascertain that the temperature within does not exceed 60° Fahrenheit, and the depth of the litter is to be regulated accordingly. The vegetation of the included plants is speedily promoted; so that, in the space of a month or six weeks, the shoots will be ready for cutting, which, being thus excluded from the light, are most effectually blanched, and are exceedingly tender and crisp. By means of the moveable lids, the plants are examined and the shoots gathered without materially disturbing the litter. By commencing at various times, a supply for the table can be readily furnished from the middle of November till the middle of May.

The Artichoke (*Cynara Scolymus*) is a perennial plant, a native of the south of Europe, and is a well known inhabitant of our gardens. It resembles a thistle on a large scale. In France, the entire head or whole leaves of the involucre of the artichoke are eaten, when in a young and tender state, *en poivrade,* or with pepper, salt, and vinegar; but in this country the only parts used are the base of the leaves of the involucre, and the immature floral receptacle, or phoranthium, commonly called the *bottom,* freed from the bristly seed-down which has been called the *choke.* The varieties are the conical or French, the globe or red artichoke, and the dwarf globe. Of these the first is the highest flavoured, the second is well adapted for a general crop, and the third is prolific, and occupies little room.

The artichoke loves a deep cool dry soil. It is propagated by parting the roots in April, the sets being planted in rows four or five feet asunder, and two feet apart in the rows. The young plants generally afford a crop which succeeds that of old plants; and for this reason a new plan-

Kitchen Garden.

tation is made in some gardens every year. During summer the plants are kept clear of weeds, but require little other attention. In November the decayed stems and leaves are removed, and the ground cleared. In some gardens the earth is ridged slightly around the roots, in order to defend the stools from the frost. This, however, is done more effectually by a litter of straw, or of the refuse of the stable-yard, of the depth of a foot, drawn close round the base of the leaves. In April this litter is taken away, the stocks are examined, and two or three only of the strongest shoots are permitted to remain. The offsets, which are carefully removed, afford materials for a young plantation. The ground between the rows is digged over. At this time manure may be applied; well-rotted hot-bed dung, and above all sea-weed, being considered preferable.

The Cardoon (*Cynara Cardunculus*) is a perennial plant, a native of the south of France and Spain. It has a close resemblance to the artichoke, but surpasses it in size. The edible part, or *chard*, as it is called, is composed of the blanched and crisp stalks of the inner leaves. Besides the common sort there is a prickly variety, known in France by the name of the Cardoon of Tours. The common artichoke is also used for the production of chard. Cardoons are found to prosper on light deep soil. The seed is sown annually about the middle of May, in shallow trenches, like those for celery, and the plants are thinned out to ten or twelve inches from each other in the lines. In dry weather water is copiously supplied, not only to increase the succulence of the leaves, but to prevent the formation of flower-stalks, which render the plant useless. In autumn the leaves are applied close to each other, and wrapped round with bands of hay or straw, the points of the leaves only being left free. Earth is then drawn up around the leaf-stems to the height of fifteen or eighteen inches. Sometimes cardoons are blanched by a more thorough earthing up, in the manner of celery, but in this case the operation must be carried on from the end of summer. During severe frost the tops of the leaves should be defended with straw or litter.

The Rampion (*Campanula Rapunculus*) is an English native biennial, the roots of which, under the name of *ramps*, are used as a salad, or boiled like asparagus. It is but little cultivated in this country. The seed is sown broadcast, about the beginning of June, in a cool situation, and the young plants are merely to be thinned and kept clear of weeds. On the approach of frost, the roots, which somewhat resemble small radishes, are stored in sand, and will keep fresh and firm till spring.

Salads, &c.

Lettuce (*Lactuca sativa*) is a hardy annual, but of what country it is a native is unknown. Some suppose it to be a seminal variety of the native *L. virosa*, a poisonous plant, "which," says Professor Lindley, "would not be more remarkable than the fact, that the indigenous celery is one of our strongest poisons." Besides its well known uses, it may be mentioned that the late Dr Duncan senior, of Edinburgh, prepared from its milky juice, a medicine denominated *Lactucarium*, similar in its action to opium, but capable of being administered in cases where that powerful drug is inadmissible. There are two principal varieties, the Cos or upright, and the Cabbage-lettuce. The subvarieties are numerous; we may mention the following:

Early Forcing Cos,
Green Cos,
White Cos,
Cilicia,
White Cabbage,
Brown Dutch Cabbage,
Imperial Cabbage,
Grand Admiral.

By proper care fresh lettuce may be had throughout the whole year. The first sowing is made in January, in some sheltered situation, or under hand-glasses, or in February on a gentle hot-bed. The seedlings are transplanted as soon as the weather will permit. A second sowing may be made in the beginning of March, and another in April. Besides the ordinary compartments, the seedlings may be planted on celery ridges, between rows of slight crops of other vegetables, and, in short, in any odd corner which may occur. To obtain a winter supply, a sowing is made in August or September, and the plants are pricked out in October, along the bottom of walls, or under glazed frames.

Endive (*Cichorium Endivia*) is an annual plant, a native of China, from which it was introduced in 1548. It is the lettuce of winter, the blanched hearts being used for salads and in soups. The varieties are, the Broad-leaved Batavian, the Green Curled-leaved, and the White Curled-leaved. A sowing may be made in the beginning of June, and another in July, the seeds being scattered very sparsely, that the plants may not come up in clusters. The seedlings are transplanted into a rich soil, and are arranged in rows twelve or fifteen inches asunder, and at the distance of ten inches in the row. Sometimes they are planted in drills to facilitate the operation of blanching. The later crop should be placed in a sheltered situation, where it may be able to withstand the winter. When the plants have reached their maturity, the leaves are gathered up, and tied together an inch or two below the tips, and afterwards about the middle of the plant. In two or three weeks they are found sufficiently blanched for use. In winter it is necessary to draw the earth quite up about the leaves. At that season, too, the plants may be inserted into a sloping bank of earth, or blanched in boxes in the mushroom-house, or in a cellar.

Succory (*Cichorium Intybus*) is an indigenous plant, the cultivation of which may be said to have been introduced by the foreign refugees during the French revolutionary war. By the French it is much esteemed as a winter salad, and, when blanched, is known by the name of *Barbe du Capucin*. When intended for winter use, the seed is sown in May or June, commonly in drills, and the plants are thinned out to four inches apart. If the first set of leaves grow very strong, owing to wet weather, they are cut off perhaps in the middle of August, about an inch from the ground, so as to promote the production of new leaves, and check the formation of flower-stems. About the beginning of October the plants are raised from the border; all the large leaves are cut off; the roots are also shortened. They are then planted pretty closely together in boxes filled with rich light mould, and watered when needful. When frost comes on, the boxes are protected by any kind of haulm. As the salad is wanted, they are removed into some place having a moderately increased temperature, but with little light, such as a mushroom-house or cellar off the kitchen. Each box affords two crops of blanched leaves, and these are reckoned fit for cutting when about six inches long. The roots of this plant, it may be added, have been employed as a substitute for coffee-beans, and in Flanders, and some parts of France, a portion of them is very often mixed with coffee.

Parsley (*Apium Petroselinum*) is a biennial plant, of well-known use in cookery. It is said to be a native of Sardinia, but it now grows spontaneously in various parts of Britain. The varieties are the Common, the Curled-leaved, and the Hamburg, the last of which is cultivated for the sake of its tuberous roots. Parsley loves a light rich soil. It is sown in drills about the beginning of March, and the seed lies some weeks in the ground before the plants appear. As they grow up they are thinned out, and they are defended by branches or other coverings from hard weather in winter. The Hamburg variety being cultivated for its roots, is sown about the same time in a well trenched soil, in drills a foot apart, and it is thinned to about nine inches in the rows. In the beginning of November the roots are taken up and stored in sand.

Celery (*Apium graveolens*) is a native biennial, an inhabitant of the sides of ditches near the sea. In its wild state it is of an acrid nature, and of a coarse, rank flavour; but by cultivation it is improved into one of the most agreeable salads. There are two principal varieties; *celery* properly so called, with upright stalks and fibrous or slightly tuberous roots; and *celeriac* with large turnip-shaped roots. Of the former, the principal subvarieties are, the Italian, the Red Solid, and the White Solid, of which the second and third are the best.

Celery is usually sown at three different times: on a hot-bed in the beginning of March, and in the open ground in March, and again in April. The seedlings, when about two inches high, are pricked into rich soil, in which they are allowed to stand till they are four or five inches high. The first crop is defended by frames or hand-glasses, and is planted wide to admit of being lifted with balls of earth adhering to the roots. Towards the end of May trenches for blanching the celery are prepared. These trenches are three and a half or four feet apart, fifteen inches wide at the bottom, and about a foot below the natural level of the surface. The soil at the bottom of the trench is carefully digged and manured, and a single row of plants is placed in each trench. Sometimes where a large supply is required, the trenches are made six feet wide, and after a similar preparation, rows fifteen or eighteen inches apart are planted across the trenches. As the plants advance in growth, earth is laid up about the stalks of the leaves, an operation which is repeated at the end of every ten or fifteen days, care being taken not to choke the plants. As the celery approaches maturity, scarcely any thing but the tips of the leaves appear above the ridges, and, when lifted, the stalks are found to be completely blanched. Successional crops should then be planted out. Celery loves a rich light soil and an abundance of moisture.

Celeriac, or turnip-rooted celery, is treated at first like the early crop of common celery. In the beginning or middle of June it is planted out in a flat bed, in drills fifteen inches apart. A single earthing afterwards suffices. Its large round roots are used in soups, and are much relished by some. It is, however, more attended to in France and the Low Countries than in Britain.

Garden Cress (*Lepidium sativum*), and White Mustard (*Sinapis alba*), are generally associated in their use as salads, and in their culture in the garden. They are annual plants, and are eaten only when very young. In winter they may be raised on a slight hot-bed, in spring under hand-glasses, or in drills near a south wall, and in summer, when they should be sown once a fortnight, in drills, in any cool shady situation. Table mustard, which is made from *Sinapis nigra* L., belongs rather to the department of agriculture. Durham mustard, which is distinguished for its poignancy, though not remarkable for fine colour, is said to be made principally from the seeds of the common yellow field mustard or charlock, *Sinapis arvensis* L.

Of Rhubarb (*Rheum*) several species and many varieties are cultivated for the purpose of supplying materials for tarts, the foot-stalks of the leaves being well adapted for that purpose, and coming into use at a most convenient season. R. *rhaponticum* and *palmatum* were the species first employed, and are still occasionally used; but the sorts now preferred are seminal varieties, mostly allied to *R. hybridum* and *R. undulatum*. The following are the most worthy of notice:

Wilmot's,
Gigantic,
Elford,
Buck's.

Of these, the talented editor of the *Horticultural Register* decidedly prefers the first two, the former as being excellently suited for forcing, the latter as growing to a great size, without rankness. They may be multiplied by dividing the roots, and this is the common practice; but they thrive much better when grown from seed. Mr Paxton recommends sowing on a slight hot-bed in spring, and transplanting out in rows in the month of May. No stalks are gathered from them for the first two years, but in the third season they are fit for use. A portion of the crop is allowed to come on under the general influence of the season; but much also is forced, which may be done in a variety of ways. Some treat it like sea-kale, covering the root allowed to remain in the ground with a large pot or box, and wrapping it round with litter. Others take up the roots in autumn, pot them, and force them in vineries or hot-beds. Perhaps the best method is to procure long narrow boxes of a moderate depth, and to place them, packed full of roots, in a mushroom-house or cellar, where there is a considerable temperature. The rhubarb soon throws up its stalks, and these being partially etiolated, possess a delicacy and flavour superior to those grown in the open air. It is easy, by varying the time of subjecting the boxes to the increased temperature, to keep up a succession of rhubarb stalks, from the period at which kitchen apples become scarce or begin to lose their flavour, till green gooseberries come into season.

The following annual plants are occasionally used in cookery, or as salads: *Chervil*, Scandix cerefolia; *Purslane*, Portulaca oleracea; *Lamb's-Lettuce*, Fedia olitoria; *Indian Cress*, Tropæolum majus; *Marigold*, Calendula officinalis; *Borage*, Borago officinalis. These may be sown in spring, or in the beginning of summer, in any fresh light soils. In general a small quantity will suffice.

The *Common Sorrel*, Rumex acetosa; and the *French Sorrel*, Rumex scutatus; and the *Horse-radish*, Cochlearia Armoracia, are perennials, and are increased by parting their roots. They thrive in any cool shady situation.

The *Capsicum* or *Chili*, Capsicum annuum, and the *Love-Apple*, Solanum Lycopersicum, are tender annuals from tropical climates. Both are sown in hot-beds in spring, and after being transplanted and nursed in separate pots, are planted out, the former in a warm border, and the latter against a wall. In Scotland the Capsicum will scarcely mature its fruit without the aid of glass.

Dill, Anethum graveolens, and *Angelica*, Angelica archangelica, are umbelliferous biennials, which have been for a long period, though not extensively, cultivated in our gardens. They are easily raised from seed. With these may be associated the beautiful perennial, *Fennel*, Anethum Fœniculum, used in salads and sauces. It may be propagated either by parting the roots, or by seeds, which should be sown in autumn, soon after they are ripe.

In every garden there is a small department set apart for the culture of Sweet Herbs and Medicinal Plants. We need not here enter into details respecting their uses or culture, but shall merely give classified lists.

Shrubby Plants increased by parting the roots, or by cuttings:—*Thyme*, Thymus vulgaris; *Sage*, Salvia officinalis; *Winter Savory*, Satureja montana; *Rosemary*, Rosmarinus officinalis; *Lavender*, Lavandula Spica; *Hyssop*, Hyssopus officinalis; and *Rue*, Ruta graveolens.

Perennial Herbaceous Plants, increased by parting the roots:—*Spearmint*, Mentha viridis; *Peppermint*, M. piperita; *Pennyroyal*, M. pulegium; *Balm*, Melissa officinalis; *Tarragon*, Artemisia Dracunculus; *Tansy*, Tanacetum vulgare; *Costmary*, Balsamita vulgaris; *Chamomile*, Anthemis nobilis.

Biennial or Annual Plants, increased by sowing the seeds:—*Clary*, Salvia Sclarea; *Coriander*, Coriandrum sativum; *Caraway*, Carum Carui; *Sweet Marjoram*, Origanum majorana; *Summer Savory*, Satureja hortensis; *Sweet Basil*, Ocimum basilicum; and *Bush Basil*, O. minimum. These last, the basils, which are natives of the East, and in much request for their delicate flavour, are raised on hot-beds in spring, and transplanted with balls, into some warm situation. In Scotland, they are mostly treated as tender annuals, and are grown, under glazed frames, in flowerpots.

There are besides a few others, which, in each of the classes, more properly belong to the Dietetics, and the Materia Medica. The young green leaves of Prunus Laurocerasus (under the name of laurel), may properly enough be employed in garnishing; but they ought never to be used, as they too often are, for giving a nutty flavour, or for *greening* other articles; hydrocyanic acid being given out, and proving injurious, even in small quantities.

THE FLOWER GARDEN.

The cultivation of flowers, if not the most useful, is at least one of the most pleasing occupations of the horticulturist, and has generally shared largely in his attention. It is probable, that at first, flowers, as objects of curiosity, were confined to a few patches or borders in the garden, as is still the case in many old places; but in the progress of the art, and the diffusion of taste, separate departments were allotted to them under the name of Flower Gardens. After some general remarks on style and situation, we shall treat of the component parts of flower gardens, their various decorations, and of floriculture.

The designing of flower gardens unquestionably belongs to the fine arts, involving in it, the exercise of invention, taste, and foresight. Its principles are more vague and evanescent than those of any of the sister arts. The hand of the designer is not here guided by the imitation of Nature, for his work is wholly artificial in its arrangements and appliances; neither does utility come in, as in architecture, to supply a form and frame-work, which it is the artist's part to adorn. "As flower gardens," says Mr Loudon, the best authority on this topic, "are objects of pleasure, the principle which must serve as a guide in laying them out, must be taste. Now, in flower-gardens, as in other objects, there are different kinds of tastes; these embodied are called styles or characters; and the great art of the designer is, having fixed on a style, to follow it out unmixed with other styles, or with any deviation which would interfere with the kind of taste or impression which that style is calculated to produce. Style, therefore, is the leading principle in laying out flower gardens, as utility is in laying out the culinary garden. As objects of fancy and taste, the styles of flower gardens are various. The modern style is a collection of irregular groups and masses, placed about the house as a medium, uniting it with the open lawn. The ancient geometric style, in place of irregular groups, employed symmetrical forms; in France, adding statues and fountains; in Holland, cut trees and grassy slopes; and in Italy, stone walls, walled terraces, and flights of steps. In some situations these characteristics of parterres may, with propriety, be added to, or used instead of the modern sort, especially in flat situations; such as are inclosed by high walls; in towns, or where the principal building or object is in a style of architecture which will not render these appendages incongruous. There are other characters of gardens, such as the Chinese, which are not widely different from the modern; the Indian, which consists chiefly of walks under shade, in squares of grass; the Turkish, which abounds in shady retreats, boudoirs of roses and aromatic herbs; and the Spanish, which is distinguished by trellis work and fountains; but these gardens are not generally adapted to this climate, though, from contemplating and selecting what is beautiful or suitable in each, a style of decoration for the immediate vicinity of mansions, might be composed preferable to any thing now in use." It may, however, be remarked, that the flower garden properly so called, has generally been too much governed by the laws of landscape gardening, and these often ill-understood, and misapplied. In the days of "clipped hedges and pleached alleys," the parterres and flower-beds were of a description the most grotesque and intricate imaginable. At a subsequent period, when the natural and the picturesque became the objects of imitation in the park, there appeared the most extravagant attempts at wildness in the garden. The result has been unfortunate. It is not meant that when there are merely a few patches of flowers by way of foreground to the lawn, they should not be subordinated to the principles which regulate the more distant and bolder scenery; but wherever there is a flower garden of considerable magnitude, and in a separate situation, it should be constructed on principles of its own. In such a spot, the great object must be to exhibit to advantage the graceful forms and glorious hues of flowering plants and shrubs; and it is but seldom that mere elegancies in the forms of compartments, and other trickeries of human invention, can bear any comparison with these natural beauties. To express the peculiar nature of garden scenery, as distinct from the picturesque in landscape, Mr Loudon has invented the term *gardenesque;* and, whatever may be thought of the term itself, it is very desirable that the distinction should be preserved.

Two varieties of flower gardens have chiefly prevailed in Britain; one, in which the ground is turf, and the pattern, so to speak, is composed of a variety of figures cut out of the turf, and planted with flowers and shrubs; and another, when the flower-beds are separated by gravel walks, without being interspersed with grass at all. The choice of one or other of these varieties ought greatly to depend upon the situation. When the flower garden is to be seen from the windows, or any other elevated point of view, from which the whole or the greater part of the design may be perceived at once, perhaps the former should be preferred. Where the surface is irregular, and the situation more remote, and especially where the beauty of flowers is the chief object of contemplation, the choice should probably fall on the latter. This variety, too, seems preferable, on the principle of contrast, where there are large lawns in the outer grounds, in order that *kept* (or smoothly mown) grass may not be found every where.

Respecting the situation of the flower garden, no very precise directions can be given, as it must be influenced by the nature of the lawns, and of the site of the mansion to which it is attached. Generally speaking, it should not be at any great distance from the house; and in places where there is no distant view of importance, it may be constructed under the windows. In retired scenes, it is delightful to step out of the drawing-room into compartments of flowers, in the vicinity of a greenhouse or conservatory. On the other hand, when the park is spacious, and the prospects extensive and picturesque, it is perhaps better that the flower garden should be at some distance, say not more than a quarter of a mile, and out of sight of the house, but with an easy access in any sort of weather; an arrangement which would give an agreeable termination to a short walk, a desirable matter in most cases, for it has been often remarked that many parts of

Fl er
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extensive grounds remain unvisited, because they afford no remarkable object to attract the attention.

The particular form of a flower garden is equally beyond the inculcation of specific rules. Indeed, it may be of any shape, and, except where the dimensions are extremely limited, the boundaries should not be continuously visible. The taste of the proprietor or designer, and the capabilities of the situation, must determine not only the external configuration, but also the arrangement of the interior parts. By judicious management, it may be made to pass through shrubbery, gradually assuming a more woodland character, and groups of trees, into the park on the one hand, and into the kitchen garden or orchard on the other. In most cases, even when it is in the vicinity of the mansion-house, the flower garden should be encircled with some sort of fence, in order to convey the idea of protection, as well as to furnish security to the vegetable inmates of the parterres, it being impossible to carry on floriculture to any great extent in open places which are accessible to hares and rabbits. In detached localities, the fences may be made sufficiently strong to preclude the intrusion of every species of vagrant; and these it is not difficult to mask with shrubs and trees. A north wall of moderate extent and moderate elevation, is often desirable, as affording space for ornamental climbers, and half-acclimatized exotics, and as forming a *point d'appui* for the conservatory and other botanical structures. Such a wall may be surmounted with urns and other architectural ornaments, and screened at some little distance behind by trees. The other fences may be of wire-work, generally called *invisible*, or of wooden rails, or of holly hedges with rails.

Formerly the flower-beds were made either circular, straight, or in curves, and were turned into knots, scrolls, volutes, and other compartments; and this taste prevailed, perhaps, in some measure from a desire on the part of the contrivers, to compensate by their ingenuity for the paucity of the ornamental plants which they then cultivated. Now that the riches of Flora have poured into our gardens, a simpler taste has obtained. Of the figures in fashion at present in the lawn-flower-garden, perhaps the kidney-shape and its varieties occur too frequently. It is needless as well as impossible to specify the numerous configurations of flower-plots, for they abound in kaleidoscopical variety. Good taste will suggest that those only should be associated which harmonize well together; and it is better to incur the hazard of an apparent monotony, than to excite wonder by incongruous combination. When the figures are separated by turf, it is necessary that the little lawns or glades should have a certain degree of breadth, as nothing has a worse effect than over-crowding. A multitude of little figures should also be avoided, as they produce what Mr Gilpin calls *spottiness*, and which, as he has correctly pointed out, is a grievous deformity. In this sort of flower garden, it is desirable that a gravel walk should skirt along at least one side of the principal figures; in our humid climate, the grass would otherwise render them inaccessible with comfort during a great part of the year. In those gardens in which turf is wholly or partly excluded, the compartments should be of a larger and more massive character. Narrow borders, bounded by parallel straight lines and concentric curves, should be avoided. The centres of the figures should be filled with tall-growing shrubs, and even with an occasional low evergreen tree, such as a yew or a holly. The walks, arranged in long concave curves, may communicate here and there with one another. A dial, a few seats and arbours, with an urn or two or a vase, may be introduced with good effect. It is to be regretted that few good specimens of this species of flower garden have hitherto been executed in Britain.

Amongst the accompaniments of the flower garden may be mentioned the Rock-work. This consists of variously grouped masses of large stones, generally such as are remarkable for being figured by water-wearing, or for containing petrifactions or impressions; and into the cavities between the stones, filled with earth, alpine or trailing plants are inserted. In proper situations, a small piece of water may be introduced, for the culture of aquatic plants. One of the walks is sometimes arched over with wire-work, and covered with ornamental climbing shrubs, forming a delightful promenade in the glowing days of summer. A separate compartment, generally of a regular figure, is set apart for roses, under the name of the Rosary. A moist or rather a shady border, with bog earth, is devoted to that class of shrubs, commonly, but not very accurately, designated "American plants." In extensive places, a separate "American Garden" is often formed, in a locality which, if not damp, has at least the command of water, occupying generally some warm corner of the park.

Flower
Garden.

Some writers have advocated the formation of Winter and Spring Gardens in separate localities; but we are not aware that their ideas have ever been embodied to any great extent. It is proposed that in the winter garden should be assembled all the most beautiful evergreen shrubs and plants, together with the few flowers that bloom during the winter months. The situation, it is recommended, should be well sheltered, and open only to the warm rays of the sun, which are peculiarly grateful in our cold winter seasons. However attractive this scheme may be in theory, it seems doubtful whether it would be very successful in execution. Masses of evergreens have a sombre and monotonous effect, even in winter, unless occasionally broken and varied by deciduous trees. The contrast of their leafless neighbours relieves the intenseness of their gloom, and sets off their brilliancy. Though a winter garden, the very name of which is chilling, is perhaps not very desirable by itself, the object to be attained in it should be kept in view in the formation of the park or flower garden. We can easily suppose a particular section of the latter to contain a predominance of evergreens, and to possess the principal characters of a Winter Garden, without the formality of its name and purpose. In the immense variety of situations, it is not difficult to imagine a sloping bank, for instance, facing the sun, with a long walk skirting its base, the lower side of which might be adorned with a border or narrow parterre planted with arbutus and periwinkle, whilst the slope is covered with the higher evergreens, and the summit of the acclivity is crowned with groups of deciduous trees, interrupted by a few straggling firs, through which the wind, unfelt below, might sigh its melancholy music. Again, the Spring Garden, which need not be of very great extent, may take refuge in the vicinity of the greenhouse or conservatory, with which it is naturally allied.

Soil.—A variety of soils is required in the flower garden, to suit the very different kinds of plants that fall to be cultivated. To florists' flowers particular compounds are assigned, and these shall be mentioned when treating of the flowers themselves. *American plants* require a peaty earth, varying from boggy peat to almost pure sand. Alluvial peat, that is, boggy earth which has been washed away and incorporated with white sand, is to be preferred: peat, cut from its natural bed and only partially decomposed, is of no value at all, or is positively prejudicial to plants. In collecting soil from the surface of a muir, it is proper to take no more than the upper turf or sod, with the peat adhering to it, and only from the driest parts of the muir, where, besides the common heath, fescue-grasses occur. Where this cannot be procured, a good substitute is found in vegetable mould, that is, decayed leaves swept from lawns or woods, and allowed to lie in heaps for a few years. For the general purposes of the flower garden, a light loamy soil is advantageous; and where the natural covering is thin, or requires making up, recourse should be had to the surface-earth of old pastures, which, especially when incumbent on trap-rocks, is found to be excellent. It is expedient to have a large mass of this material in the compost yard. The turf, and the surface-soil adhering to it, should be laid up in a rough state, in which way it is continually ameliorating by the decomposition of the vegetable matters, and the action of the air.

Garden Walks.—During the prevalence of the Dutch taste, grass-walks were common in our gardens; but, owing to their frequent humidity in our climate, they have in a great measure disappeared. Their disuse is perhaps to be regretted, as in some situations, particularly behind lengthened screens of trees, or in gardens from which grass has been in a great measure excluded, an example or two of them would be agreeable. It is justly observed by Sir William Temple, that "two things peculiar to us, and which contribute much to the beauty and elegance of our gardens, are the gravel of our walks, and the fineness and almost perpetual greenness of our turf;" and therefore no trouble should be spared in securing excellence in these respects. In old times grass walks were formed with much care. After the space which they were to occupy had been digged and levelled that it might subside equally, a thin layer of sand or poor earth was laid upon the surface, and over this a similar layer of good soil. This arrangement was to prevent excessive luxuriance in the grass. In selecting the seed, all annual, wiry, and coarse sorts of grass should be avoided. Perhaps a mixture of Roughish Meadow-grass (Poa trivialis), Sheep's Fescue-grass (Festuca duriuscula and Festuca ovina), and Crested Dogstail grass (Cynosurus cristatus), is about the best that could be selected. Poa nemoralis is well adapted for shaded situations.

Gravel-walks, in this department, are formed precisely in the same manner as those in the kitchen garden. It may, however, be remarked, that a multitude of gravel-walks, particularly when narrow, have a puny effect. All the principal lines should be broad enough to allow at least three persons to walk abreast; the others may be narrower. Much of the neatness of walks depends upon the material of which they are made. Gravel from an inland pit is to be preferred; though occasionally very excellent varieties are found upon the sea-coast. The gravel of Kensington and Blackheath has attained considerable celebrity; and is frequently employed in remote parts of the kingdom, the expense being lessened by its being conveyed to different sea-ports as ballast for ships. In summer a gravel-walk requires hoeing and raking from time to time, to clear it from weeds and tufts of grass. After this operation, or even after a simple sweeping, it is rolled down with a hand-roller; and this is repeated as often as the surface is ruffled. Nothing contributes more than frequent rolling to the elegance and convenience of garden walks.

Edgings.—Walks are generally separated from the borders and parterres by a variety of plants planted closely in line. By far the best edging is afforded by the Dwarf Dutch Box (Buxus sempervirens var). It is extremely neat, and, when annually clipped, will remain in good order for many years. It may be planted at any season, except when in full growth or in mid-winter. Excellent edgings are also formed by Sea Pink (Statice armeria) and Double Daisy (Bellis perennis). Dwarf Gentian (Gentiana acaulis) and London Pride (Saxifraga umbrosa) are also sometimes used. Indeed, any low-growing herbaceous plant, susceptible of minute division, is fitted for an edging. Among the great variety occasionally employed for this purpose may be mentioned, the Pansy (Viola tricolor), the Dwarf Bell-flower (Campanula pumila), the Cowslip, Polyanthus, Auricula, Hepatica, Veronica fruticulosa, and Erica carnea. Edgings may also be formed of spars of wood, narrow pieces of sandstone flag, or even of slight bars of cast iron. In shrubberies and large flower-plots, verges of grass-turf, about a foot in breadth, make a very handsome border to walks. These should not be allowed to rise high above the gravel: an inch and a half may be assigned as the limit they should not exceed. The grass is kept short by repeated mowings, and the edges are defined by clipping with shears, or cutting with a paring iron.

Shrubs.—Much of the beauty of the pleasure garden depends upon the proper selection and disposition of ornamental trees and shrubs; and it is to be regretted that this department of the art has often been greatly neglected. In many gardens we still find only a few evergreens, and a parcel of rugged deciduous species, introduced probably before the age of Miller. No wonder is it, therefore, that we sometimes hear of the insipid scenes of the shrubbery. Nevertheless, shrubs are highly elegant in themselves, and they afford a most efficient means of diversifying garden scenery. Of the many beautiful species now to be had in Britain, and affording the materials of exquisite decoration, we can mention only a few. For extensive lists and for much general information, we may once more refer to the work of Mr Loudon.

Of Evergreens, besides the Common Laurel (Prunus Laurocerasus) and the Portugal Laurel (P. Lusitanica), we may notice the American Arborvitæ (Thuja occidentalis), as adapted to large masses of shrubs; and the Chinese Arborvitæ (T. orientalis), whose size and mode of growth fit it for smaller compartments. The different varieties of Rhamnus Alaternus, and the species of Phillyrea and Juniperus, have long and deservedly been favourite evergreens. The Sweet Bay (Laurus nobilis), in favourable situations, rises into a handsome shrub or low tree, and may convey to the student of the classics an idea of the Delphic laurel. The Strawberry tree (Arbutus Unedo), a native of Ireland as well as of the south of Europe, will always find a place as one of the most elegant of plants, equally beautiful as regards foliage, flower, and fruit: nor should its countryman, the Irish Yew, ascending like the pillared cypress, be forgotten. The Cypress itself, though rather a denizen of the park, may be sparingly introduced. The Laurustinus (Viburnum Tinus), with blossoms approaching the snow in whiteness, enlivens the winter season, when nothing else is in flower in the shrubbery. The Swedish and Irish Junipers deserve a place. Different species of Daphne will not be forgotten; it may be sufficient to enumerate pontica, collina, Cneorum, and hybrida. As extremely low evergreens, we may mention Gualtheria procumbens and Shallon, Polygala Chamæbuxus, and Astragalus Tragacantha; but these would probably be better placed among what are popularly called American plants. Of the more tender evergreens, we should name the Andrachne (Arbutus Andrachne), a beautiful shrub, but liable to be injured by severe frosts. The Broad-leaved Myrtle (Myrtus Romana), in warm places, and with the aid of a covering in the depth of winter, may be made to clothe the walls with its brilliant verdure for eight months in the year, and with its white flowers for some weeks in the end of summer. Aucuba Japonica, and Buxus Balearicus, are handsome shrubs, of a somewhat stronger constitution: the former is very ornamental in dull shady places, where no other shrub will grow. The beautiful tribes of Cistus and Helianthemum, some of which are quite hardy, are admirable for adorning sloping banks.

Amongst the shrubs that require a peaty soil, or at least a damp and shady situation, the splendid genus Rhododendron holds the principal place. Of the larger species may be mentioned R. Ponticum, Catawbiense, and maximum, with their many beautiful varieties. In early spring, R. Däuricum expands its blossoms among the first of flowering shrubs. Nor should we overlook R. punctatum, hirsutum, ferrugineum, and Chamæcistus, of humbler growth, but not inferior in beauty. With these the closely cognate genus of Azalea, with its multitudinous species and varieties, disputes the palm of elegance. The pale and drooping Andromedas are scarcely of inferior interest. The hardy Heaths, particularly Erica carnea, tetralix, and stricta, Menziesia polifolia and cœrulea, and the Canadian Rhodora, combine to bring up the rear of this department of Flora's train.

The deciduous flowering shrubs are too much neglected in many gardens. They are seldom well managed, either in point of arrangement or in the evolution, by pruning, of picturesque effect. Very often they are huddled together promiscuously, and grow up into the shape of huge sheaves of rushes. With judicious management, there is not a finer object in the vegetable kingdom than the common Lilac (Syringa vulgaris), or the hybrid Varin (S. Rathomagensis). Even the old Guelder-Rose (Viburnum Opulus) is worthy of the poet's eulogy; the "scentless rose," which he describes as "tall,"

> "And throwing up into the darkest gloom,
> Of neighbouring cypress, or more sable yew,
> Her silver globes, light as the foamy surf
> That the wind severs from the broken wave."

It would lead us into disproportioned detail to specify a tithe of those shewy shrubs which should be dear to every floriculturist. Suffice it to name Ribes sanguineum, Daphne mezereum, Spartium of many species, Cytisus, Amygdalus, and Pyrus. The Ribes speciosum, or Fuchsia-flowered gooseberry, seems to require the protection of a wall, but deserves it. The fine suffruticose plant Pæonia Moutan, requires the most sheltered position in the shrubbery, where, in May and June, its flowers excel all others in magnificence. From such a list as that published by Mr Loudon, any one might form such a collection as, when properly arranged, would produce all the variety and beauty expected from the shrubbery.

There are many fine climbing shrubs, such as the species of Clematis, and of Lonicera or Honeysuckle. Others, though not precisely of this class, are much beholden to the shelter of a wall, such as the beautiful Magnolia conspicua, and Edwardsia tetraptera and microphylla. Among those of recent introduction, may be noticed Glycine Sinensis and Eccremocarpus scaber. The numerous species or varieties of Fuchsia, when planted against a wall, or even in the open ground, and shaded with an occasional covering in winter, convey to us a better idea of the riches of Chilian vegetation, than when they are confined to the shelves of the greenhouse. Many roses are also well adapted for walls, such as the varieties of Noisette, Boursault, and the different species from China.

A separate compartment, called the Rosary, is generally devoted to the cultivation of roses. It is often of an oval form, with concentric beds, and narrow intervening walks of grass or gravel, but it may assume any configuration which is suited to display this favourite plant. Of the thousand varieties of roses which exist in the nurseries, we pretend not to give any selection. It may, however, be remarked, that in planting the Rosary, care should be taken to classify the sorts according to the sizes and affinities, otherwise the effect will be much impaired. The climbing sorts may be advantageously introduced, being trained to pillar-like trellises. When the rosary is extensive, it is judicious to intersperse some of the most showy hollyhocks; for thus the beauty of the quarter is maintained in the later months of autumn, when the roses are chiefly past. Of late years, quantities of standard roses have been imported from the Continent. These are the finer sorts, budded on tall stocks of the wild species, such as R. villosa and canina. They are well adapted to stand singly on the little lawns in flower-gardens, or to break the uniformity of low flower borders.

All shrubs nearly may be propagated by layers, some by budding or grafting, many by separating the roots. In planting, shrubs may be arranged either singly or in masses: the latter method is perhaps the most efficient in the production of effect, but it should not be very servilely adhered to, as it is apt to beget monotony. Some kinds should never appear in masses: The white Portugal broom, for instance, when so arranged, gives a limy tint to a garden. Perhaps it is better that groups should contain a predominance of one shrub, set off by a few others of a contrasting figure or colour, than that they should be entirely homogeneous.

Herbaceous Plants.—Common perennial flowers, whether strictly herbaceous or bulbous, afford the principal materials for floral decoration. Botany supplies, as it were, the colours for the picture, and gardening grinds and prepares them for use. The painting is continually varying, and new shades are arriving and departing in succession. The least consideration of the subject will suggest the rule, that in planting flowers they should be arranged according to their stature, otherwise many of the most beautiful little flowers would be lost among their taller compeers. The lowest plants should therefore stand next the margin of the border or parterre, and they should increase in height as they go back. To produce a full shew, a profusion, just not amounting to crowding, is requisite. The flower-plots should present a regular bank of foliage and blossom, rising gradually from the front; but as this might convey an idea of too great precision, a few *staring* plants, on the same principle as those employed in greenhouses, should be thinly scattered over the surface. These may be shrubs, or any tall showy plant, such as Bocconia cordata, Papaver bracteatum, Gladiolus Byzantinus, or Lilium candidum. The management of colour is more difficult. When the length of the flowering season is considered, it will be obvious that it is impossible to keep up the show of a single border or plot for six months together, and consequently that much of the labour employed in mixing colours is misspent, since plants, as they are commonly arranged, come dropping into flower one after another; and even where a certain number are in bloom at the same time, they necessarily stand apart, and so the effects of contrast, which can be perceived only among adjacent objects, are entirely lost. To obviate this defect, it has been recommended that ornamental plants should be formed into four or five separate suites of flowering, to be distributed over the garden. Not to mention the more vernal flowers, the first might contain the flora of May; the second that of June; the third that of July; and the fourth the tribes of August and the following months. These plants should be kept in separate compartments, arranged either singly or in masses; but the compartments themselves should be so intermingled, as that no particular class should be entirely absent from any one quarter of the garden. The May parterres should, however, chiefly occur in the vicinity of the greenhouse or conservatory, or, when these are absent, in a warm sunny situation. The flowerings of June and July, as being highly shewy, should occupy the most conspicuous parts of the garden. The autumnal perennials, not being so imposing, may retire into the more secluded situations, as they are supplanted by the superior brilliancy of the annuals, which fill the vacant beds of florists' flowers, or are scattered over the faded clumps of May and June.

Before attempting to plant, the floriculturist would do well to construct tables or lists of flowers, specifying their respective times of flowering, their colours, and altitudes. These tables, when skilfully used, would prevent mistakes, produce a greater facility of execution, and put the colours nearly as much under control as they are on the painter's pallet. To diversify properly and mingle well together the reds, whites, purples, yellows, and blues, with all their

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intervening shades, requires considerable taste and powers of conception; but if success is not attained in the first attempt, inaccuracies should be noted, and rectified at the proper time next season. Certain series of colours have been given, but these it is needless to mention, as it is quite immaterial whether the first flower in a row be red or white. The principal object is to preserve an agreeable contrast; and as at particular seasons a monotony of tint prevails, it is useful at such times to be in possession of some strong glaring colours. White, for instance, should be much employed in July, to break the duller blues and purples which then preponderate. The orange lily, too, is very effective at that season. On the other hand, yellows are superabundant in autumn, and therefore reds and blues should then be sought for.

Besides mere vividness of colour and elegance of form, there are other qualities which render plants desirable in the flower-garden. Whoever has visited a botanic garden, must have been sensible of an interest excited by the curious structure or by the scarcity of some plants. Even quaintness of form is deserving of attention. The writer of this article has seen Allium fistulosum (the common Welsh onion) making a conspicuous figure in a flower-garden; and he remembers well a plant of sea-kale (Crambe maritima), which the good taste of the owner had introduced into the parterre, to the great disturbance of the ideas of the gardener. At the same time, it must be admitted that such expedients should be employed with reserve. No handsome plant should be rejected because it is common, nor any inconspicuous weed preserved merely because it is scarce. The flower-gardener should have a small nursery for the propagation of finer plants, to be transferred into the borders as often as is required.

We shall enumerate merely the names of a few of the most shewy flowers, adapted to the British flower-garden.

Vernal Herbaceous Plants.—Helleborus niger, lividus; Erianthus hyemalis; Hepatica triloba var.; Primula vulgaris var., veris, elatior, marginata, helvetica, nivalis, viscosa, integrifolia, cortusoides; Cortusa Matthioli; Soldanella alpina, Clusii; Viola odorata, tricolor, biflora, altaica; Dodecatheon Meadia vars.; Orobus vernus; Adonis vernalis; Omphalodes verna; Corydalis lutea, longiflora; Sanguinaria canadensis; Iris pumila; Anemone apennina, Halleri, pulsatilla.

Vernal Bulbous Plants.—Galanthus nivalis; Leucoium vernum; Crocus, species; Cyclamen coum, vernum; Corydalis bulbosa; Erythronium Dens canis; Narcissus Pseudo-narcissus, moschatus, odorus, Jonquilla, &c.; Fritillaria imperialis, meleagris, persica; Gagea lutea; Tulipa sylvestris; Iris persica; Trillium grandiflorum, &c.; Scilla verna, præcox, bifolia, sibirica.

Herbaceous Plants flowering in May. Anemone narcissiflora, sylvestris, dichotoma; Primula farinosa, scotica; Convallaria majalis; Uvularia grandiflora, perfoliata; Phlox divaricata, subulata, setacea, &c.; Asphodelus luteus, ramosus; Draba Aizoïdes; Viola cornuta, obliqua; Gentiana verna, acaulis; Lupinus polyphyllus; Gaillardia bicolor; Iris florentina, cristata, &c.—*Bulbs*: Leucoium æstivum, Scilla non-scripta, italica, &c. Hyacinthus monstrosus; Muscari moschatum, botryoides, comosum; Narcissus Bulbocodium, poëticus, &c.

June—Herbaceous Plants. Pæonia officinalis, albiflora, corallina, Humii, &c.; Dianthus, species; Geranium sanguineum, Lancastriense, Wallichianum, striatum, &c.; Monarda didyma, Kalmiana; Papaver bracteatum; Saxifraga, species; Spiræa, species; Mimulus luteus, moschatus; Trollius Americanus, europæus; Lysimachia verticillata; Veronica latifolia, &c.; Geum coccineum; Aconitum napellus, &c.; Potentilla nepalensis, &c.—*Bulbs*: Allium Moly, Gladiolus byzantinus, communis; Lilium Pomponium, bulbiferum, aurantiacum, monadelphum, penduliflorum, concolor, &c.; Iris Xiphium, Xiphioides, &c.

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July—Herbaceous Plants: Phlox intermedia, and many other species of that fine genus; Pentstemon, numerous species; Œnothera, various species; Campanula persicifolia, &c.; Asclepias amœna, syriaca; Iris fulva, pallida, variegata; Gentiana lutea, asclepiadea, cruciata, septemfida, &c.; Chelone obliqua, barbata, Lyoni.—*Bulbs:* Lilium martagon, canadense, tigrinum, superbum, &c.; Gladiolus cardinalis, Tigridia pavonia, Commelina cœlestis, Cyclamen hederæfolium.

Autumnal Herbaceous Plants: Phlox decussata, pyramidalis, tardiflora, &c.; Lobelia cardinalis, fulgens, splendens, &c.; Aster sibiricus, amellus, pulcher, &c.; Eschscholtzia californica; Solidago, several species; Aconitum japonicum, volubile, variegatum; Gentiana Saponaria; Pentstemon, several species.—*Bulbs:* Colchicum autumnale; Crocus nudiflorus, serotinus; Tritona pallida, media.

It is with regret that we thus confine ourselves to a dry list of border flowers; but to do them any thing like justice, would require many pages. Within the last few years great accessions have been made to our stores. The Lupines and Pentstemons from the Columbia River, the Verbenas and Calceolarias from South America, and the Potentillas and Geraniums from Nepal, have in a great measure changed the face of our flower gardens. While our riches have increased, the difficulty, as well as the necessity, of making a selection have increased also.

Most herbaceous perennial plants are propagated by parting the roots, or by cuttings; but some most conveniently by the sowing of seed.

Biennial Plants. Plants whose existence is limited to two years, in the latter of which they flower and then decay, are called biennials. Many of them possess considerable beauty; and by their easy propagation, and rapid growth, they afford a ready means of decorating borders. The following may be considered most worthy of notice: Agrostemma coronaria; Antirrhinum majus; Hedysarum coronarium; Lunaria biennis; Campanula media; Œnothera sinuata, biennis; Verbascum formosum, Hesperis matronalis, Scabiosa atropurpurea, Mathiola simplicicaulis. When a very desirable variety is procured, such as the striped Antirrhinum majus, attention should be paid to the striking of cuttings during the summer, as the only means of continuance.

Biennials are sown in beds in the end of spring, and are generally transplanted in the course of the autumn, into the places where they are intended to stand, that they may be confirmed before winter, and shoot up readily into flower in the following summer.

Annual Plants.—Many of the annuals species, though of fugitive duration, are possessed of much beauty of hue and elegance of form. They are further valuable from their pliability, so to speak, and the promptitude with which they may be used. They are besides of easy culture, many requiring nothing more than to have the seeds sown in the spot where they are to grow. Annuals may be divided into three classes, the *hardy*, the *half-hardy*, and the *tender*. The first class, as stated above, are sown at once in the ground which they are to occupy; the *half-hardy* succeed best when aided at first by a slight hot-bed, and then transplanted into the open air; the tender are kept in pots, and treated as greenhouse or stove-plants, to which departments they properly belong. It is scarcely necessary to remark that the *hardy* and *half hardy* sorts may be grown either in patches or in beds, and are subjected to all the rules which regulate the disposition of common border flowers.

Hardy Annuals.—Adonis autumnalis; Iberis umbellata; Knautia orientalis; Alyssum, several species; Linaria, various species; Delphinium Ajacis, consolida; Silene Armeria; Campanula speculum, Lorii; Lavatera trimestris; Malope trifida; Hibiscus trionum, bifrons; Nolana, various species; Papaver somniferum, numerous varieties; P. Rhœas, varieties; Gilia capitata, tricolor; Collinsia grandiflora; Kaulfussia amelloides; Clarkia pulchella, elegans; Œnothera rosea, rosea-alba, tenella, Lindleyana, Romanzovii; Rudbeckia amplexicaulis; Senecio elegans; Mathiola annua; Lupinus, several species.

Half-hardy Annuals.—Callistemma hortense; Lopezia racemosa, Tagetes patula, erecta, racemosa, &c.; Zinnia elegans, pauciflora; Xeranthemum annuum, Helichrysum fulgidum, Chrysanthemum carinatum; Amaranthus caudatus; Schizanthus pinnatus, porrigens, Grahami, Hookeri; Salpiglossis atro-purpurea, straminea; Petunia nyctaginiflora; Mirabilis Jalapa.

Tender Annuals.—Impatiens Balsamina, Browallia elata, Celosia cristata, Gomphræna globosa; Solanum melongena; Mesembryanthemum crystallinum.

We have been able to enumerate only a small selection of species, out of a multitude which is continually receiving accessions. Many of the sorts mentioned above have been introduced during the last ten or fifteen years; and we doubt not that, in an equal period from the present, many more will come into notice.

Before leaving this part of the subject, it may be proper to mention, that it is now the practice of some florists to grow and treat as annuals, or rather as biennials, great quantities of the more hardy Pelargonia, Verbenæ, Salviæ, Fuschiæ, Hemimeris, and other genera. Mr James Smith at Hopetoun House, every season propagates, by cuttings or seeds, several hundreds of these plants. Grown in moderate-sized pots, they are kept in frames or cold vineries during winter. About the end of May, or as soon as there is no longer any apprehension of injury from frost, the plants are taken out of the pots and plunged into the open ground, in any warm sunny spot or clump in the flower garden. If the stems are long or naked, they are pegged to the earth. Towards the middle of July they begin to grow vigorously, and in August or September present, in luxuriance, at least, if not in magnitude, a better representation of their native vegetation than we see elsewhere in our gardens. Upon the approach of frost, they are, with the exception of the Fuschias, left to their fate, as it is easier to propagate new ones than to preserve the old. These plants, with the fine new annuals, and the gorgeous Dahlias, give a splendour to the autumnal flower garden which in former times it did not possess.

Florists' Flowers.—This technical appellation has been restricted to certain flowers, which have been especial favourites with florists, and have consequently received a large share of their attention. Though possessed of great individual beauty, few of them are calculated to make a shew at a distance, and the arrangements requisite for their culture do not harmonize well with the general disposition of a flower garden. It is, therefore, desirable, particularly when considerable refinement is aimed at, that a separate garden, or a separate section of the garden, should be set apart for their culture. The more robust or less valuable varieties, however, which are often as shewy as the most esteemed, may be introduced into the general parterres. We shall notice the most considerable, in the order in which they naturally attract attention.

The Hyacinth, Hyacinthus orientalis, one of the most beautiful and fragrant of the spring flowers, is a native of the Levant, where it occurs abundantly, in form not unlike our common harebell. It has long been a favourite in the East: but has been brought to its present artificial perfection in Holland, chiefly since the beginning of last century. Many years ago it was successfully grown in the vicinity of Edinburgh, by Justice, one of the most ingenious horticulturists of his time: but it must be confessed that, in the culture of this flower, the British florists have never attained to the eminence of the Dutch, principally, however, as is alleged by some, from want of attention and pains-taking. According to Miller, the catalogues of the Haarlem florists used to enumerate 2000 sorts, some of which sold as high as L. 200 a bulb: they are now less numerous, and much less expensive.

Hyacinths are either single, semidouble or double, and exhibit a great variety of tint. In a fine flower the stalk should be tall, strong, and upright; the blossoms numerous, large, and suspended in a horizontal direction; the whole flower having a compact pyramidal form, with the uppermost blossom quite erect; the plain colour should be clear and bright; and strong colours are preferable to pale; when colours are mixed they should blend with elegance.

The hyacinth delights in a rich light sandy soil; and it is chiefly owing to the want of these qualities in his composts, that the British florist fails in the growth of this beautiful plant. The Dutch compost, as given by the Hon. and Rev. Mr Herbert in the *London Hortic. Transactions* vol. iv., is the following: One-third coarse sea or river sand; one-third rotten cow-dung without litter; and one-third leaf mould. The natural soil is removed at least two feet deep, and the vacant space filled up with compost, previously prepared and well mixed. These materials retain their qualities for six or seven years, but the Dutch do not plant hyacinths upon the same place for two years successively. In the alternate years they plant it with narcissus or crocus. We may mention that, in the finest bed of hyacinths which we have seen in Scotland, a considerable portion of the soil was composed of *sleetch*, a sort of sandy and marly deposition from the ooze on the shores of the Forth.

According to Mr Main (*Villa and Cottage Florists' Directory*, p. 84.) St Crispin's day, the 25th of October, is the best time to plant the bulbs. They are arranged in rows, eight inches asunder, there being four rows in each bed; or, if more convenient, they may be placed in rows across the bed. The bulbs are sunk about three or four inches deep, and it is recommended to put a small quantity of clean sand below and all around them. As the roots are liable to be injured by frost, it is usual to cover the beds with decayed tan-bark, with litter or with awnings. The first may be considered the neatest during winter, but an awning is nearly indispensable in spring when the lingering colds prove exceedingly hurtful to the young flower-stems. The awning may be made of coarse sheeting or duck. As the flower-stems appear, they are tied to little rods, to keep them upright and preserve them from accident. In order to perfect the colours, the rays of the sun are admitted in the morning or in the evening, but the glare of mid-day and the cold of the night, are both excluded. When the season of blossom is over the awning is removed, or only replaced to keep off heavy rains. Much of the success, in the culture of this flower, depends on the subsequent management of the bulbs. It is the practice in Holland, about a month after the bloom, or when the tips of the leaves assume a withered appearance, to take up the roots, and, cutting off the stem and the foliage within half an inch of the bulb, but leaving the fibres, to lay the bulbs sideways on the ground, covering them with half an inch of dry earth. After three weeks, they are again taken up, cleaned, and removed to the store-room. In this country it is more common to allow them to stand till the leaves be withered, and then to take them up at once. In the store-room the roots should be kept dry, well-aired, and apart from each other.

Where forcing is practised, a few hyacinths may be forced in deep flower-pots filled with light earth, and, when coming into flower, transferred to the greenhouse, which they enliven at the deadest season of the year. In chambers, they are grown in water-glasses made for the purpose; or, with still greater advantage, in boxes filled with damp hypnum moss.

New varieties of hyacinths are procured by sowing the seed; but this is a tedious process, and seldom followed in this country. The established sorts are propagated by offsets or small bulbs, which form at the base of the parent bulb. Almost all the hyacinths cultivated in this country are imported from Holland, and the quantity of roots annually introduced must be very considerable.

The *Tulip*, Tulipa Gesneriana, is a native of the East, whence it was introduced in Europe about the middle of the 16th century. Gaudy as it is, it has no proper corolla, but only a calyx of six coloured sepals. About the year 1635 the culture of the tulip was very engrossing; and, indeed, the rage for possessing rare sorts had become so great in Holland, as to give rise to a strange species of gambling, known to the collectors of literary and scientific anecdotes by the name of Tulipo-mania, which has tended to bring unmerited discredit on this fine flower. At present the finer tulips are mostly of moderate price, and, though not to be met with in every garden, have yet some ardent cultivators.

There are some varieties, such as the early Duc Van Thol, the Clarimond, the Parrots, and the Double Tulips, which belong, properly speaking, to the general cultivator. In this country, the florists' tulips are arranged under four classes. 1. The *Bizarres*, which have a yellow ground marked with purple or scarlet. 2. The *Byblœmens*, with a white ground marked with violet or purple. 3. The *Roses*, with a white ground marked with rose-colour. 4. The *Self* or *Plain-coloured* tulips, which are of one uniform colour, and are chiefly valued as breeders. The Byblœmen class includes most of those tulips which are held in highest esteem in this country.

The properties of a fine late tulip, as specified by Mr Hogg, are the following, somewhat abridged. The stem should be strong, erect, thirty inches high: the flower large, of six petals (sepals), which should proceed almost horizontally at first, and, turning up, should form an almost perfect cup, with a round bottom, rather widest at top. The three exterior petals should be rather larger than the three interior ones: the limbs of the petals should be rounded, and freed from every species of serrature. The ground colour of the flower at the bottom should be clear white or yellow; and the various rich-coloured stripes, which are the principal ornament of a fine tulip, should be regular, bold, and distinct at the margin, and terminate in fine broken points, elegantly feathered or pencilled. There are other refinements upon which florists are not quite agreed: and it must be confessed, that their standard of excellence is somewhat factitious; for, to an uninstructed eye, though practised in the contemplation of other sorts of beauty, a tulip, which by them is looked upon as worthless, will often appear as fine as the choicest variety in the select bed.

Tulips prosper in a light sandy soil, richly manured with well rotted cow dung. Twenty inches depth of soil should be removed, and the vacant space filled up with compost. Some put alternate layers of light soil and cow dung. The bed should be filled up with compost about the middle of October, and in a fortnight, when the soil has subsided, the bulbs are planted in rows, distant eight or nine inches, and at the depth of about three inches. A little clean sand may be put around the bulbs. After planting, the bed may be covered over with tan, or with a hooped awning, as in the case of hyacinths. In spring, it is necessary to shield the leaves and flower-stalks from frost, and also from heavy rains; and, when in bloom, the flowers must be sheltered from the sun's rays, by which they are speedily injured. After the sepals have fallen, the seed-vessels are broken off close by the stem, to prevent the plant from exhausting itself in perfecting seed, and to direct its energies to the forming of the new bulb. When the leaves have withered, the bulbs are taken up, dried, and stored until the planting season come round.

Tulips are readily propagated by offsets, which are taken off from the parent bulbs, and nursed in separate beds till they be full grown. New varieties are raised from seed; they are from five to seven years old before they flower, and, if raised from promiscuous seed, they often turn out worthless. Early in the 18th century, the distinguished Scottish cultivator, Sir James Justice (already mentioned as a most successful cultivator of hyacinths), was eminently successful in raising fine seedling tulips; and some skilful florists of our own day, such as Mr Strong of Brook Green, and Mr Oliver of Edinburgh, succeed in breaking their seedlings into colours equal to the finest byblœmens of Holland. They save the seeds from the first-rate sorts, the stigma of the intended parent flower having been fertilized with the pollen of some other fine variety. Seedling tulips, it may be remarked, present this anomaly for the first two or three years, that they form their new bulbs several inches below the old ones, so that an inexperienced cultivator is sometimes apt to miss them at the time of lifting.

The *Ranunculus* (R. Asiaticus) is, like many of the other florist's flowers, a native of the Levant, where it is a favourite of the Turks. It has sported into innumerable varieties, and those now in cultivation in this country are mostly of British origin. The plant is of small stature, furnished with decomposite leaves, and rising from a root formed by a bundle of little tubers.

According to the canons of floral criticism, the properties of a fine double ranunculus are the following: The stem should be strong, straight, and from eight to ten inches high, supporting a large well-formed blossom at least two inches in diameter, consisting of numerous petals, the largest at the outside, and gradually diminishing in size as they approach the centre of the flower, which should be well filled up with them. The blossom should be of a hemispherical form; its component petals imbricated neither too closely nor too much separated, and having rather a perpendicular than a horizontal direction. The petals should be broad, and have perfectly entire well-rounded edges; their colours should be dark, clear, rich or brilliant, either consisting of one colour throughout, or be otherwise variously diversified on an ash, white, sulphur or fire-coloured ground, or regularly striped, spotted, or mottled in an elegant manner.

The ranunculus requires a stronger and moister soil than most other flowers. Maddock prefers a fresh, strong, rich loam. Hogg recommends a fresh loam, with a considerable portion of rotted cow or horse dung. The Rev. Mr Williamson (Hort. Trans. vol. iv.) uses a stiff clay loam, with a fourth of rotten dung. "The bed should be dug from eighteen inches to two feet deep, and not raised more than four inches above the level of the walks, to preserve the moisture more effectually: at about five inches below the surface should be placed a stratum of two-year-old rotten cow dung, mixed with earth, six or eight inches thick; but the earth above this stratum, where the roots are to be placed, should be perfectly free from dung, which would prove injurious if nearer. The fibres will draw sufficient nourishment at the depth above mentioned; but if the dung were placed deeper, it would not receive so much advantage from the action of the air." Other florists have recommended to put the manure at least two feet and a half below the surface of the earth. The principal object, however, is to maintain throughout the bed a genial moisture; and this is to be done by avoiding all hot gravelly earths, and particularly soils that are apt to cake. The tubers are planted late in autumn or early in spring, in rows five or six inches apart, and three or four inches separate in the rows. They should be so close that the foliage shall cover the surface of the bed, for in this way a salutary degree of shade and moisture is preserved. The autumn planted roots must be sheltered from frost by old tan or hooped mattings. When in flower, the plants are covered with an awning. When the leaves wither, the roots are taken up, dried, and stored.

Scarcely any florists' flower is more readily propagated from seed, or sooner repays the care of the cultivator. The seed is obtained from semi-double sorts, which are often of themselves very beautiful flowers. It is generally sown in boxes in autumn or spring. We have often seen it committed with success to the open ground. The young plants thus raised flower, often in the second, and always in the third year.

The *Anemone* of the flower garden includes two species, Anemone coronaria, a native of the Levant, and A. hortensis, a native of Italy. These have long shared the attention of the florist, and in his arrangements have generally been associated with the ranunculus, resembling it in its natural affinities and mode of culture. The single and semi-double flowers are considered nearly as fine as the double ones. The sorts are numerous, but at present are seldom distinguished by names. In a fine double anemone, the stem should be strong, erect, and not less than nine inches high. The flower should be at least two and a half inches in diameter, consisting of an exterior row of large well rounded petals, in the form of a broad shallow cup, the interior part of which should contain a number of small petals, mixed with stamens, imbricating each other. The colours should be clear and distinct, when diversified in the same flower, or striking and brilliant, when there is only one tint.

The soil and culture are so nearly the same as in the ranunculus, that it is needless to specify them. The plant continues longer in flower, and the leaves often remain so long green, that it is difficult to find a period of inaction in which to take up the roots. It has been recommended, that as soon as the bloom is over, the bed should be screened from rain by mattings until the leaves wither. As the roots are rather brittle, they require considerable care in handling. Anemones are easily raised from the seed. A bed of single anemones, it may be remarked, is a valuable addition to a flower garden, as it affords, in a warm situation, an abundance of handsome and often brilliant spring flowers, almost as early as the snowdrop or crocus.

The *Narcissus* is an extensive genus, including a great many interesting species and varieties. It belongs, however, rather to the botanico-florist than to the florist proper; but as it contains many plants of great elegance, it ought to receive more general attention. The Polyanthus Narcissus (N. Tazetta) affords the varieties which are chiefly cultivated by florists. These prosper in a rich light soil, containing a little dung. The roots should not be stirred more frequently than once in three years; and this remark applies also to Narcissus Jonquilla and odorus, the small and large jonquil, of which fragrant plants there should be beds in every flower garden. N. Tazetta, like the hyacinth, may also be grown either in pots or in water-glasses.

Iris. The species which peculiarly appertain to the florist are, I. Xiphium and Xiphioides, of both of which there are many beautiful varieties. They are of easy culture, succeeding in almost any kind of soil, and requiring to be moved only once in three or four years. The roots are not improved by being kept out of the ground; and perhaps the best method is, upon taking them up and freeing them from their shaggy skins, to replant them immediately.

Besides these, may be mentioned the Persian Iris (I. Persica), a low bulbous-rooted plant, with delicate blue or violet coloured flowers, and a high degree of fragrance. It has long been cultivated by the Dutch, from whom bulbs are annually procured. It is grown in water, or in pots of nearly pure sand. When planted out, it requires to be guarded from frosts and rain. The Snake's-head Iris (I. tuberosa, *Bot. Mag.*) is also a fragrant species, and is more hardy than the preceding. Mr Denson, who has been very successful in the culture of this plant, recommends, in *Gard. Mag.* vol. viii., that it should be allowed to stand two or three years in succession on the same spot; when, "in July, take it up and divide the tubers, planting them soon as dug up, six inches deep in a compost formed of half friable mould, and half leaf mould, or old hot-bed dung, rotted to the consistence of soil. Let the situation be a dry bed or border, at the base of a wall, with a southern aspect, and plant the tubers close to the wall, or only a few inches from it." The Chalcedonian Iris (I. susiana), is the most magnificent species of the genus, and is well worth the labour of the cultivator. Its little stalk, a few inches high, is surmounted by a splendid corolla, the petals of which are nearly as broad as the hand, and are of a purple or black ground, striped with white. It loves a loamy soil, and a sunny exposure, and must be guarded from moisture and frosts in winter. For these three species Mr Loudon recommends the protection of a frame.

There are many other species which are worthy of a place in a select flower garden, and when well grouped in a peaty earth, form an agreeable appendage to a parterre. Of these we may mention the low creeping I. cristata and pumila, the more aspiring prismatica, flexuosa, virginica, sordida, variegata and Swertii, the taller Sibirica, triflora and ochroleuca, the broad leaved Florentina, Germanica and sambucina, and the stately pallida, which, for simple elegance, is not outshone by any of its compeers. This beautiful family is much beholden to David Falconer, Esq. of Carlowrie, who has introduced some of its most interesting members to the horticultural world in Scotland.

The *Lily.* Of the genus Lilium there are many species, some of which have not been exhibited to the extent of their capabilities in the flower garden. The old white Lily (L. candidum, L.) after supplying the poets with so much imagery, has retired into the modest station of a common border flower. The flaunting Orange-Lily (L. bulbiferum) may be allowed, if it pleases, to follow its example. L. martagon may occupy the same place. The scarlet Turk's Cap (L. Chalcedonicum) is worthy of more care, as being more beautiful and more tender. It does not relish being disturbed, and it dislikes peat. On the contrary, the splendid Tiger Lily (L. tigrinum), which propagates rapidly by axillary bulbs, succeeds best in peaty soil. The same remark applies to the rarer L. canadense, and superbum (magnificent species) as well as to L. concolor, Pennsylvanicum and others, which ought to be more common in our gardens. L. Japonicum and longiflorum, in which the genus attains its greatest magnificence, unfortunately require a finer climate than ours, and must therefore be grown in pots under glass.

Omitting *Crocus*, *Fritillaria*, and some other bulbous genera, which are sometimes treated as florists' flowers, we proceed to one of the prime ornaments of the autumnal flower garden, the *Dahlia*, or *Georgina*, as it is called by some writers.

The *Dahlia*, of which there are two species (D. variabilis and D. coccinea), is a native of Mexico, from which it was introduced in 1789, but afterwards lost by our cultivators. It was reintroduced in 1804; but it was not till ten years later that it was generally known in our gardens. The first plants were single, of a pale purple colour, and though interesting, as affording a new form of floral ornament, they by no means held forth a promise of the infinite diversity of tint and figure exhibited by their successors. At present the varieties are endless, each district

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of the country possessing suites of its own, and cultivators occasionally raising at one sowing a dozen or two of sorts, which they think worthy of preservation. The results have been most propitious to the flower garden, from which, indeed, the Dahlia could nearly as ill be spared, as the potato from the kitchen garden.

The varieties of Dahlia may be classed under the following heads: 1. The *Common* or *Rose-shaped* form, under which the double sorts first appeared. This is by far the most numerous class, and perhaps the most beautiful. The dwarf sorts are in most repute. 2. The *Anemone-flowered*, having a radius of large petals, and a central disk of smaller ones, somewhat like the double anemone. 3. *Globe-flowered*, having small globular flowers, which are extremely double. They possess great intensity of colour, and, rising for the most part above the leaves, make generally as striking an appearance as those of a more massive efflorescence.

In a fine Dahlia the flowers should be fully double, always filling the centre; the florets should be entire or nearly so, regular in their disposition, each series overlapping the other backwards; they may be either plain or quilled, but never distorted: if, instead of being reflexed, the florets are recurved, the flower will be more symmetrical. The peduncles ought to be strong enough to keep the blossoms erect, and long enough to shew the flowers above the leaves. Bright and deep velvety colours are most admired.

New varieties are, of course, procured from seed. If sown in flower-pots, and aided by a little heat, the seedlings, speedily planted out, will flower the first season. Established varieties are propagated by dividing the large tuberous roots, but in doing so, care must be taken to have an eye to each portion of tuber, otherwise it will not grow. Sometimes shoots of rare varieties are grafted on the roots of others. A good method is to take cuttings close from the roots of the plants, as soon as they shoot up in the beginning of summer, and to strike them in small flower-pots. These will generally flower during the current season.

Dahlias succeed best in an open situation, and in rich loam; but there is scarcely any garden soil in which they will not thrive, with manure. They are, however, injured by being repeatedly planted on the same spot. They may stand singly like common border flowers; but have the most imposing appearance when seen in masses arranged according to their stature. Old roots often throw up a multitude of stems, which render thinning necessary. As the plants increase in height, they are furnished with strong stakes, to secure them from high winds. Dahlias generally flower till they are interrupted by frost in autumn. The roots are then taken up, dried, and stored in a cellar, or some other place, where they may be secured from frost and moisture.

The *Auricula* (Primula Auricula) is a native of the Alps and the Caucasus. It has long been an inmate of our gardens; and has generally been a favourite with those florists whose means and appliances are of a limited kind. Some of the most successful cultivators at present are among the operatives in the vicinity of Manchester and Paisley.

Besides the double varieties which have never been in much repute, Auriculas are classed under two divisions: the *Selfs* or plain-coloured, and the *variegated* or *painted* sorts. Professed florists confine their attention to the latter: it must, however, be confessed, that their criteria of fine flowers are often arbitrary, and that although many of their favourites are examples of undoubted beauty, the eye of the uninitiated would generally prefer the simpler hues of the self-coloured flowers.

The auricula, though now almost wholly an artificial plant, and strangely transformed from its original appearance, still loves a moist soil and shady situation. The florists' varieties are grown in rich composts, for the preparation of which numberless receipts have been given. We quote that of Mr Hogg, an experienced grower, as stated in his Supplement, p. 166. "One barrow of rich yellow loam, or fresh earth from some meadow or pasture land or common, with the turf well rotten; one barrow of leaf mould, one ditto of cow-dung, two years old at least; and one peck of river, not sea sand. For strong plants intended for exhibition, add to the same composition, as a stimulant, a barrowful of well decayed night soil, with the application of liquid manure before the top-dressing in February, and twice more, but not oftener, in March. A portion of light, sandy, peat-earth may be added, as a safe and useful ingredient, particularly for plants kept in low damp situations."

Auriculas may be propagated from seed. It is to be sown in January or February in boxes, which are kept under cover, and exposed only to the rays of the morning sun. When seed has been saved from the finer sorts, the operation is one of considerable nicety, as it not unfrequently happens that the best seedlings are at first exceedingly weak. They generally flower in the second or third year; and the florist is fortunate who obtains three or four good sorts out of a large sowing. The established varieties are increased by dividing the roots, an operation which is performed in July or in the beginning of August.

Fine auriculas are grown in pots about six inches in diameter. These are kept in frames, or stages constructed for the purpose. For winter use, perhaps there is nothing better than a common hot-bed frame, as this admits of an exact adjustment of air and temperature, things to which attention is absolutely necessary as the plants approach the flowering season. After the bloom is over, the pots may be placed on stages slightly elevated, and facing the north. Though not absolutely necessary, it is useful to have the power of sheltering them from long continued rains. It is usual every year to shift the plants, shortening the roots, and giving them a large portion of new soil, soon after the flowers have decayed. For more detailed information on this subject, we may refer to the well-known treatises of Maddock and Hogg.

The *Polyanthus* is supposed to be a seminal variety of Primula vulgaris; and is much cultivated by some florists. Like the auricula, it has sported into many hundred varieties. It is not necessary to give a detailed account of its culture, as it scarcely differs from that of the auricula. The polyanthus, however, is the hardier of the two, and seldom perishes from cold. It may be mentioned that there are several beautiful double varieties of the common primrose, which are deserving of a place in every garden.

The whole genus *Primula* merits the attention of the curious cultivator. P. helvetica and nivalis adorn the flower borders in spring with their abundant trusses of blossom. P. marginata, when planted in a shady situation, is equally lavish of its pale and delicately beautiful flowers. P. viscosa and integrifolia, with their intense colours, are the ornaments of the alpine frame; or, with P. longifolia, farinosa, and Scotica, may be plunged into the margin of the American border. A supply, however, should be kept in pots. Besides these we might name P. cortusoides, Pallasii, Palinuri, and others. The curious P. verticillata, and the splendid P. Sinensis, are inmates of the greenhouse. The florist of simple tastes will love them all.

The *Carnation* (Dianthus caryophyllus) has long been a favourite flower, not only for the beauty but for the delightful fragrance of its blossoms. It is a native of Germany, and it is occasionally found in an apparently wild state in England. The cultivation of it, however, is by no means easy, and calls forth all the resources of the florist. The varieties, which are very numerous, have been arranged under three heads: *Flakes*, having two colours, with their stripes running quite through and along the petals; *Bizarres*, irregularly spotted, and striped with not fewer than three colours; *Picotees*, spotted, with serrated or fringed petals. Mr Hogg, who has written a treatise expressly on this flower, has given a catalogue of nearly 350 sorts.

Carnations are propagated by layers or pipings: the former method is most practised, but with some sorts piping, it is said, should be preferred. Layering is performed when the plant is in full bloom. Proper shoots are selected; a few of the lower leaves are then removed; an incision is made a little below a suitable joint passing up through it, and the shoot is then pegged down and covered with some fresh soil, the tip being left above ground. Layers are generally found to be rooted in about a month after the operation has been performed. Pipings are little cuttings, separated at a joint, and planted thickly under bell-glasses on a slight hot-bed. They require great attention, and are precarious in their success, but form excellent plants.

Numerous directions have been given respecting composts for carnations. We abridge those of Hogg, who is principal authority in this matter. Take three barrows of loam, one and a half of garden mould, ten of horse-dung, and one of coarse sand; let these be mixed, and thrown into a heap, and turned over two or three times in the winter, particularly in frosty weather. Towards the end of November a barrow-load of lime is added while hot, to aid in the decomposition of the soil, and destroy worms. For the varieties which are liable to sport, he recommends a poorer compost.

The more robust carnations are planted out in beds or singly in the flower garden; but the finer and tenderer sorts are grown in pots of about a foot in diameter. The time of potting is about the end of March. When the flower-stems shew themselves, they are furnished with rods, to which they are tied as they lengthen, to prevent their being broken by the wind or other accident. When the plants begin to expand their blossoms, they are removed to a stage calculated to exhibit their beauties. Some florists attach ligatures of matting to the flower-buds, in order to prevent irregular bursting, and even arrange the petals, by removing distortions with scissars.

New varieties are raised from seed. The seed of the hardier double or semidouble sorts often affords a very beautiful bed of flowers, and should not be neglected by those who have the command of extensive flower gardens.

The *Pink* is considered by botanists as merely a variety of the preceding. It is, however, very distinct in its character, and constant in its habits. It is one of the mechanics' flowers, and is cultivated most extensively in the neighbourhood of some of the manufacturing towns. Its simple elegance does credit to the taste of those who select it for their favourite; and it deserves a place in the garden of the highest as well as of the lowest in the land. Pinks are numerous, the growers at Paisley enumerating about three hundred varieties. Those are preferred which have the limb of the petals nearly entire, and are well marked in the centre with bright crimson or dark purple.

Pinks are mostly propagated by pipings in slight hot-beds or under-hand glasses; and when proper attention is given to the due admission of air, they generally succeed. Occasionally rare sorts, which are scantily furnished with grass, are propagated by layers. This flower does not require such elaborate composts as some others, but it likes fresh light soils, well manured with decayed cow dung. Not more than two years of blooms should be taken from the same bed, and it is the practice of most florists to have a new bed every year. The flower stalks are supported by small sticks. As in the carnation, ligatures of matting, or collars of card, are sometimes applied to the calyces of the flowers: but this practice, however it may be followed by those who judge according to the technical "criteria of a fine flower," will scarcely be adopted by any who have an eye for natural beauty.

The genus *Lobelia* may now be regarded as affording a group of florists' flowers. L. Cardinalis, the cardinal flower, has long been a valued but somewhat rare plant. It is propagated by seed or by off-sets. L. fulgens is a more shewy species, which, when potted and treated as a tender annual, forms a magnificent plant. It also succeeds perfectly well in the open borders. Being a semi-aquatic, it may be preserved during winter in springs or cisterns. We have seen quantities kept most successfully at the mouth of an Artesian spring at Hopetoun House. L. splendens is also worthy of notice. Besides the quaint L. tupa, there are many other species, particularly the blue and yellow procumbent sorts, which merit a place in every collection of fine flowers.

It would lead us too much into detail to speak minutely of Calceolaria, Phlox, Chelone, Pentstemon, Œnothera, and other genera, which approach the character of florists' flowers. To have them in perfection, they should be kept in beds by themselves: and we are persuaded that, were a moiety of the care bestowed upon some of the preceding flowers, which are conventionally supposed to belong peculiarly to the florist, expended on them, they would amply repay the labour of the cultivator.

The *Chinese Chrysanthemum* (Chrysanthemum sinense), from the peculiar culture which it now undergoes, may be considered to belong to this department of flowers. It is a native of China, and though introduced many years ago, its ornamental capabilities have only recently been brought into notice. Flowering in November and December, it fills up, with its many coloured blossoms, the blank of a most dreary season, and affords the means of decorating greenhouses, conservatories, and dwelling-houses, when almost all other means of embellishment fail. Forty varieties have been enumerated by Mr Sabine in the London Horticultural Memoirs, but it is believed that there are many others not yet introduced from China. The Chrysanthemum is hardy enough to live in the open air, but it requires the shelter of a wall, and from the lateness of its flowering, it is only the early varieties that, even in fine seasons, are permitted to unfold their blossoms. It is seen in its beauty only when grown in pots. Yearly plants are preferred. In the beginning of April, cuttings of the last year's shoots, about three inches long, are put singly into small pots, filled with soil composed of one half bog earth or leaf mould, and one half pure sand. Their growth is expedited at first by gentle heat. In about a month they are rooted and are put into a cold frame, in which they are kept till the beginning of June, when they are put into larger pots, and set out in some airy situation. About this time the tops of the plants are pinched off to make them bushy, but no more side shoots are allowed to remain for flowering than the plants are likely to be able to support. In August they are again shifted into larger pots, filled with strong rich soil. During the whole season, the pots are frequently moved to prevent the roots from striking through, and they are never plunged. Mr Monro of the Lond. Hortic. Garden, whose method of culture we have been describing, recommends liquid manure to be applied from time to time in summer and autumn. Other cultivators, in order to have a greater succession of flowers, and a variety in the stature of the plants, strike cuttings at two seasons, in March and in May, and propagate by layers in August. In the beginning of winter the plants are put into a cold frame or vinery, and they are brought into a milder temperature as they are wanted. To produce large shewy plants, a few of the chrysanthemums of the former year may be selected, and, being freed from suckers, and having the mould shaken from their roots, may be repotted and shifted repeatedly during the summer and autumn.

BOTANICAL STRUCTURES.

Glazed houses, for the reception and culture of exotic plants, though sometimes placed in connection with similar structures in the forcing department, are now almost universally regarded as appendages of the flower garden. In the hands of architects they have assumed a great variety of forms. We shall confine ourselves to the exhibition of the principle of the most important of these, and shall limit our remarks to the Greenhouse, the Conservatory, and the Stove.

The *Greenhouse* is intended to afford a winter and partly a summer shelter to the less tender classes of exotic plants grown in pots. Fig. 5, Plate CCXCIII., exhibits the old *lean-to* greenhouse. The general form of the house is that of a vinery with pretty lofty front glass. The main part of the area is occupied by a stage rising in steps to receive the potted plants. At some height above the front flue is placed a narrow horizontal bench of trellis work to receive small plants which require to be near the light. The interior air is warmed by one or two flues, or other heating apparatus, according to its volume; but a temperature of 45° Fahr. during winter is sufficient. Sometimes greenhouses are constructed with span-roofs and a double stage. They may indeed assume any form which taste can suggest, provided there be a sufficiency of light, and the plants be not too far from the glass. The *heath-house* does not essentially differ from the greenhouse, but for it a span roof is certainly preferable.

In the *Conservatory* the chief plants grow in beds of earth sunk in the floor. Fig. 3, Plate CCXCIII. shews the principle of this species of house. The beds marked *b b* are filled with a light soil calculated for the plants which are to inhabit them. Fig. 4. represents the front elevation of the roof. Numerous varieties of this structure also have appeared, and some most sumptuous examples have been erected in the gardens of the nobility. With similar restrictions as in the greenhouse, the conservatory may be said to be capable of assuming any form.

The *Plant Stove* may be either a *dry stove* or a *bark stove*, or both combined, and is applied to the cultivation of tropical plants which require an elevated temperature. The dry stove may be considered as a greenhouse with a larger than usual apparatus for the production of heat. The bark stove is furnished somewhat in the manner of a pine stove, with a receptacle to contain a bed of fermenting tanners' bark into which the pots are plunged. In this country, stoves are regarded as belonging rather to the botanic than to the flower garden; they are extremely useful, however, in the latter, for, besides presenting the florist with many unusual forms of vegetation, they afford in summer a variety of beautiful plants, which, when in flower, may be introduced into the greenhouse.

Sometimes the various botanical structures are combined into one imposing assemblage, as that exhibited in Plate CCXCIII. Fig. 1, the ground-plan of which is given in Fig. 2 of the same plate; *a* being a palm-house; *b* for New Holland plants; *c* large greenhouse; and the intermediate spaces being occupied by dry stove, heath-house, and greenhouses. This mode is, of course, suited only for places of the first order, where splendour is the object, where every thing is on a great scale, and expense little regarded. In a vast proportion of cases economy must be studied; and in villa gardens the ornamental plant-house is very often attached to the library or the drawing-room. A good plan for such a glazed house may be found in the Gardener's Magazine, vol. vi. p. 664.

Greenhouse Plants.—This beautiful class of plants have become so numerous, that, in a sketch like the present, it is impossible to give the names of even a limited selection. We may once more refer to Mr Loudon's tables in his *Encyclopedia of Horticulture*, or to his still more copious lists in the *Hortus Britannicus*, in both of which works much valuable information may be obtained. The recent increase of species makes the work of selection at once more necessary and more difficult; a work which it must be confessed is often negligently performed. Many of the finer sorts of woody plants are propagated with difficulty, and consequently, being high priced in the nurseries, are possessed in requisite abundance only where there is considerable liberality on the part of the proprietor. On the other hand, the species which strike easily are circulated by gardeners themselves, many of whom, by their own interest and resources, more than half fill their greenhouses without calling for the aid of their employers. To this cause may be ascribed the perpetuation of many mean looking plants, which, if hardy, would scarcely be tolerated in well-kept shrubberies, and certainly ought not to encumber the greenhouse.

Light mould produced by the rotting of turf from pastures, and reduced with sand if necessary, or enriched with leaf-mould, is well adapted for most greenhouse plants. Some require a mixture of peat earth: others thrive only in pure sandy peat. If more specific directions be wished, we would recommend the reader to have recourse to *Cusking's Exotic Gardener*, or to the more recent work by Sweet, entitled *The Botanical Cultivator*. The common means of propagation is by cuttings, inserted in earth or sand, and covered, if necessary, with bell-glasses. A few sorts are increased by grafting or layers. Nearly all may be raised from seed, large quantities of which are annually imported from abroad; and, it may be added, many greenhouse plants ripen their seed in this country.

Many of these plants require shifting and fresh earth twice a year; all of them should be repotted once a year at least. It is the common practice to examine their roots in spring or the early part of summer, and, removing the matted fibres, to put them into larger pots if necessary. As room is extremely valuable in limited greenhouses, it is desirable that the plants should be kept of a moderate size; and they are, therefore, rather to be under-potted than otherwise. Many of the free-growing plants require to be shifted again in August; at which period of the year, it is considered preferable to repot those which require to be disturbed only once a year. During the summer months, a great proportion of the inmates of the greenhouse are placed in the open air, on a spot paved or laid with ashes, to prevent the entrance of earth-worms into the pots, and not too much exposed to winds. Meanwhile, their place in the greenhouse is occupied by balsams and other tender annuals of a showy character. On the approach of winter the plants are again placed under cover. All that is necessary in the management of the greenhouse in winter, is to keep up a steady but very moderate temperature, to preclude the access of damp by regular airing in mild dry weather, and to attend to moderate watering where it may be needed.

Of late years, particular genera of plants have come greatly into vogue, and it would be an omission not to notice some of them. Among the foremost may be mentioned *Pelargonium*, with its affinities. This beautiful tribe has varied nearly as rapidly as the Dahlia; to the discomposure of some botanists, whose scientific logic has been brought into jeopardy. Pelargoniums are of easy culture, propagating readily by cuttings, and requiring only to be shifted from time to time. Equal to these in point of beauty of colour, and certainly superior in elegance of form, is the family of Cape heaths, the *Ericæ* of botanists. Of this genus there is said to be 600 species, considerably more than the half of which exist in our collections. Many heaths may be raised from seed, which occasionally ripens in this country: the most common mode of propagation, however, is by cuttings, and this in some species is attended with difficulty. Heaths require a peaty soil, and attention in watering. For further information, we may refer to the excellent little treatise of Mr M'Nab of the Botanic Garden, Edinburgh, whose success in this department is quite unrivalled, and in whose hands heaths attain a splendour which, we believe, they never reach in the environs of Table Mountain itself. The superb genus *Camellia* is the only other that particularly claims our attention. To the elegance of the finest evergreen it unites the beauty of the fairest rose. The Camellia, though a native of Japan, is not particularly tender, but from some peculiarities in its constitution, its culture requires a considerable degree of attention and care. Cuttings of the single red variety strike freely, and upon these as stocks, the finer sorts are grafted by inarching or side-grafting. The soil generally employed is a mixture of peat and light loam. Care must be taken not to allow the roots to become matted in the pots. The young plants should be shifted at least once a year; when old, and in large tubs, once in two years will be sufficient. It is found beneficial to apply a certain degree of heat while the plants are growing, and till they form flower-buds for the following season. To have Camellias in perfection, a house with a span roof should be appropriated for their reception. There are some splendid collections of this noble plant in the nursery-gardens in the neighbourhood of London, particularly at Hackney, Vauxhall, and Clapton.

Conservatory Plants.—These are composed of a selection from the numerous inmates of the greenhouse. They should be naturally of an elegant form, capable in general of sustaining themselves, and somewhat hardy in their constitution. Many of the Australian plants, particularly the Acacias and Banksias, are well adapted for this purpose. The ascending Proteas of the Cape, Clethra arborea of Madeira, and many others of a similar habit, may likewise take their place in this department. To these may be added a few of the hardier Heaths and Camellias, together with a Myrtle or two, double flowering Pomegranate, Camphor-laurel, Tea-tree, and some of the varieties of the magnificent and consecrated Rhododendron arboreum. Any wall in the interior of the house may be furnished with a trellis, and covered with such climbing plants as Lonicera Japonica, Cobbea scandens, Maurandia semperflorens and Barclayana, and the trailing Pelargoniums. In the management of the conservatory, abundant air should be admitted, and care should be taken not to *draw* the plants; that is, not to cause them to become too tall and spindle-formed by over-crowding. They should be so pruned as to keep them comparatively short and bushy; but after all pains have been taken, the sorrowful time at length arrives, when they either disfigure themselves by pressing against the glass, or must submit to the no less distorting process of a violent amputation. To meet such exigencies, it is recommended that, wherever there is also a greenhouse, a few plants should be kept in training for the conservatory, and substituted in the room of any that become unmanageable. After all, the fourth, fifth, and sixth, summers of the conservatory will always be the finest: and when a longer series of years have gone by, and the plants have outgrown the space allotted to them, perhaps the best thing that can be done is to change the whole interior of the house, plants, earth and all. If this operation be anticipated, and for a year or two prepared for, sufficiently large plants may be had in readiness, and the appearance of a well-furnished house be attained in one or two seasons. It is scarcely needful to add, that the neatness which is so desirable everywhere in the flower-garden is absolutely indispensable in the conservatory.

Stove Plants.—There are many beautiful plants, natives of tropical regions, which are cultivated in our stoves, but which, from the elevated temperature they require, can be only occasionally visited with pleasure. This may account for the fact that stoves are seldom found but in first-rate gardens, even where the price of fuel is inconsiderable. It is unnecessary to be minute respecting *dry stove* plants: their culture is precisely that of greenhouse plants, differing only in the degree of heat. Many dry stove plants are succulent, such as Cactus, Aloe and Mesembryanthemum, and of course require an arid soil, composed of a little light loam mixed with lime-rubbish or shivers. One of the most successful growers of the cacti was the late Mr Walter Henderson at Woodhall. The compost which he employed consisted of 1 part rotted dung, 1 rotted leaves, 1 heath mould, 1½ loam, and 1 coarse sand, all well mixed together; and the pot was nearly one-third filled with shreds, so as to form an effectual drain. Some of the species, such as Cactus speciosus and Cereus flagelliformis, are improved, and made to flower more freely, by being kept growing vigorously in the greenhouse during summer. The *bark stove* plants thrive best in the tepid vapour peculiar to the equatorial climes. In order to furnish bottom heat, a bark pit is prepared, into which the pots or tubs are sunk; and the atmosphere is heated by flues, by steam, or, what is better, by a circulation of hot-water. Along the front glass, and on the back wall, are shelves on which pots may be arranged, according to the necessities of light and shade. On the front shelves are occasionally placed shallow troughs, filled with old tan, leaves, or decayed wood, for the reception of the air-plants and other epiphytes. Small cisterns too are introduced to contain tender aquatics. Along the rafters some of the more elegant species of Passiflora, such as P. quadrangularis, may be trained; and through the branches of some of the woody plants, Cuscuta, Tropæolum, and other tender climbers, may be allowed to twine themselves. In the pit may be plunged some of the Palms, those princes of plants. In short, there is no end of those numerous tribes, "the potent sons of moisture and of heat," with which the teeming regions of the equator are filled; and no suite of stoves in this country, however extensive, can come up to the wishes of the botanist. The management of this department of floriculture is laborious and trying to the constitution. A strong heat, both in the bark bed and in the atmosphere, must be maintained; the air must be kept charged with vapour, and the plants require frequent shifting and repotting. For more detailed information as to the management of particular stove plants, we may again refer to Cushing, who, in his *Exotic Gardener*, has treated this subject with a skill and fulness that have not been surpassed, perhaps not equalled, by any of his successors.

CALENDAR.

January.

Kitchen Garden.—Sow early frame and Charlton pease in the beginning of the month, and dwarf marrowfats about the end of the month; early mazagan and longpod beans during the first and last weeks; onions, on very light soils; as also parsley, if not done in August, on a warm border; short-topped radish in two or three sowings, at a week's interval, in the same situation. In the last fortnight sow hardy green and brown Dutch lettuce.

Plant fruit trees, in general, in open weather, mulching the trees to protect them from the drought which may occur in spring. Plant shallot.

Prune all sorts of fruit trees in mild weather or in moderate frosts, nailing only in fine weather: wash those trees infested with insects, with soap-suds, flowers of sulphur, and tobacco liquor.[1]

Forcing Department.—Prepare for making up hot-beds for early cucumbers and melons, at least where a pit heated with hot water is not in use. Sow salads, carrots, and kidney-beans on slight hot-beds. Sow pease in cold frames for transplanting. Force asparagus, sea-kale, and rhubarb, in hot-beds, in pits, in the mushroom-house, or in the open garden by covers surrounded with litter. Give air in fine weather, and water sparingly, to the pinery and cucumber-pit; and to other forcing houses, according to the progress of the trees. Attend to the forced kidney-beans and strawberries. Give abundance of air to the greenhouse, conservatory, and alpine frame, but little water. Begin to force roses, kalmias, rhododendrons, &c., and hardy flowers and bulbs.

Flower Garden.—Plant dried tubers and bulbs of border flowers, if not done in autumn; but roots of the finer florists' flowers ought to be deferred till next month.

Transplant herbaceous plants and evergreen shrubs in light soils, if not done in autumn; also deciduous trees, shrubs, and hedges. Lay edgings in fine weather.

Sow mignonette, stocks, &c., in pots; sow pease, and a few hardy annuals, on a warm border. Give stage auriculas and carnations abundance of air; but keep them rather dry, to prevent damping off.

FEBRUARY.

Kitchen Garden.—Sow beans and pease in the beginning and end of the month; a few early cabbages, to replace the last sowing in August; red cabbages and savoys in the last week. Sow also early horn carrot; Dutch turnip; onions for a full crop in light soils, with a few leeks. Sow chervil and fennel, and lettuce for succession, with radishes and round-leaved spinach, twice in the course of the month; small salads every fortnight.

Plant Jerusalem artichokes, garlic, horse-radish, and early potatoes. All sorts of fruit trees may still be planted. Strawberries may be planted about the end of the month. Transplant for seed, if not done before, all the brassica tribe, including cabbage, cauliflower, turnip, &c.; also carrots, onions, beet, celery, endive, leeks, and parsneps. Transplant to the bottom of a south wall a few of the pease sown in November for the first crop.

Prune apricots, peaches, nectarines, and plums, before the buds be much swelled; also apples, pears, cherries, gooseberries, currants, and raspberries, before the end of the month. Finish the dressing of vines, keep the fruit-room free from spoiled fruit, and shut it close.

Forcing Department.—Plant out melons and cucumbers on hot-beds and in pits, sowing more for succession. Sow carrots, turnips, and early celery; cauliflower, to be afterwards planted out. Plant early potatoes on slight hot-beds. Continue the forcing of asparagus, rhubarb, and sea-kale. Pine-apple plants require little air or water at this season, except young plants in dung-frames, which ought to be kept free from damp. Shift fruiting plants by the middle of the month, if not done in August. Continue the forcing of all sorts of fruits. Those who have not commenced sooner will find this one of the best seasons to begin. Be careful to protect the stems of vines that are outside of the forcing houses.

Let the greenhouse and conservatory have plenty of air in mild weather. Put in an extra quantity, if not done in autumn, of cuttings of Pelargoniums, Fuschsia, Salpiglossis, Calceolarias, Heliotropium, and Salvia splendens, for the flower garden. Sow stocks, a few tender annuals, and dahlia seed, on a slight hot-bed, or in pots.

Flower Garden.—In good weather plant dried roots, including most of the finer florists' flowers; continue the transplanting of hardy biennial flowers, and herbaceous plants, shrubs, and deciduous trees.

Sow in the last week mignonette, and hardy annuals, in a warm border, for subsequent transplanting.

MARCH.

Kitchen Garden.—Sow main crops of pease, beans, cabbages, onions, leeks, carrots, parsneps, Brussels sprouts, borecoles, lettuces, and spinach. In the beginning, and also in the end of the month, sow turnips and savoys. In the last fortnight sow asparagus, cauliflower, sea-kale, cardoons, celery, and most of the culinary aromatics, as dill, fennel, parsley. Small salads should be sown every ten days.

Plant early potatoes in the first week, and a main crop during the last fortnight. Jerusalem artichokes, sea-kale, asparagus, and pease raised in frames, may now be planted. Full crops of cabbages should now be planted out, and cauliflowers under hand-glasses. Propagate by slips the various pot-herbs, as mint, sage, savory, tansy, &c.

Fruit Garden.—Finish the planting and pruning of fruit trees before the middle of the month. Protect those coming into blossom. Begin grafting in the third week; dig and dress between the rows of gooseberries, currants, and other fruit trees, if not already done. Kill wasps when they first appear, for the death of every individual now is equal to the destruction of a colony in autumn.

Forcing Garden.—Proceed with the forcing of melons and cucumbers, giving air, and applying linings to maintain the proper temperatures. Examine pine-suckers and crowns, potting those that are kept in tan during the winter; repotting those that require large pots, and dressing the roots of such as are sickly; about the middle of the month, shift to the succession pit, and give a top-dressing to the fruiting plants; turn the tan, and add new bark to the pits, to keep up bottom heat. In the vinery and peach-house, attend to the keeping down of insects by watering; and promote the growth of the young shoots, by steaming in the evenings. Sow the seeds of capsicum and tomato.

Greenhouse.—More water may be given than formerly. Sow seeds of greenhouse and hot-house plants; also the different sorts of tender annuals; pot off those sown last month; shift greenhouse and stove plants; plant tuberoses in pots for forcing. Begin to propagate greenhouse plants by cuttings.

Flower Garden and Shrubbery.—In the last week, sow hardy annuals in the borders, with biennials that flower the first season; as also perennials. Plant anemone and ranunculus roots. Transplant from the nursery to their final sites annuals sown in autumn, with biennials and herbaceous plants Propagate perennials from root-slips and offsets. Protect tulips, hyacinths, and choice flowers, from severe weather. In the last week put into heat the finer sorts of dahlias, so as to spring them, and prepare them for propagation by cuttings and by division of the roots. In the first week finish the planting of hardy deciduous trees and shrubs; evergreens by the middle; but some of the hardier sorts may still be planted towards the end of the month. Likewise finish the pruning of all deciduous trees and hedges as soon as possible. Attend to the dressing of shrubberies, laying of turf-edgings, and to the state of gravel walks.

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[1] We have not deemed it necessary to treat separately, or at length, of the means of destroying insects; many of the nostrums recommended proving very inefficient. The wash here mentioned is perhaps the best and simplest for the stems and branches o wall fruit-trees. Some prefer making it of the consistence of paint, and laying it on with a brush. One advice we would tender to all gardeners,—not to be anxious to kill the smaller kinds of the feathered songsters, the soft-billed warblers of the garden, which are often suspected of attacking blossom or fruit, when they are only picking off caterpillars or aphides, their favourite food. In hot-houses, the keeping of the walls and frame-work clean, by frequent white-washing and painting, is very important; and much benefit results from occasionally filling them with the smoke of tobacco-paper, and then thoroughly syringing.

APRIL.

Kitchen Garden.—Sow asparagus, sea-kale, beet, salsify, scorzonera, skirret, carrots, and onions on heavy soils; also pease, beans, turnips, spinach, celery, cabbages, savoys, and German greens, for succession. Sow broccoli and kidney beans both in the second and in the last week; and small salads should be sown twice or thrice during the month; also all sweet herbs, if not done last month.

Plant cauliflower, cabbages, sea-kale, lettuce; and finish the planting of the main crops of potatoes. Propagate all sorts of pot-herbs, and attend to the hoeing and thinning of spinach, onions, turnips, &c. Earth up cabbages, cauliflower, pease, beans, and early potatoes. Stake up pease; blanch sea-kale and rhubarb in the open air, by covering with straw or leaves.

Fruit Trees.—No pruning ought to be left undone till this period; stone fruits, in particular, are much injured by spring pruning. If vines have been neglected, rubbing off the buds that are not wanted is safer than pruning. Protect the finer sorts of fruit-trees on the walls.

Forcing.—Continue the preparation of succession beds and pits for cucumbers and melons. Sow gourds and basil. Pot love-apples and capsicums. Attend to the routine culture of the pinery, giving water and air when necessary. Keep up the bottom heat with linings and additions of new tan. In the forcing houses, from the variable state of the weather considerable vigilance is required in giving air. Keep down red spider (acarus) in the more advanced houses by frequent waterings. Continue the usual operations of disbudding and thinning of fruit, and take care to keep up the proper temperatures.

Greenhouse.—Still sow all sorts of tender annuals. Proceed with all necessary shiftings. Propagate rare and fine plants by cuttings or grafting. Pot off tender annuals, and cuttings of half-hardy greenhouse, plants put in in February for the use of the flower garden.

Flower Garden and Shrubbery.—Sow main or succession crops of annuals of all sorts; half hardy annuals in warm borders, or on slight hot-beds. Biennials and perennials should be sown before the middle of the month. Plant Tigridia pavonia and fine stocks. Finish the transplanting of herbaceous plants by the end of the first week. Protect stage auriculas and hyacinths from extremes of every description of weather; and tulips from hoarfrosts and heavy rains. Plant out tender deciduous trees and shrubs raised in pots. Remove part of the coverings of all tender shrubs and plants in the first week, and the remainder at the end of the month. Form and repair lawns and grass walks, by laying turf and sowing perennial grass-seeds.

MAY.

Kitchen Garden.—Sow small salads every week; radishes and lettuces thrice; spinach once a fortnight; carrots and onions for late drawing; kidney-beans in the first week and last fortnight. Pease and beans, cauliflowers, cabbages, Brussels sprouts, bore-cale, broccoli, savoys, and German greens, for late crops. Sow pumpkins and cucumbers on a warm border in the last week. Continue the various operations of hoeing and earthing up the different crops.

Fruit Trees.—Disbud peaches, nectarines, and other early trees against the walls; also attend to the thinning of fruit. Give occasional washings with the engine to keep down insects. Pick caterpillars from gooseberries and wall trees on their first appearance. Mulch, if not done before, all newly planted fruit trees, watering abundantly in dry weather. Remove from raspberries and strawberries all suckers and runners that are not wanted.

Forcing.—Plant melons, and cucumbers, and some basil, on the hot-beds prepared for vegetables in February, and now free. Plant out pumpkins on dung-ridges, under hand-glasses. Sow late crops of cucumbers and melons; attend to the various particulars in their culture, heat, air, water, shade, and insects. Go on with the usual culture of the pinery; give abundance of heat and water, keeping down all manner of insects.

Greenhouse. Turn out all hardy plants about the middle, and the more tender at the latter end of the month. Sow tender annuals for succession; potting and shifting all those sown at an earlier period. Pot off, likewise, all rooted cuttings. Put in cuttings of the different desirable species which are now fit for that purpose. Sow a few hardy annuals and ten-week stock, &c. for late crops.

Flower Garden.—Sow annuals for succession; biennials in the last week, in the nursery compartment, for next year. Propagate by cuttings, dahlias, pansies, double wallflowers, rockets, scarlet lychnis, and lobelias, by dividing the roots. Plant out, during the first week, dahlias, hardy pelargoniums, stocks, and calceolarias, protecting the dahlias from slight frosts. By the middle and end of the month, masses of the following plants may be formed with safety: pelargonium, heliotropium, fuschsia, salpiglossis, nierembergia, salvia, verbena, bouvardia, erica, and lobelia. Protect tulips, ranunculuses, and anemones, from the mid-day sun, from rains, and winds. Remove the coverings from all tender plants in the open air.

Shrubbery.—Planting out of tender evergreens from pots may be continued, but any other kind of transplanting will be carried on at considerable risk, except in very moist and cloudy weather. Proceed with the laying down of lawns and gravel-walks.

JUNE.

Kitchen Garden.—Sow pease and beans for late crops. The kinds used for early crops are likewise best for this purpose. Sow salading every ten days; also carrots and onions for drawing young. In the beginning of the month sow endive for an early crop. In the first week sow turnips for succession; and in the third week for a full autumn crop. Scarlet and white runners for a late crop; cabbages for coleworts.

Plant full crops of broccoli, Brussels sprouts, savoys, German greens, and leeks; ridge out early celery, successional crops of cabbage and cauliflower. In the first fortnight of the month, plant cucumbers for pickling, in a warm border, placing hand-glasses over them. Pull and store winter onions.

Fruit-Trees.—Train and prune the summer shoots of all descriptions of wall and trellis trees. Standards do not require this, except those are trained *en pyramide* or *en quénouille.* Mulch and water fruit-trees and strawberries in dry weather, desisting from watering as soon as the fruit begins to ripen. Net over cherry-trees, to protect the fruit from birds. Destroy insects by frequent washings, and directing tobacco-smoke against them, or by strewing snuff (or the fine powder of tobacco) over them. In the first week, plant out love-apples in vacant spaces along the bottom of a south wall.

Forcing and Greenhouse Department. Hot-beds and Pits.—Proceed with planting melons and cucumbers raised from seeds and cuttings, for late crops. Keep up, by

Calendar.

linings, the necessary temperatures for ripening of the fruits. Continue the cultivation of the pinery stated for last month; but, if you wish very large-sized fruit, and do not care about preserving suckers, remove the whole suckers from the stem and roots, and apply heat and water in abundance. Shift suckers and succession plants in the beginning and middle of the month, as the state of the plants may require.

Forcing-houses may have the same treatment as stated last month. Little water and a good deal of air must be given to those houses where the fruit is beginning to ripen. Those in which the fruit is past, ought to be constantly under a system of thorough ventilation.

The *Greenhouse* will now be occupied with tender greenhouse plants and annuals, and the more hardy plants from the stove, for here they will remain longer in flower. Shift, re-pot, and propagate all plants, fine perennials, biennials, or annuals, and cuttings of all sorts that are desirable. Sow fragrant or showy annuals, to flower in pots during winter.

Flower Garden.—Take up bulbs and tuberous roots, and dry them in the shade before you remove them to the store-room. Fill up with annuals and greenhouse plants those beds from which the bulbs and roots have been raised. After this season, keep always a reserve of annuals in pots, or planted on beds of thin layers of well-rotted hot-bed dung, from which they are easily removed with balls, to fill up any blanks which may occur in the border or parterre. Sow perennials, if neglected last month, to be planted out in the spring. Lay and pipe carnations and pinks in the end of the month.

July.

Kitchen Garden.—In the first week, sow pease for the last crop of the season. In the last week, sow yellow turnip for a full winter crop, and spinach for an early winter crop. Endive, for autumn and winter crops, in the beginning and end of the month; also successional crops of lettuce and small salads.

Plant full crops of celery, celeriac, endive, about the middle and end of the month; late crops of broccoli, cauliflower, and coleworts, in the last week. Gather and dry medical and pot herbs; also propagate such by slips and cuttings.

Fruit-trees.—Continue the summer pruning and training of all wall and espalier-rail trees, with the destruction of insects. Plant strawberries in pots, for forcing next winter. Propagate different sorts of fine fruit-trees, by budding on other trees, or on prepared stocks.

Forcing.—Attend to the pruning of melons and cucumbers, giving air and water, renewing linings, &c. Go on with the usual cultivation of the pinery, but withhold water from the plants when the fruit begins to ripen. Have the old plants with suckers on them put into a brisk bottom-heat, giving proper supplies of water; this will increase their size very much, and materially shorten the period of their coming into fruit. The forcing-houses ought to have the same treatment as stated for last month.

In the *Greenhouse*, little alteration will take place in the culture and management from that given for last month; necessary attention being paid to potting, shifting, and putting in cuttings, and giving abundance of water to the potted plants, both in the house and out of doors.

Flower Garden and Shrubbery.—Take up the remainder of tuberous roots, such as anemone, ranunculus, &c., finishing by the end of the first week; fill up their places, and any vacancies that may have occurred, with annuals from the reserve ground. Propagate herbaceous and other plants that have gone out of flower, by means of cuttings and slips; also roses and American shrubs, by laying, budding, or cuttings. Go on with the laying and piping of carnations and pinks; attend to the staking and tying up of dahlias and strong herbaceous plants.

August.

In the *Kitchen Garden*, sow winter and spring spinach in the beginning and about the end of the month; parsley and winter onions, for a full crop, in the first week; cabbages, cauliflower, savoys, and German greens, about the middle of the month, for planting out in spring; lettuce in the first and last week; small salads occasionally; black, Spanish, red and white queen radish, for winter crops.

Plant and earth up celery and endive. A few coleworts may still be planted.

In the *Fruit Garden*, proceed in the training and regulation of summer shoots of all fruit trees as directed for the three last months. Mat up, in dry weather, gooseberry and currant bushes, to preserve the fruit till late in the autumn. Every exertion must now be used by the gardener to preserve the ripening fruits on the walls from insects, and to destroy wasp nests.

Forcing.—The same routine of cultivation in hot-beds and pits may be proceeded in as stated for last month. Sow, and propagate by cuttings, in the beginning of the month, cucumbers, to be afterwards grown in hot water pits, or in boxes in the front of the pine-stove, for a winter crop. In the pinery most of the fruit will be cut by the middle of the month, when a general shifting of succession plants will take place; as also a potting of suckers; but these will be strengthened by being allowed to remain on the old plants until the end of this month. In the forcing-houses where the crops are past, part of the sashes may be removed, so as to permit thorough ventilation.

Greenhouse.—Attend to the propagation of all sorts of greenhouse plants by cuttings, and to the replacing in the greenhouse and stoves the more tender species, by the end of the month in ordinary seasons, but in wet weather in the second week. Sow half-hardy annuals, as Clarkia, Schizanthus, Coreopsis, &c., to flower during winter.

Flower Garden and Shrubbery.—Sow in the second and the last week, on a warm border of a light sandy soil, with an east aspect, for planting in spring, Clarkia pulchella and elegans, Coreopsis tinctorea, Oenothera Lindleyana, and rosea-alba, Collinsia grandiflora, Schizanthus pinnatus, &c. Auricula and Primula seeds in pots and boxes. Propagate all sorts of herbaceous plants by rooted slips; lay chrysanthemums; take off layers of carnations, pinks, and pansies. Transplant evergreens in moist weather, about the end of the month; and propagate them by layers and cuttings.

September.

Garden.—Sow a few small salads for late crops; lettuce and spinach, if not done last month, for spring crops. Plant endive and lettuce. If broccoli be too strong or tall to withstand the winter, lift them and lay them nearly up to the neck in the earth. Lift onions, and lay them out to win on a dry border or gravel walk. Lift potatoes and store them.

Fruit Trees, &c.—Finish the summer pruning and training. Assist the maturing of the fruit, and, what is equally important, the ripening of the young wood for next year, of peaches and nectarines on hot walls, with fires during the day. Gather and lay up in the fruit-room with care the autumnal sorts of apples and pears. Plant strawberries for a main crop.

Forcing.—Take care that late crops of melons and cucumbers be not injured by damping, from getting too much water and too little air. In the pinery the usual routine of cultivation may be carried on; in the first week take off and pot all strong suckers, if not done in the middle of last month; the remainder may be taken off at the end of the month, and planted in old tan in a frame or pit prepared for that purpose. In this way they will be found to keep much better over the winter, and to be better supplied with roots, than if they had been potted, which ought never to be done after this season. Expel damp, and assist the ripening of late crops of grapes and peaches, with fires during the day. Prune early vines and peaches.

Flower Garden, &c.—Sow in the beginning of this month all half-hardy annuals stated for last month, if not done at that time. Sow also the different species of primula; and the seeds of all such plants as, if sown in spring, seldom come up the same season, but if sown in September and October vegetate readily the succeeding spring. Continue the propagation of herbaceous plants, taking off the layers of carnations, pinks, pansies, and chrysanthemums, by the end of the month. Plant evergreens; lay and put in cuttings of most of the hard-wooded sorts of shrubby plants.

October.

Kitchen Garden.—Sow small salads and radishes in the first week; Mazagan beans and early frame pease in the last week. If the winter prove mild they will be somewhat earlier than those sown next month or in January.

Plant cabbages in beds or close rows till wanted in spring. Cauliflowers in the last week, to receive the protection of frames, or, at any rate, at the bottom of a high wall or hedge in a sheltered situation.

Store potatoes, beet, salsify, scorzonera, skirret, carrots, parsneps, by the end of the month.

Fruit Garden.—Such fruit trees as have dropped their leaves, may be transplanted. Protect fig-trees, if the weather prove frosty, as soon as they have cast their leaves. Cover late crops of grapes on hot walls with woollen nets or mats, to prevent injury from frost. Store and lay up very carefully during the month all sorts of apples and pears, the longest keeping sorts not before the end of the month, if the weather be mild. A part of them may be placed in a close cellar.

Forcing.—Assist hot-beds and pits with fresh linings, to keep up the declining heat of such beds as have not ripened off their crops. Give abundance of air in good weather. Gradually lower the heat of the pinery.

Dress vines and peaches; clean and repair the forcing houses and their flues.

Greenhouse.—Replace all sorts of greenhouse plants. Fill the pits with pots of stocks, mignonette, and hardy annuals for planting out in spring, along with many of the more hardy sorts of greenhouse plants. The whole ought to be thoroughly ventilated, except in frosty weather. Begin to force roses, hyacinths, and a few other bulbs, for winter and early spring decoration.

Flower Garden.—Sow a few pots of hardy annuals in a frame, or on a sheltered border, for spring use, as directed for August.

Plant the greater part of the common border bulbs about the end of the month, with a few anemonies for early flowering. Transplant strong plants of biennials and perennials to their final situations.

Protect alpine plants, stage auricules, and carnations with glass frames; half-hardy greenhouse plants, such as fuschsias, &c. about the end of the month, with coverings of broom or spruce-fir, preferring the latter. Take up, dry, and store dahlias and tigridia tubers in the end of the month; pot lobelias from the open borders.

Transplant all sorts of hardy evergreens and shrubs, especially in dry soils, giving abundance of water. Put in cuttings of all sorts of evergreens, &c.

November.

Kitchen Garden.—Sow early from pease and mazagan beans, in the second week, for an early crop. Protect endive, celery, artichoke, seakale, with stable-litter or ferns; mulch asparagus with hot-bed dung; take up endive, late cauliflower, early broccoli, and lettuces, and lay them in an open shed, or in old cucumber and melon pits, which will protect them from frost, and afford a supply during winter. Force rhubarb and seakale in the open border, under boxes or cases, surrounded and covered with well-fermented stable dung. Plant all sorts of fruit trees in fine weather, giving an abundant supply of water to settle the earth about the roots. Commence and carry on the various operations of pruning and nailing when the weather may permit. Take off such late sorts of apples and pears as may remain on the trees, and lay them carefully past in the fruit-room; which place will require frequent examination, and the removal of all decayed fruit.

Forcing and Greenhouse.—In hot-beds and pits keep up the requisite degree of heat by frequent additions to the linings. Cucumbers and pines, on hot-beds, will require more than ordinary attention, to prevent them damping off from too much moisture. Where a circulation of hot water in pipes is employed for heating, the necessary temperature and dryness are much more under the control of the gardener. Force asparagus, rhubarb, and seakale, in the mushroom-house or pits.

In the forcing-houses, prune and train the trees; dig and dress the borders of such houses as have not been already done. Continue the forcing of roses, hyacinths, &c. The directions for the greenhouse and conservatory in January apply also to this month generally.

Flower Garden, &c.—Plant dried tubers of border flowers, but the finer sorts had better be deferred till spring. Protect such half-hardy plants as were not sheltered last month. Plant deciduous trees and shrubs as long as the weather continues favourable. Dig and dress such flower borders and shrubberies as may now be cleared of annuals and the stems of herbaceous plants.

December.

Kitchen and Fruit Garden.—Sow a few pease and beans, as in November. Very few operations can be carried on during this month, with the exception of trenching and digging in dry weather.

Plant all sorts of fruit trees in mild weather. Proceed with pruning and nailing wall-trees, whenever an opportunity occurs. Examine the fruit-room every week, removing the fruit found in a state of decay.

Forcing, &c.—The same degree of attention to hot-beds and pits will be necessary as in the last month. Continue the forcing of asparagus, rhubarb, and sea-kale, in pits and in the mushroom house.

Proceed with the usual routine of culture commenced last month, making the necessary preparations to begin forcing by the last week of this, or the first of next month.

Flower Garden, &c.—The directions for last month will be found equally applicable to this. Rake and sweep leaves from lawns and gravel-walks, repairing the latter as occasion may require.

HOSANNA, in the Hebrew ceremonies, a prayer which was rehearsed on the several days of the feast of tabernacles. It was so called, because in it was frequently repeated the word הרשענא, *serva nunc*, or *serva precor*, save us now; or, save us, we pray. There were different hosannas, called by the Jews *hoschannoth*, that is, the *hosannas*. Some were rehearsed on the first day, others on the second, and so on, and they were called *hosanna* of the first day, *hosanna* of the second day, and so of the others.

Hosanna Rabba, or *Grand Hosanna*, is a name given to the feast of tabernacles, which lasted eight days, during the course of which they frequently invoked the assistance of God, the forgiveness of their sins, and his blessing on the new year, and for this purpose made great use of the hoschannoth, or prayers above mentioned. The Jews also applied the term *hosanna rabba*, in a more peculiar manner, to the seventh day of the feast of tabernacles, because on that day they in an especial manner invoked the divine blessing.

HOSEA, the first in number of the minor Hebrew prophets, as arranged in the Hebrew and Greek Bibles, although probably the third in chronological order. He was the son of Beeri; but it is uncertain to what tribe he belonged. He prophesied in the reigns of Uzziah, Jotham, Ahaz, and Hezekiah, kings of Judah, and in the time of Jeroboam, king of Israel. If he uttered predictions during sixty-six years, that is, between 790 and 724 before Christ, then he discharged the office of a sacred seer eight years during the reign of Jeroboam II. thirty-three in that of Uzziah, during the entire reigns of Jotham and Ahaz, and three years under the reign of Hezekiah; but he could not have survived the taking of Samaria. He reproved the vices of kings as well as their subjects, mixing threatenings of divine vengeance with promises of pardon in case of repentance. His style is concise and sententious, and his comparisons are short and lively. He is sometimes distinguished by great force of expression, has many beautiful passages, and in some parts is truly sublime. Dr Newcome was of opinion that the chief difficulty in understanding this prophet is owing to the corrupt readings which disfigure the printed text; and these he freely corrected from the collations of Dr Kennicott. On the other hand, Dr Horsley protests earnestly against Dr Newcome's opinion, declaring that the corruptions can be no cause of obscurity; but we must leave it to our readers to determine which of these great men is in the right, from an attentive perusal of their own works, assured that they will decide in favour of him who furnishes the best helps for understanding the prophet.

HOSPINIAN, Rodolphus, one of the greatest writers that Switzerland has given birth to. He was born in 1547, at Altorf, near Zurich, obtained the freedom of Zurich, and was made provisor of the abbey-school. Notwithstanding this employment, he undertook a work of vast extent, being a History of the Errors of Popery. Though he could not complete this work according to the plan which he had formed, he published a considerable part of it; whilst his treatise on the Eucharist, and another work called *Concordia Discors*, exceedingly exasperated the Lutherans. He did not reply to them; but turning his arms against the Jesuits, published *Historia Jesuitica*. These writings gained him preferment; he was appointed archdeacon of Caroline church, and then minister of the abbey-church. He died in 1626; and an edition of his works was published at Geneva, 1681, in seven volumes folio.

HOSPITAL, popularly Spittal, a place or building erected, out of charity, for the reception and support of the poor, aged, infirm, sick, and otherwise helpless. The word is formed from the Latin *hospes*, host, stranger. See Host.

In the early ages of the church, the bishop had the immediate charge of all the poor, both healthy and diseased, as also of widows, orphans, strangers, and others. When the churches came to have fixed revenues allotted to them, it was decreed that at least one fourth part of these should go to the relief of the poor; and to provide for them the more commodiously, houses of charity were built, which were afterwards denominated *hospitals*. They were governed wholly by the priests and deacons, under the inspection of the bishop. But in course of time, separate revenues were assigned for the hospitals; and particular persons, from motives of piety and charity, gave lands and money for erecting hospitals. When the church discipline began to relax, the priests, who till then had been the administrators of hospitals, converted them into a sort of benefices, which they held at pleasure, without accounting to any body, reserving the greater part of the income to their own use, so that the intentions of the founders were in a great measure frustrated. To remove this abuse, the council of Vienne expressly prohibited the giving any hospital to secular priests in the way of a benefice; and directed the administration of these establishments to be committed to sufficient and responsible laymen, who should take an oath, like that of tutors, for the faithful discharge of its duties, and be accountable to the ordinaries. This decree was executed and confirmed by the council of Trent.

In Britain hospitals are buildings properly endowed, or otherwise supported by charitable contributions, for the reception and support of the poor, aged, infirm, sick, or helpless.

HOSPITAL, or Hôpital, Michel de l', chancellor of France, and one of the most illustrious magistrates of modern times, was born at Aigueperse, in Auvergne, in the year 1505. His father, John de l'Hôpital, who was at once physician and counsellor to the Constable of Bourbon, sent him to study law, first at Toulouse, and afterwards at Padua, the legal school of which then enjoyed great celebrity. In that age jurisprudence was the principal science cultivated, and no one could aspire to any employment without having studied it profoundly. L'Hôpital, although he had already acquired the elements of this science in France, spent six years at Padua in improving himself therein; he also applied himself to the study of the belles-lettres, in which he made rapid advances, and at the same time cultivated the Greek and the Latin languages, with which he rendered himself perfectly familiar. Having completed his studies, and finding his prospects clouded by the death of the Cardinal de Grammont, who had induced him to return to France, and upon whose credit and influence he had founded his hopes of preferment, he entered himself of the bar at Paris. In this profession, his merit and virtue were soon appreciated. At the end of three years, John Morin, criminal lieutenant, a person famous in the martyrology of the Protestants, on account of the severity with which he enforced the laws enacted against them, gave L'Hôpital his daughter in marriage, and at the same time conferred upon him the office of counsellor to the parliament of Paris as her dowry.

In this situation, which he held during twelve years, the toleration he displayed formed a remarkable contrast to the unrelenting severity by which his father-in-law had rendered himself but too celebrated. When L'Hôpital entered the parliament, that once illustrious body had much degenerated, owing to the venality which the misfortunes of the time had forced Francis I. to introduce, or at least to overlook. A witness of this corruption, L'Hôpital deplored its consequences, and, in concert with some old magistrates who still remained, endeavoured to set an example of assiduity and application, to a crowd of inexperienced young men, who, by venality, had obtained admission into the parliament, and who had no other title to that honour but the money they had paid for it. L'Hôpital was long cited as a model in the magistracy. He made it a rule to listen with patience, to interrupt no one, to express himself as concisely as possible, and to oppose all unnecessary delays; he was also punctual in his attendance in court, where he generally remained until the business of the day had been regularly gone through, and always rose with reluctance, however late, if any portion of it remained unattended to. In short, he was a laborious and conscientious judge, who to great talents united the most steady and persevering industry. The vacations made no material change in his way of life; his pursuits were indeed different, but his application was the same; the perusal of the great writers of antiquity, the study of French history, and the reading of the Holy Scriptures, each in its turn formed the occupation of his leisure time. "There is nothing frivolous in my amusements," says he, in one of his letters; "sometimes Xenophon is the companion of my walks; sometimes the divine Plato regales me with the discourses of Socrates. History and poetry have their turns; but my chief delight is in the sacred writings."

The next appointment which L'Hôpital received was that conferred upon him by Henri II. of envoy or ambassador to the council of Trent, which was then sitting at Bologna. But having soon grown tired of the inactivity to which he found himself reduced, he was, at his own desire, recalled, and, upon his return, experienced some coldness on the part of the court, which did not altogether relish his evident disinclination to assist in the proceedings of that famous council. This obscuration, however, proved only temporary, for ere long he was restored to the royal favour, and appointed master of the requests. Nor did his promotion stop here. In the beginning of 1554, he was constituted director and superintendent of the royal finances in the chamber of accounts. At this time the finances required a guardian at once vigilant and faithful. Enormous abuses prevailed in the whole fiscal administration. On the one hand there existed profusion without limits, and on the other malversation without shame. Scarcely a third, or even a fourth part of the sums collected, ever reached the royal treasury; the people were exposed to the most grinding exactions, yet the revenue was in a state of gradual decline. To put an end to these disorders, L'Hôpital revived the ancient laws which had fallen into desuetude; he struck terror into defaulters by some examples of wholesome severity; he refused to sanction any expenditure except for the immediate purposes of the state; he defied the enmity of that numerous and vindictive class whose dishonest gains he had destroyed; and he acted with so much personal disinterestedness, that, after having been five years in office, he was unable to give a portion to his daughter, and the deficiency was supplied by the liberality of the sovereign.

After the fatal accident which, in 1559, put an end to the life of the king, the Cardinal de Lorraine, then at the head of affairs, introduced L'Hôpital into the council of state; but as one of the articles of the treaty of Chateau-Cambrésis had provided that the Duchess of Berri, his benefactress, should espouse Emanuel-Philibert, Duke of Savoy, he was appointed to conduct that princess into Piedmont, whither he attended her in the capacity of chancellor. The distracted situation of France, however, soon made it necessary to recall a man of such undaunted firmness and inflexible integrity. In the midst of faction, turbulence, and confusion, when the passions of men appeared, like the evil spirits, to have been for a season unchained, he was advanced to the office of chancellor of France, and in this elevated station conducted himself like a philosopher and a hero, superior alike to weakness and to fear. At this period the destruction of the Protestants had been determined on; it was resolved to leave them no alternative but abjuration or death; and it was even in contemplation to establish in France the redoubtable tribunal of the inquisition. The new chancellor durst not attack this project in front, without compromising himself with the governing party; but he sought indirectly to defeat the odious design, and by the edict of Romorantin, which declared the crime of heresy to be cognisable only by the ecclesiastical judge, he ultimately accomplished his beneficent design, and thus decided the clergy to abandon all idea of establishing the inquisition, which, they knew, would be powerless when deprived of the aid of the secular arm. Upon all occasions, indeed, he was the advocate of mercy and reconciliation, and a declared enemy to persecution on account of religion; and hence the more bigoted Romanists, offended at his wisdom and moderation, accused him of being a concealed Protestant, forgetting that by such suspicions and accusations they paid the highest compliments to the spirit of that faith which they were so desirous to eradicate. With a man of such character, ability, and firmness at the head of affairs, it was hopeless to attempt to carry through the violent measures which were already contemplated; yet when the question of giving him a successor came to be seriously agitated, Catherine of Medicis found herself involved in very great perplexity. The ancient relations of L'Hôpital with the House of Lorraine; the estimation in which he was universally held, his known love of his country, which, in his mind, absorbed all other affections; and the difficulty of finding any one to fill his place, who would not sink into insignificance or contempt in comparison with this truly great man—were serious obstacles to his removal: but as nothing could induce him to abandon or change the pacific character of his measures, all other considerations were at length disregarded, and the queen excluded him from the council of war, upon which he immediately withdrew to his country-house at Vignay, near Estampes.

His exclusion from the council was accompanied with insult. The Constable of Montmorency told him that a man of his profession, a civilian, ought not to intermeddle in what related to war. "That is a subject," said the constable, "on which you are not qualified to give advice." "True," replied the chancellor, "I do not know how to make war, but *I know when it is necessary.*" Several days after his retirement from office, when the seals were demanded of him, he resigned them without regret, observing that the affairs of the world were too corrupt for him to meddle with them. He spent his time in lettered ease, amusing himself with writing Latin poetry, and enjoying the society of some select friends, until his peace was broken by the bloody tragedy of St Bartholomew, which, with his usual sagacity, he had foreseen. Of this barbarous and inexpiable massacre the judgment he pronounced has been ratified by posterity. He was himself near becoming one of its victims. The inhabitants of the country had risen, and were devastating the fields, and dragging the farmers in chains towards the city. But the queen, anxious about his fate, sent a detachment of cavalry for his protection. The sudden apparition of this troop, whose destination was unknown, produced great consternation in his house, which was open on all sides. He was asked by the inmates if they would close the gates. "No, no," said he; "if the small gate will not admit them, throw open the large one." When informed that the persons who prepared the lists of proscription had pardoned him the opposition which he had always given to their projects; "I did not know," replied he coldly, "that I had done any thing to deserve either pardon or death." But what most deeply affected L'Hôpital on this mournful occasion, was the danger to which his daughter, who happened to be in Paris, was in consequence exposed. She was saved by the interference of

Anne d'Este, duchess of Guise, whom L'Hôpital thanked for this signal service, in an epistle overflowing with the warmest feelings of paternal gratitude. These cruel events, however, deeply affected his health and spirits, and he died at Vignay, on the 13th of March 1573, at the age of sixty-eight, and less than one year after the massacre.

"L'Hôpital," says Brantôme, "was the greatest, worthiest, and most learned chancellor that was ever known in France. His large white beard, pale countenance, and austere manner, made all who saw him think they beheld a true portrait of St Jerome, and, in fact, he was called St Jerome by the courtiers. All orders of men feared him, particularly the members of the courts of justice; and when he examined them on their lives, their discharge of their duties, their capacities or their knowledge, and particularly when he examined candidates for offices, and found them deficient, he made them feel it. He was profoundly versed in polite learning, very eloquent, and an excellent poet. His severity was never ill natured; he made due allowance for the imperfections of human nature; he was always equal and firm. After his death, his very enemies acknowledged that he was the greatest magistrate whom France had known, and that they did not expect to see such another." The productions of L'Hôpital are, 1. Latin Poems; 2. Speeches delivered at the Meeting of the States at Orleans; 3. *Mémoires, contenant plusieurs Traités de Paix*, &c., from 1551 to 1560, Cologne, 1672, in 12mo. A work which he had undertaken on law is lost; and it is said that he had also projected a history of his own time, on the model of the ancient historians; but of this no part appears to have been executed. In 1807, M. Bernardi published his *Essai sur la Vie, les Ecrits, et les Loix de Michel de l'Hôpital*, in one volume 8vo, from which and other documents Mr Charles Butler published his Essay on the Life of L'Hôpital, principally with the view of exhibiting him as a friend of toleration. (A.)

HOSPITAL, *William-Francis-Antony, Marquis of*, an eminent French mathematician, was born of an ancient family in 1661. He was a geometrician almost from his infancy; for one day being at the Duke of Rohan's, where some able mathematicians were speaking of a problem of Pascal's which appeared to them extremely difficult, he ventured to say that he believed he could solve it. They were amazed at such presumption in a boy of fifteen, for he was then no more; nevertheless, in a few days he sent them the solution. He entered early into the army, and rose to be a captain of horse; but being extremely shortsighted, and exposed on that account to perpetual inconveniences and errors, he at length quitted the army, and applied himself entirely to his favourite pursuit. He contracted a friendship for Malebranche, whose opinion he followed upon all occasions. In 1693 he was received as an honorary member of the Academy of Sciences at Paris; and he published a work upon Sir Isaac Newton's calculations, entitled *L'Analyse des Infinimens Petits*. He was the first in France who wrote upon this subject, and on this account was regarded almost as a prodigy. He engaged afterwards in another work of the mathematical kind, in which he included *Les Sections Coniques, les Lieux Géométriques, la Construction des Equations, et Une Théorie des Courbes Mécaniques;* but a little before he had finished it, he was seized with a fever, of which he died on the 2d of February 1704, at the age of forty-three. It was published after his death.

HOSPITALITY, the practice of entertaining strangers. Dr Robertson, speaking of the middle ages, says, "Among people whose manners are simple, and who are seldom visited by strangers, hospitality is a virtue of the first rank. This duty of hospitality was so necessary in that state of society which took place during the middle ages, that it was not considered as one of those virtues which men may practise or not, according to the temper of their minds and the generosity of their hearts. Hospitality was enforced by statutes, and those who neglected the duty were liable to punishment. The laws of the Salvi ordained that the moveables of an inhospitable person should be confiscated, and his house burnt. They were even so solicitous for the entertainment of strangers, that they permitted the landlord to steal for the support of his guest."

The hospitality of our British ancestors, particularly of the great and opulent barons, has been much admired, and considered as a certain proof of nobleness and generosity of spirit. The fact indeed is well attested. The castles of the powerful barons were capacious palaces, daily crowded with numerous retainers, who were always welcome to plentiful tables. They had their privy councillors, their treasurers, marshals, constables, stewards, secretaries, chaplains, heralds, pursuivants, pages, henchmen or guards, trumpeters, minstrels, and, in a word, all the officers of a royal court. The etiquette of their families was an exact copy of that of the royal household; and some of them lived in a degree of pomp and splendour little inferior to that of the greatest kings. Richard Neville, earl of Warwick, we are told, "was ever had in great favour of the commons of the land, because of the exceeding household which he daily kept in all countries wherever he sojourned or lay; and when he came to London, he held such an house, that six oxen were eaten at a breakfast, and every tavern was full of his meat." The Earls of Douglas in Scotland, before the fall of that great family, rivalled or rather exceeded their sovereigns in pomp and profuse hospitality. But it is highly probable these great chieftains were prompted to indulge this style of living by a desire of increasing the number and attachment of their retainers, on which, in those turbulent times, their dignity, and even their safety, depended, as much as to the innate generosity of their tempers. Those retainers did not constantly reside in the families of their lords; but they wore their liveries and badges, frequently feasted in their halls, swelled their retinues on all great solemnities, attended them in their journeys, and followed them into the field of battle. Some powerful chieftains had constantly at their command so great a number of these retainers, that, setting the laws at defiance, they became formidable to their sovereigns, and terrible to their fellow-subjects; and several laws were made against giving and receiving liveries. But these laws produced little effect at this period.

Hospitality was not confined to the great and opulent, but was practised rather more than it is at present by persons in the middle and lower ranks of life. But this was owing to necessity, arising from the scarcity of inns, which obliged travellers and strangers to apply to private persons for lodging and entertainment; and those who received them hospitably acquired a right to a similar reception. This was evidently the case in Scotland in the first part of this period. In the year 1424, James I. procured the following act of parliament:—"It is ordanit, That in all burrow townis, and throuchfairis quhair commoun passages ar, that thair be ordanit hostillaries and resettis, havand stables and chalmers; and that men find with thame bread and aill, and all uther fude, alsweil for horse as men, for resonable price." But travellers had been so long accustomed to lodge in private houses, that these public inns were quite neglected; and those who kept them presented a petition to parliament, complaining, "That the liegis travelland in the realme, quhen they cum to burrowis and throuchfairis, herbreis thame not in hostillaries, bot with thair acquaintance and freindis." This produced an act prohibiting travellers to lodge in private houses where there were hostelries, under the penalty of forty shillings, and subjecting those who lodged them to the same penalty.

The inhabitants of the Highlands of Scotland and the Western Isles were anciently remarkable for their hospitality to strangers, and still happily retain, in no inconsiderable degree, the same kindly disposition.

HOSPITALLERS, Hospitalarii, an order of religious knights, who built at Jerusalem an hospital, in which pilgrims were received. To these Pope Clement V. transferred the effects and revenues of the Templars, whom, by a council held at Vienne, he suppressed for their numerous and flagrant misdemeanours. These hospitallers, otherwise called knights of St John of Jerusalem, are the same with those who were latterly called knights of Malta.

HOSPITIUM, a term used in old writers either for an inn or a monastery, built for the reception of strangers and travellers.

HOSPODAR, a title borne by the princes of Moldavia and Wallachia, who used to receive the investiture of their principalities from the grand seignior. He gave them a vest and standard; they were under his protection, and obliged to serve him; and he even sometimes deposed them; but in other respects they were absolute sovereigns within their own dominions. But since the treaty of Adrianople, concluded between Russia and Turkey in 1829, the former power has acquired an ascendency in these principalities, and obtained a complete control over the nomination of the hospodars.

HOSSEEPOOR, a town of Hindustan, province of Bahar, eighty-two miles north-west from Patna. Long. 84. 17. E. Lat. 26. 25. N.

HOSSEIN-ABDAUL, a town of Hindustan, province of Lahore, situated thirty miles east of the Indus. It is the frontier town of the Afghans, and has been a frequent object of contention between them and the Sikhs. Long. 71. 43. E. Lat. 33. N.

HOSSOBETTA, a town in the south of Hindustan, and province of North Canara. The principal inhabitants consist of Concanies, or the descendants of the natives of the Concan, who, according to the account of Dr Buchanan, fled thither from the Portuguese settlement of Goa, in order to avoid the persecutions of the Portuguese Catholics, who were desirous to convert them to the Christian faith. Long. 75. E. Lat. 12. 42. N.

HOSSO-DURGA, a small town of Hindustan, in the province of South Canara. It possesses a fort and a temple, which is served by a few Puttar Brahmins, the chief inhabitants of the place. The fort is large and well built, with round bastions, which render it more defensible than the forts in India with square bastions generally are. The surrounding country is overgrown with wood, and but thinly inhabited, consisting, like the rest of Malabar, of low hills and narrow valleys alternately.

HOST, Hospes, a term of mutual relation, applied both to a person who lodges and entertains another, and to the person thus lodged. It is formed from the Latin *hospes*, which according to some, was thus called *quasi hostium* or *ostium petens, ostium* having anciently been written with an aspirate. Thus the innkeeper says, he has a good *host*, in speaking of the traveller who lodges with him; and the traveller, again, says he has a kind *host*, in speaking of his landlord.

It must be observed, however, that it was the custom amongst the ancients, when any stranger asked lodging, for the master of the house, and the stranger, each of them to set a foot on their own side of the threshhold, and swear they would neither of them do any harm to the other. It was this ceremony which raised so much horror against those who violated the law or right of hospitality on either side, inasmuch as they were looked upon as perjured.

Instead of *hospes*, the ancient Latins called it *hostis*, as Cicero himself informs us; though, in course of time, *hostis* came to signify an enemy, so much had the notion of hospitality degenerated.

Host is also used by way of abbreviation for *hostia*, a victim or sacrifice offered to the Deity. In this sense, *host* is more immediately understood of the person of the Word Incarnate, who was offered up an host or *hostia* to the Father on the cross for the sins of mankind.

Host, in the church of Rome, a name given to the elements used in the eucharist, or rather to the consecrated wafer, which they pretend to offer up every day as a new host or sacrifice for the sins of mankind.

HOSTAGE, a person given up to an enemy as a security for the performance of the articles of a treaty.

HOSTIA, Host, in *Antiquity*, a victim offered in sacrifice to a deity.

The word is formed from *hostis*, enemy, it being the custom to offer up a sacrifice before they joined battle, to render the gods propitious, or, after the battle was over, to return them thanks. Some choose to derive the word from *hostio*, the same as *ferio*, I strike. Isidore remarks on this word, that the name *hostiæ* was given to those sacrifices which they offered before they marched to attack an enemy (*antiquam ad hostem pergerent*); in contradistinction to *victimæ*, which were properly those offered after the victory.

Hostia also signified the lesser sorts of sacrifice, and *victima* the larger. Aulus Gellius says, that every priest, indifferently, might sacrifice the *hostia*, but that the *victima* could be offered by none but the conqueror himself. After all, however, we find these two words promiscuously used, one for the other, by ancient writers. We read of many kinds of *hostiæ*, as *hostiæ puræ*, which were pigs or lambs ten days old; *hostiæ præcidaneæ*, sacrifices offered the day before a solemn feast; *hostiæ bidentes*, sacrifices of sheep or other animals of two years old; *hostiæ eximiæ*, a sacrifice of the flower of the flock; *hostiæ succedaneæ*, sacrifices offered after others which had exhibited some ill omen; *hostiæ ambarvales*, victims sacrificed after having been solemnly led round the fields at the *ambarvalia; hostiæ amburbiales*, victims slain after the *amburbium; hostiæ caneares* or *caviares*, victims sacrificed every fifth year by the college of pontiffs, in which they offered the part of the tail called *caviar; hostiæ prodigiæ*, sacrifices in which the fire consumed all, and left nothing for the priests; *hostiæ piaculares*, expiatory sacrifices; *hostiæ ambegnæ* or *ambiegnæ*, sacrifices of cows or sheep that had brought forth twins; *hostiæ harugæ*, victims offered to predict future events from; *hostiæ mediales*, black victims offered at noon.

HOSTILITY, the action of an enemy, or a state of warfare. The word is low Latin, *hostilitas*, formed from the primitive word *hostis*, which signifies enemy, and which anciently signified stranger, *hospes*.

HOT-Beds, in *Gardening*, beds made with fresh horse-dung or tanners' bark, and covered with glasses to defend them from cold winds. See Horticulture.

HOT-House. See Horticulture.

HOTEL, a French term, anciently signifying a house or dwelling-place. It was afterwards used to signify the palaces or houses of the king, princes, and great lords.

Hotel likewise means a large inn, or a large lodging-house ready furnished.

HOTTENTOTS, the original inhabitants of Cape Colony, and other places in the southern angle of Africa. They are divided into several tribes, but their mental and physical characteristics are the same in all. They have been already fully described in the articles Africa and Good Hope, Cape of, which see.

HOTTINGER, John Henry, one of the most learned and eminent of the Protestant divines of Switzerland, was born at Zurich in the year 1620. At an early age he discovered an invincible propensity to learning, and acquired with astonishing facility the knowledge of languages.

The trustees of the schools had their attention attracted towards Hottinger by his amazing progress in the knowledge of the Hebrew, Greek, and Latin, and they determined to send him to foreign universities at the public expense. In 1638 he studied for a short time at Geneva under the celebrated Frederick Spanheim, and went afterwards to France. He next visited Holland and Flanders, and became a student in the university of Groningen, where he attended the theological lectures of Francis Gomar and Professor Alting, and studied the Arabic language under Professor Pasor. Being anxious, however, to enjoy still greater advantages than this situation afforded, he went to Leyden, where he became tutor to the children of Professor Golius, whose knowledge of oriental languages was at that time unrivalled. By his instructions and those of a Turk then at Leyden, Hottinger acquired an extensive knowledge of the Arabic, and Golius permitted him to copy many of the Arabic manuscripts which he had in his possession. In 1641 he was chosen chaplain to the embassy of the states-general to Constantinople; but the magistrates of Zurich would not suffer him to accept of it, resolving that his talents should be exerted for the glory and the benefit of their own public schools. They permitted him to visit England prior to his return home, where he contracted habits of intimacy with some of the most distinguished literary characters. As soon as he returned to Zurich, he was appointed professor of church history, when not more than twenty-two years of age; and when twenty-three, he was chosen professor of catechetical divinity and oriental languages. About this period he married, and began his career as an author, in which he persevered for twenty years with the most astonishing industry. In 1653 he was appointed professor of rhetoric, and professor extraordinary of the divinity of the Old Testament, and of controversial theology.

About this time Hottinger became so justly celebrated as a man of uncommon erudition, that his aid was earnestly requested by the elector palatine to restore the fame of the university of Heidelberg. The magistrates of Zurich consented to lend him for three years. At Heidelberg he was named professor of divinity, principal, ecclesiastical counsellor, and rector; and he wrote in favour of the reunion of Lutherans and Calvinists; but he had no better success than his predecessors who had made the same attempt. He continued at Heidelberg, by permission of the magistrates of Zurich, till the year 1661. On his return home he was chosen president of the commissioners who were appointed to revise the German translation of the Bible. Though requested to accept of professorships from the magistrates of Deventer, the landgrave of Hesse, and the magistrates of Amsterdam and Bremen, the love of his country induced him to reject all these offers. He was offered the divinity chair at Leyden in 1667; but the magistrates would not part with him. This made the Dutch request him as a loan, to which the magistrates agreed, from their respect for the states of Holland; but whilst making preparations for his departure, he was unfortunately drowned in the river which runs through Zurich, when on his way to an estate of his own, about six miles from that city.

Dr Hottinger was a man of extraordinary abilities, both natural and acquired, having few equals in his knowledge of oriental languages and the antiquities of the church. He had a most retentive memory, and his literary industry was almost unexampled. His life was comparatively short, being only forty-seven when he found a watery grave; yet he was the author of no fewer than forty volumes on different subjects. He is frequently inaccurate, owing to the astonishing rapidity with which he wrote. His principal works are, 1. Exercitationes Anti-Morinianæ de Pentateucho Samaritano, Zurich, 1644, in 4to; 2. Erotematum Linguæ Sanctæ libri duo, cum Apendice Aphorismorum, ibid. 1647; 3. Thesaurus Philologicus, seu Clavis Scripturæ qua quidquid fere Orientalium, Hebræorum maxime et Arabum habent monumenta de Religione ejusque variis speciebus, Judaïsmo, Samaritanismo, Muhamedismo, Gentilismo, &c. ibid. 1649; 4. Historia Ecclesiastica Novi Testamenti, in nine parts, 1651–1667; 5. Historia Orientalis ex variis Monumentis Collecta, ibid. 1651, in 4to; 6. Grammaticæ Chaldæo-Syriacæ libri duo, ibid. 1652; 7. Analecta Historico-Theologica, octo Dissertationibus proposita; 8. Dissertationum miscellanearum Pentas, ibid. 1654, in 8vo; 9. Dissertatio de Subsidiis Analyseos Sacræ, ubi prolixe de Sensu Verborum Institutionis Cœnæ Dominicæ, ibid. 1654, in 8vo; 10. Juris Hebræorum leges 261, juxta Legis Mosaïcæ ordinem ac seriem depromptæ; 11. Smegma Orientale sordibus barbarismi contemptui præsertim Linguarum Orientalium appositum, Heidelberg, 1657, in 4to; 12. Grammatica Ling. Hebr. Chald. Syr. et Arabicæ Harmonica, ibid. 1657; 13. Cippi Hebraïci, ibid. 1659, in 8vo; 14. Primitiæ Heidelbergenses, ibid. 1659; 15. Dissert. Theolog. Philolog. fasciculus, ibid. 1660; 16. Etymologicon Orientale, sive Lexicon Harmonicon Heptaglotton, 1661, in 4to; 17. Epitome utriusque Juris Judaici, Aphorismis Maimonides exhibita, ibid. 1661; 18. Compendium Theologiæ Christianæ Ecclesiarum Orientalium, Syrorum cum primis, Æthiopum, Arabum, et Ægyptiorum; 19. Compendium Theatri Ismaelitici sive Saracenici, ibid. 1662, in 8vo; 20. Bibliothecarius tripartitus, Zurich, 1664, in 4to.

HOUBRAKEN, Jacob, an eminent engraver, was the son of Arnold Houbraken, a native of Holland, and born on the 25th of December 1698. By whom he was instructed in engraving we are not informed, but he is supposed to have been initiated in the principles of the art by his father, and to have studied the portraits of Edelink, especially that of Lebrun, which is usually prefixed to the engravings of Gerard Audran from the battles of Alexander. For some time he worked in obscurity without obtaining either profit or fame, and he had attained the meridian of life before he engaged in the undertaking by which he is best known; a work founded on a plan of George Vertue, who proposed to give sets or classes of eminent men, though the design was afterwards adopted by others, and thus taken out of the hands of the projector. The persons who undertook and brought to a conclusion this great national work were the Knaptons, booksellers, who, encouraged by the success of Rapin's History of England, employed both Vertue and Houbraken, but chiefly the latter. Some of Houbraken's heads were carelessly executed, especially those of the moderns; but others display a wonderful union of softness and freedom, with good drawing and a masterly determination of the features, such as we observe in the works of Nanteuil, Edelink, and Drevet. From his solicitude to avoid the appearance of an outline, he frequently neglected the little sharpnesses of light and shadow which appear in nature, and, like the accidental semitones in music, excite a pleasing sensation in the mind, in proportion as the variation is judiciously managed. For want of attention to this essential beauty, many of his productions have a hazy appearance, and do not strike the eye with the force which might be expected from the excellence of the engraving. Houbraken lived to a good old age, and died at Amsterdam in 1780. (A.)

HOUGHTON le Spring, a town of the ward of Easington, in the county of Durham, 266 miles from London, and seven from Durham. There is a well-endowed classical school, founded by a former rector; and the livery is a very valuable one, in the gift of the bishop. The inhabitants amounted in 1801 to 996, in 1811 to 1356, in 1821 to 2905, and in 1831 to 3917.

HOUND.

FROM the combination of various causes, the history of no animal is more interesting than that of the dog. First, his intimate association with man, not only as his valuable servant and protector, but as his constant and faithful companion throughout all the vicissitudes of life. Secondly, from his natural endowments, not consisting solely in the exquisite delicacy of one individual sense, that fineness of olfactory nerve by which the earth and air send forth showers of perfumes; not merely combining memory with reflection that soars above instinctive preservation or self-enjoyment; but qualities of the mind that absolutely stagger us in the contemplation of them, and which we can alone account for in the gradation existing in that wonderful system which (by different links of one vast chain, extending from the first to the last of all things, till it forms a perfect whole) is placed, as Professor Harwood elegantly expresses it, "in the doubtful confines of the material and spiritual worlds." It might have been instinct that enabled Ulysses's dog to recognize him on his re-landing in Ithaca, after an absence which must have set the powers of memory at defiance; and he recognized him with all the acuteness and affection which instinct boasts; *but what caused him to expire at his feet on the sudden dawn of unexpected happiness?* The heart of man could go no further than this; and although perhaps the poet's fiction is only present to us in this instance, by what name can we call those tender affections, those sincere attachments, those personal considerations, which we ourselves have witnessed in these faithful creatures towards human kind? Virtue alone is too cold a term, as almost every good quality to be found in animated nature is to be found here; and when we reflect upon the miserable existence so often the lot of this kind-hearted animal in this world, and the more than uncertainty that, as Byron says, he will be

> "Denied in heaven the soul he held on earth,"

we cannot but feel regret that he should be without his reward. But yet this is a point not exactly decided upon by man; at least it has been considered as a fit subject for speculation by deep and able thinkers. Mr Locke, for example, doubted whether brutes survive the grave, because there is no hint given of it in revelation; but Dr Priestley thought, if the resurrection of the dead be within the proper course of nature, and there be something remaining of every organized body that death does not destroy, there will be reason to conclude that they will be benefited by it as well as ourselves. "The misery," says this forcible writer, and great moral philosopher, "some animals are exposed to in this life, may induce us to think that a merciful and just God will make them some recompense for it hereafter."

But no animal has met with more variety of respect shown towards him than the dog has. By the law of Moses he was declared unclean, and was held in great contempt by the Jews, as also by the Turks, and kept by both merely for the purposes of scavenging their streets. In every part of the sacred writings, as also in those of Greece and Rome, not only are images introduced from the works of nature, and metaphors drawn from the manners and economy of animals, but the names of them are applied to persons supposed to possess any of their respective qualities. Thus our Saviour, adopting this concise method, applies the word "dog" to men of odious character and violent temper; and, as with us at present, the term of reproach, "he was a son of a dog," was in common use among the Jews. The wife Abigail (1 Samuel, xxv. 3) "was a woman of good understanding, and of a beautiful countenance; but the man (Nabal) was churlish and evil in his doings, and *was of the house of Caleb.*" But this last, says an able expounder of the Scriptures, is not a proper name. Literally it is, "he was the son of a dog." On the other hand, the idolatrous Egyptians held the dog sacred, and worshipped him in their god Anubis, representing the form of a man with a dog's head, which Juvenal complains of in his fifteenth satire:

> "Oppida tota canem venerantur, nemo Dianam."

Anubis, says Strabo, is also the city of dogs, the capital of the Cynopolitan prefecture. "Those animals," says he, "are fed there on sacred aliments, and religion has decreed them a worship." This absurd adoration is confirmed by Diodorus Siculus and Herodotus; and Rome having adopted the ceremonies of Egypt, the Emperor Commodus, when celebrating the Isiac feasts, shaved his head, and himself carried the dog Anubis.

But to proceed to their origin and history. It has been justly remarked, that "all dogs whatsoever, even from the terrible Boar-dog to little Flora, were all one in the first creation;" and every virtue and faculty, size and shape, which we find or improve in every dog upon earth, were originally comprehended in the first parents of the species, nothing having remained constant but their natural conformation; and all the variety which we now behold in them is either the product of climate or the accidental effect of soil, food, or situation, and very frequently the issue alone of human care, curiosity, or caprice. This we take to be the case with other departments of the creation. For example, we only acknowledge two sorts of pigeons, the wild and the tame. Of the first there is but one, the œnas, or vinago of Ray. Of the last, the varieties are innumerable. The tame and the wild goose are likewise originally of the same species, the influence of domestication alone having caused the tame ones to differ from the parent stock. Notwithstanding, however, the efforts and effects of human industry and skill, there is fortunately a *ne plus ultra* in nature which cannot be passed; and as there is a distinct specific difference in all living creatures, a pigeon is still a pigeon, a goose a goose, and a dog remains a dog. Still, although no human device can add one new *species* to the works of the creation, and nature is still uniform in the main, as we have already observed, in our remarks on the horse, she is always ready to meet the demands of art, a fact beautifully set forth in these lines of *Hudibras*:—

> "How fair and sweet the planted rose,
> Beyond the wild in hedges grows!
> For without art the noblest seeds
> Of flowers degen'rate into weeds.
> How dull and rugged, ere 'tis ground
> And polish'd, is the diamond.
> Though Paradise were e'er so fair,
> It was not kept so without care:
> The whole world, without art and dress,
> Would be but one great wilderness;
> And mankind but a savage herd,
> For all that nature has conferr'd.
> This does but rough-hew and design,
> Leaves art to polish and refine."

We have good reason to believe that England (in a great measure from the congeniality of its climate) has long been famous for dogs, which, on the authority of Strabo (lib. iv. p. 199), were much sought after by all the surrounding nations. So high indeed in repute were British dogs amongst the Romans after the reduction of our island, not only for excellence in the chase, but fierceness in the combat, that an officer from that country was appointed to reside in the city of Winchester, for the express purpose of collecting and breeding them to supply the amphitheatre, as well as the imperial kennel, at Rome. Nor was this all. As a kind of earnest of our present celebrity in the various sports of the field, all the neighbouring countries, as Dr Campbell remarks, "have done justice to our dogs, adopted our terms and names into their language, received them thankfully as presents, and, when they have an opportunity, purchased them at a dear rate."[1] Thus we find, that when King Alfred requested Fulco, archbishop of Rheims, to send some learned ecclesiastics into England, he accompanied his letter with a present of several dogs, being the most valuable he could, in those times, bestow. The congeniality of our climate has contributed much to this excellence, as our dogs, hounds especially, are found to degenerate in most others; which Somerville alludes to in his poem of the Chase.

> "In thee alone, fair land of liberty,
> Is bred the perfect hound, in scent and speed
> As yet unrivall'd, while in other climes
> Their virtue fails, a weak degen'rate race."

We do not benefit much by research into ancient authors on the subject of dogs; for although they have been much written upon, and immortalised in song by Oppian, Claudian, Gratius, and others (Virgil says little about them), yet, from our ignorance of the sort of animal bred in their time, and the use they made of them, *as sportsmen*, we can draw no parallel between them and our own that would tend to a good purpose. No doubt the "canis *vestigator*" of Columella, and the "canis *odorus*" of Claudian, were of what we term a low-scenting sort, as the epithets applied to them signify; but it would be difficult to pronounce an opinion upon the καστόριαι, or the ἀλωπεκίδες, of Xenophon, although the characteristic properties of good hunting hounds are very well and accurately laid down by him in the third chapter of his Κυνηγετικος, as well as their defects in form, &c. equally clearly exposed; and his observations on these points might be perused with advantage by huntsmen of the present day.

Great encouragement has been given to the breeding of hounds in England by the various monarchs who have reigned over it. Henry II. was perhaps the first who made himself conspicuous in this department of the sportsman's occupation, being, as one of his historians says of him, "particularly curious in his hounds, that they should be fleet, well-tongued, and consonous." The last epithet is in reference to a property not only little regarded, but nearly lost now, namely, the deep tongue of the old English blood-hound, which Shakspeare alludes to in his celebrated description of those "of the Spartan kind:"

> "(So flewed, so sanded, and their heads are hung
> With ears that sweep away the morning dew.
> Crook-knee'd, and dewlapt, like Thessalian bulls;
> Slow in pursuit; but match'd in mouth like bells,
> Each under each:)"

which would now be considered a disgrace to any man's kennel, and we believe nowhere to be found, bearing the faintest resemblance to the picture drawn of them by this master-hand.

In Queen Elizabeth's time a classification was made by Dr Caius, physician to the queen, in his treatise *De Canibus Britannicis*, of the different kinds of dogs peculiar to Great Britain; but many of the names (the sleute or sluth hound of the Scotch, for example) having since become obsolete, they were again classed by Mr Daniel, in his *Rural Sports*, which work contains a full and satisfactory historical account of their origin, different crosses, &c. under the following genealogical heads:—Shepherd's Dog, Iceland Dog, Lapland Dog, Siberian Dog, Hound, Terrier, Large Spaniel, Small Spaniel, Water Dog, Small Water Dog, Bull Dog, Large Danish Dog, Irish Greyhound, English Greyhound, and Mastiff. Taplin, in his *Sporting Dictionary*, expresses his surprise that the Pointer is omitted; but we consider the Pointer as a dog of foreign extraction, and to our early ancestors certainly unknown.

The original stock from which English hounds have been bred would be very difficult to determine upon; but one thing is certain, namely, that the several sorts with which the country once abounded have been becoming fewer and fewer, in the course of the last hundred years, and now centre in three varieties, namely, the Fox-hound, the Harrier, and the Beagle. The stag-hound is gone, at least there is no pack of stag-hounds now kept in Great Britain, the last having been disposed of and sent abroad, soon after the stag hunting establishment in Devonshire was broken up, a few years ago. The beagle is also become rare; and otter-hounds, such as we may conclude the καστόριαι of Xenophon to have been, never existed in this country, the dog used in hunting the otter being the common harrier; and perhaps the parent of all, the majestic blood-hound, whose

> "Nostrils oft, if ancient fame sings true,
> Trace the sly felon through the tainted dew,"

is at present very thinly scattered, here and there only, at keepers' lodges in some of our royal forests. But we more than doubt whether a true specimen of the original English blood-hound exists in England at all at the present day; nor is this a matter of regret, as, unlike the rest of his species, his character is said to be that of decided enmity to man. Strabo describes an attack upon the Gauls by these animals, and likewise says they were purchased in Britain by the Celtæ, for the purposes of war, as well as those of the chase; but it is doubtful whether the most savage of this race would devour man without being trained to it, which we know that they were on a late horrible occasion, when, as stated in Rainsford's *History of St Domingo*, they were fed upon blood, and a figure representing a negro, containing blood and entrails of beasts, was the object they were led to pursue. In the West Indies, however, the blood-hound, under proper control, has been found useful in tracing runaway negroes, as the sluthhound of the Scotch was early applied to discover the haunts of robbers; and to the same purpose also on the confines of England and Wales, where the borderers preyed on the flocks and herds of their neighbours, whenever an opportunity offered. Of deer-stealers, who were so numerous a century or two ago, they were likewise the terror; and well might they have been so, for when once fairly laid upon the foot of one, they seldom failed to hunt up to him. But it is in the civil wars of our own country that blood-hounds are placed in the most conspicuous light, particularly as available to the operations of Wallace and Bruce; and the poetical historians of the two heroes allude to their services to their masters, as well as to the escapes they had from those of their various enemies.

The distinguishing features of the English blood-hound are, long, smooth, and pendulous ears, with a wide forehead, obtuse nose, expansive nostrils, and deep flewed, with an awfully deep but highly sonorous tongue. The prevailing colour is a reddish tan, darkening to the upper part, often with a mixture of black upon the back. In short, the deep-flewed southern hare-hound, now almost extinct in England, very nearly resembles the English bloodhound in form and colour; and a person may picture to himself the latter, by supposing an animal considerably larger than the old southern hound. In height he is from twenty-six to twenty-eight inches, and sometimes more. The blood-hound of the West Indies is also about the same height, but differs much in form. He has small, erect ears, the nose more pointed, and the hair and skin hard. His countenance is ill featured and ferocious; and although not so heavy as the English blood-hound, he is quite as muscular, and very active.

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[1] Campbell's *Political Survey*, vol. ii. p. 205, note (D).

The distinguishing property of the blood-hound in chase, consists in his never changing from the scent on which he is first laid; and he will hunt by the shed blood of a wounded or dead animal as truly as he will by the foot, which rendered him so useful in pursuit of the deer or sheep-stealer.

The English stag-hound, now nearly gone, is little more than a mongrel blood-hound; at least it is reasonable to conclude, that the cross which produced him was directly from the English blood-hound with some lighter animal of a similar species (perhaps a greyhound, or lurcher) approximating his form, to which conjecture his figure and disposition, as well as his *comparative* inferiority of scent, appear to add strength. It is asserted in the *Sportsman's Cabinet*, that the stag-hound "was originally an improved cross between the old English deep-tongued southern hound and the fleeter fox-hound, grafted upon the basis of what was formerly called, and better known by the appellation of, blood-hound." But this assertion must have been made without proper reflection; for, in the first place, a cross between the deep-tongued southern and the fox-hound will not produce an animal nearly so large or so strong as the stag-hound; and, secondly, the stag-hound was known in England long before the fox-hound was made use of, or, indeed, before there was an animal at all resembling the one which is now known by that term.

We confess we regret the prospect of the total extinction of the English stag-hound, who, although his form possessed little of that symmetry we now see in the English fox-hound, was a majestic animal of his kind, and possessed the property peculiar alone to the blood-hound and himself, of unerringly tracing the scent he was laid upon, amongst a hundred others; which evinces a superiority, at all events a peculiarity, of nose entirely unknown to our lighter hounds of any breed. The want of being able to distinguish the hunted fox from a fresh-found one is the bane of English fox-hunting; and there are not wanting those who think, that in the breeding of the modern fox-hound, the minor points of high form and blood are more frequently considered than they should be, in preference of a regard to nose.

The Fox-Hound.

The English fox-hound of the present day is a perfect living model; but how he has become such, it is in no one's power to determine. Although we do not like to apply the term of mongrel to an animal we so highly respect, yet there can be no doubt of his being one of a spurious race, engrafted with care on the parent stock, namely, *the old English blood-hound.* There is, we believe also, no doubt that a century and a half ago there was no animal in the world resembling the present breed of fox-hound; and that the fox, when hunted at all in Great Britain, was hunted by a dog much resembling what is now known as the Welch harrier, rough-haired and strong, but of very far from sightly appearance. As all animals, however, improve under the care and guidance of man, until at length they assume the character of a distinct breed; such has evidently been the case with hounds, the breeders of which have, by going from better to better in their choice of the animals from which they have bred, progressively arrived at the perfection we see in them. And such has been the case with all our domestic animals, the breeders of which have alone attained their ends by the choice of individuals of the highest excellence in their kind, and by a judicious selection of size, form, and qualities likely to produce the result. There can be no doubt, then, but that by pursuing this course throughout a number of generations with the hound, an animal has been produced of what may be called quite a new variety in the canine race, answering the description and purposes of our present fox-hound. But the questions may be asked, Whence the necessity for this change, and forcing, as it were, nature from her usual course? Why not be content with the low-scenting, plodding hounds of our forefathers, which, from the superiority of their nose, not only displayed *hunting*, in the strict acceptation of that term, to the highest advantage, but very rarely missed the game they pursued? These questions are satisfactorily answered in a few words; first, as the fox is not now found by the drag, and the number of those animals is so greatly increased, the necessity for this extreme tenderness of nose does not exist; and, secondly, by reason of the blood of the race-horse having gradually mixed with that of our hunters, the sort of hound we have been alluding to was not found to be adapted to their increased speed; and particularly as, in proportion as nature lavished this fine sense of smelling on the old-fashioned hound, was he given to "hang" or dwell upon the scent, thereby rendering the length of a chase (which, to please the present taste, should, like Chatham's battle, be "sharp, short, and decisive") beyond the endurance of a modern sportsman. It is true, Mr Beckford, in his *Thoughts upon Hunting*, gives an instance of a pack of old-fashioned hounds, which ran in a string, as it were, one following the other, and yet killing twenty-nine foxes in twenty-nine successive runs, each fault being hit off by an old southern hound. But what would our hard-riding, modern sportsmen think of this as pastime? Nevertheless, all who witnessed, as we have done, the style of hunting of the Devonshire stag-hounds, will remember that there was a close similarity between them in chase, and the pack Mr Beckford speaks of. But, as the same eminent author afterwards observes, it is the dash of the fox-hound of the present day that distinguishes him from all others of his genus, and hounds must now "carry a head."

The breeding a pack of fox-hounds to a pitch bordering on perfection is a task of no ordinary difficulty; the best proof of which is to be found in the few sportsmen who have succeeded in it. Not only is every good quality to be regarded, and if possible obtained, but every fault or imperfection to be avoided; and although the good qualities of hounds are very soon reckoned, their faults in shape and performance present a longer catalogue. Independently of shape, which combines strength with beauty, the highest virtue in a fox-hound is not in the exquisiteness of his nose, but in his being true to the line his game has gone, and a stout runner to the end of a chase. But he must not only thus signalize himself in chase; he must also be a patient hunter, with a cold scent, or with the pack at fault. In short, to be a hard runner and a good hunter, and steady on the line, which "a good hunter" implies, constitutes a perfect hound, when combined with good form.

The faults of hounds, too often innate, can only be cured by education. The greatest of all are, skirting, or not being true on the line, and throwing the tongue improperly; first, without a scent, which is known by the term babbling; secondly, not throwing it at all, or running mute; and, thirdly, on a wrong scent, which is called running riot. The latter, however, is the least vice of the two, because generally curable by the lash; but the fault of skirting is too often innate; at all events, too often incurable. Thus has the breeder of the hound to guard against propensities as well as faults; and a late accredited writer on the subject says, "In modern times, the system of hunting is so much improved, so much more attention is paid to the condition of hounds and their style of work, that in this enlightened age a master of hounds thinks it a reflection on his judgment if *one* hound in his pack is detected in a fault."[1]

The selection of dog and bitch to breed from is a nice point for a master of hounds, or his huntsman, to decide upon; but, if he aim at excellence, he must keep his eye on perfection. In no animal is perfect symmetry so desirable as in a fox-hound, for without it there is no dependence on his services, however good may be his nature. We will first describe him in the words of a very old writer, and afterwards in those of Mr Beckford, when it will appear that there is a strong resemblance in the portraits drawn by each. "His head," says the former, "ought to be of middle proportion, rather long than round; his nostrils wide; his ears large; his back bowed; the fillets great; the haunches large; the thighs well trussed; the ham straight; the tail big near the reins, and the rest slender to the end; the leg big; the sole of the foot dry, and formed like a fox's, with the claws great." The latter says, "There are necessary points in the shape of a hound which ought always to be attended to; for if he be not a perfect symmetry, he will neither run fast nor bear much work; he has much to undergo, and should have strength proportioned to it. Let his legs be straight as arrows; his feet round, and not too large; his shoulders back; his breast rather wide than narrow; his chest deep; his back broad; his head small; his neck thin; his tail thick and brushy; if he carry it well so much the better." Now the hound that would answer to either of these descriptions would disgrace no man's kennel, and one resembling the latter would be an ornament to it; but with regard to the former, it must be borne in mind, that it is from the pen of a sportsman who wrote a century and half ago, when, as has been before observed, there is reason to believe no animal in the perfect form of the modern fox-hound was to be found in this or in any other country. Judges of the animal, however, will be disposed to think with us, that there is much of the real character of the *hound* in the sentence we have quoted from this old writer; such as the long rather than round head; the wide nostrils (Pliny says they should be flat, solid, and blunt); and the dry, fox's foot. But the "bowed back" appears to spoil all, unless by it is meant that gentle rise in the loins which the judge of hounds admires, and without which, the late Mr Chute of the Vine, in Hampshire, who hunted that country for more than thirty years, gave it as his opinion, no hound was able to maintain his speed for an hour over hilly and *ploughed* countries when "it carries;"—a technical term for the earth clinging to the foot, which it will do after a slight frost on the preceding night; necessarily adding much to the natural weight of the hound. Beckford gives us the modern fox-hound, and perfect, with the exception of the mention of one or two material points. "His chest should be deep," says he, "and his back broad;" but he has omitted a point much thought of by the modern sportsman, namely, *the back ribs*, which should also be deep, as in a strong-bodied horse, of which we say, when so formed, that he has a good "spur-place," a point highly esteemed in him. Nor is either of these writers sufficiently descriptive of the hinder legs of the hound; for although the "large haunch and well-trussed thigh" of the former denote power and muscle, nevertheless there is a length of thigh discernible in first-rate hounds, which, like the "well let-down hock" of the horse, gives them much superiority of speed, and is also a great security against laming themselves in leaping fences, which they are more apt to do when they become blown, and consequently weak. The fore legs "*straight as arrows*" is an admirable illustration of perfection in those parts, by Beckford; for, as in a bow, or bandy-legged man, nothing is so disfiguring to a hound as his having his elbows out, which is likewise a great check to speed. In some countries the round, cat-like foot is indispensable, and agreeable to the eye in all; but we would not reject a well-shapen puppy in other respects for somewhat of an open foot, provided his ancles or fetlocks were good, *a point we consider of the greatest consequence to all quadruped animals.* The shoulders of the fox-hound should resemble those of the horse—oblique, but at the same time strong; for a narrow chested hound is almost certain to get shaken by hard work, and consequently unlikely to endure beyond his third season.

As Beckford recommends the small head, we may presume the form and fashion of this point began to be changed in his time, and has, we think, been carried to too great an excess in the fox-hound of the present day, particularly in one or two kennels (the Belvoir, for example), where very short, as well as small heads, are a leading characteristic. For ourselves, we like some length of head in the fox-hound, not being able to divest ourselves of the idea of a cross with the pointer when we see him with a short head and a snubbed nose. Beckford also says the neck should be thin. We would add, *moderately thin.* We dislike a thin neck in any animal but the cow or the stag; at the same time we dislike a short, thick neck in a hound. His neck should be moderately long and moderately thick, with the muscles clearly developed; it should rise gracefully out of his shoulders, with a slight curve or crest, and, to completely satisfy the eye, should be quite free from exuberances of flesh and hair on the lower side of it, called by huntsmen "chitterlings" or ruffles, the hound having them being termed "throaty;" although there are numerous exceptions to this rule, as some of the best hounds England ever saw have been throaty; and although we are aware that one individual instance will prove neither the rule nor its exception, we can go as far back as to Mr Meynell's famous stallion hound Gusman, for as throaty, and yet as good a fox-hound as we ever remember to have seen. We agree with Beckford, that the "tail," now called stern, of a hound, should be "thick," and moderately "brushy;" and if well carried, it is a great ornament to a fox-hound. But there is one part of it which the master of a pack likes to see nearly deprived of its covering, and that is its tip, which, when in that state, is an infallible proof of a hound being a good, and not a slack, drawer of covers. As a perfect model we refer to the portrait of Nosegay, a hound belonging to the Earl of Kintore. Plate CCXCIV.

But to return to breeding the fox-hound. In the breeding of some animals, beauty of shape is often dependent on the caprice of fashion, or the taste of the breeder; but in the breeding of hounds no such latitude can be given, for here beauty, or symmetry of shape, is alone in reference to utility, and adaptation of parts to the purposes to which they are to be applied. Yet the breeder of fox-hounds has one point further to go; he must, as we before remarked, guard against *propensities*, which run in the blood of these animals perhaps stronger than their good qualities, and will sooner or later break out in their work. In the election then of a dog for a bitch, or a bitch for a dog, these matters must be attentively considered; and no man should breed from hounds of either sex that come under any of the following denominations, viz. not of a docile sort, but very difficult to enter to their game; given to run mute; to hang on a scent; or to be skirters; not only not true to the line, but given to run riot either in cover or in chase; and, above all things, if found evidently deficient in nose, and not able to run at head. Good constitution should likewise be looked to; but we would not reject a stallion hound, or a brood bitch, merely for being slack drawers, or for not being always at the head in chase, provided they were well bred, of good form, and true to the line, in cover, and out.

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[1] Colonel Cook's *Observations on Fox-hunting*, &c.

As to the proper combination of form, that must be self-evident to the breeder of hounds. If a bitch is a little high on her leg, or light, she should be put to a short-legged, strong dog, and of course *vice versa;* if rather light in her tongue, that defect may be remedied by an opposite property in a dog. The defects in legs and feet can only be remedied by such means; and fortunate is it for the owner of an otherwise perfect and excellent bitch, that such remedies are at hand. Length and shortness of frame, as well as coarse points, are all to be obviated and altered in the same way, making allowance for the fact, that the laws of nature are not *always* certain. Constitution can likewise be mended by having recourse to that which is good (and none so easily detected as the dog's); and colour changed if required. In fact, as Beckford says, "It is the judicious cross that makes the complete pack;" and it was the remark of this practical writer, and therefore high authority amongst sportsmen, that "he saw no reason why the breeding of hounds may not improve till improvement can go no further." The question may be asked, is not his prediction verified?

But the act of crossing hounds, as indeed all other animals, although never thoroughly divested of chance, is one of more difficulty than most people would imagine, and one indeed which, by its results, would often baffle, if not puzzle, the profoundest of our modern physiologists. Our space will not admit of our going at length into this intricate subject, but great mistakes, we conceive, have been made by masters of fox-hounds, in breeding too much in-and-in, from nearest affinities, instead of having recourse to an alien cross. This was peculiarly apparent in the packs of two very celebrated masters of fox-hounds, the late Sir Thomas Mostyn, Bart., and the late John Corbet, Esq. of Sundorne Castle, Shropshire (the former of whom hunted Oxfordshire, and the latter Warwickshire, each for upwards of thirty years), who bred in-and-in, Sir Thomas from a bitch called *Lady*, and her produce; and Mr Corbet from a hound called *Trojan*, and his produce, to the great injury of their respective packs. We are aware it is asserted that a pack of fox-hounds should have the appearance and character of being of one family; but this expression is not to be taken in its literal construction. It is in the conformity of their character and appearance that they should bear a close resemblance to each other, and not in their close consanguinity. It is true, the celebrated pack of Mr Warde, the present father of the field, and a master of fox-hounds for the unparalleled period of fifty-seven years, which sold for two thousand guineas, only contained, in 1825, three couples of hounds not of his own blood, and those the produce of one stallion hound, Mr Assheton Smith's *Reubens*. But we have no proof of Mr Warde's hounds being better for adhering so closely to his own sort; on the contrary, it is the opinion, we believe, of the sporting world, reluctantly admitted, in consideration of the well-merited celebrity of their owner, that, latterly, the slackness of this renowned pack, unrivalled in fine form, was to be attributed to that circumstance. On the other hand, the rare but valuable combination of dash and nose, a match for the cold and ungenial Oxfordshire hills, for which the Duke of Beaufort's pack has been so long conspicuous, has been traced to his Grace's late huntsman, Philip Payne (said by Colonel Cook, in his *Observations on Fox-Hunting*, to be "the best judge of breeding hounds in the kingdom"), going from home for his blood, and sending his bitches to the celebrated stallion hounds of the best kennels within his reach. This, however, it must be remembered, is not within the command of every man's purse, the expenses attending sending bitches to a distance, under any circumstances, being heavy; as not only must they be placed under the care of a trusty servant on their journey, but there are other occult expenses attending them, which none but masters of hounds are aware of. It is, however, a notorious fact, that the produce of some stallion hounds, if they have a fair chance by the bitch, seldom fail in turning out well; and perhaps the most signal instance of "like begetting like" in this species of animal, is that of Mr Osbaldeston's Furrier having been the sire of an entire pack in that gentleman's kennel when he hunted the Quorndon country in Leicestershire, which he would occasionally take to the field, amounting to more than thirty-five couples, although, as may be supposed, they were generally mingled with the rest of his kennel, which at that period contained a hundred couples of hounds. These Furrier hounds gave little trouble in the entering of them, and proved very true line-hunters, and every thing that fox-hounds should be. The annals of fox-hunting likewise record similar instances of the peculiar properties of stallion hounds transmitting their virtues to many succeeding generations, especially in the instances of the Pychley Abelard, the Beaufort, and the New Forest Justice, Mr Ward's Senator, Mr Meynell's Gusman, Mr Musters's Collier, Mr Corbet's Trojan, Lord Yarborough's Ranter, with many others of more recent days, but too numerous to mention here.

The size, or, we should rather say, the height, of a fox-hound, is a point upon which there has been much difference of opinion. The long-established pack of the late Mr Chute were at least three inches below the standard of his neighbour Mr Villebois's large pack; also as much below that of his Grace the Duke of Cleveland, who had for many years also a large and a small pack; and at least four inches lower than Mr Warde's, in whose kennel were hounds full twenty-six inches high. Various arguments are made use of by the advocates of large and small hounds. Those of the former assert that they get better across a deep and strongly fenced country than smaller ones; whilst the admirers of the latter insist upon their being better climbers of hills, more active in cover, and quicker out of it when their fox is gone; and are oftener found to be perfect in form and shape. As to uniformity in size, how pleasing soever it may be to the eye, it is by no means essential to the well-doing of hounds in the field, and has been disregarded by some of our first sportsmen, the great Mr Meynell for one, who never drafted a good hound for being over or under size; neither did Mr Assheton Smith, when he succeeded to his, Mr Meynell's, country. The great object of both was to breed them with muscular power and bone, combined with as much symmetry as could be obtained; and to be equal in speed and good qualities, rather than equal in height.

We consider the proper standard of height in fox-hounds to be from twenty-one to twenty-two inches for bitches, and from twenty-three to twenty-four for dog hounds. The minimum and maximum size of the last fifty years would have been found in the kennels of Mr Chute and Mr Warde; the Duke of Cleveland and Mr Villebois coming next to Mr Warde in what may be called the maximum class. Mr Chute's motto over his kennel door was, "multum in parvo," which was his great aim; and although very full of power, and particularly neat in appearance, his hounds did not more than average twenty-one inches. On the other hand, many of Mr Warde's bitches, the most splendid animals of their kind and sex the world has ever yet seen, were better than twenty-three, and some of his dog hounds twenty-six inches high, which was about the standard of the original Devonshire stag-hounds. It may be said of hounds, however, as has been said of horses, that their height has little to do with their size, as far at least as their powers of action are concerned; and doubtless in all animals that labour, a medium height is the best.

The amount of hounds bred annually will depend on the strength of the kennel, and the number of days hunting in the week which the country they are intended for requires. From sixty to eighty couples are about the complement for a four-days-a-week country, which will require the breeding of a hundred couples of puppies every year, allowing the usual diminution of the entry by malconformation, under size, and that bane to the kennel, the distemper, which often takes off a moiety of them. As the period of gestation in the female dog is somewhat over two calendar months, the fox-hound bitch should, if she can be spared, be put to dog in January, as then she will litter in the spring, when the weather is comparatively mild (cold being destructive of young animals of this sort), and the puppies will then come early into kennel, generally be of good size, and powerful; and be entered without loss of time. The tips of their sterns being pinched off, and their dew-claws cut, whelps should be taken to their walks at about two months old; and if to one where there is plenty of milk or whey, they will be the better for it. Whelps walked at butchers' houses grow to a great size, but they are apt to be heavy-shouldered and throaty, and otherwise out of shape. If possible to avoid it, puppies should never be tied up, as perpetually drawing at the collar-chain throws their elbows out, and otherwise damages their legs, particularly by spreading their feet, and altering the form of their ancles, although it is sometimes almost impossible to avoid it, from their proneness to do mischief. If old bitches are bred from, they should be put to young dogs, and of course *vice versa;* and a bitch should not be worked for at least the last month of her time; and immediately on her whelps being taken from her, a dose of physic should be given her.

It is said that the dog in a state of nature is subject to few diseases, and for these he finds his cure by an instinctive faculty; in a domesticated state, however, he is subject to many, and some of an awful nature, which may be classed among the *opprobria medicorum*, no certain remedy being discovered for them. Amongst these is one called the distemper, not known by our forefathers, but at present become a sort of periodical disorder in kennels, to the destruction of thousands of young hounds annually. The first symptoms of this disease are, generally, a dry husky cough; want of appetite, and consequent loss of flesh; extreme dulness, and a running from the nose and eyes. As the disease advances, it is attended with twitchings of the head, while the animal becomes excessively weak in the loins and hinder extremities; is greatly emaciated; runs at the eyes and nose, and smells very offensively. At length the twitchings assume the appearance of convulsive fits, accompanied with giddiness, which cause the dog to turn round; he has a constant inclination to dung, with obstinate costiveness at one time, or incessant purging at another. Finally, the stomach becomes extremely irritable; every thing swallowed is instantly thrown up; and the dog generally dies in a spasmodic fit.

For the cure of this disorder many remedies have been prescribed; but as none of them can be relied upon as specific, we decline giving them,[1] and prefer transcribing the following observations of an intelligent and experienced huntsman in the service of a noble duke, accompanied by a comment upon it by a noble lord, also a practical sportsman, hunting his own fox-hounds.

" As soon," says the former, " as the young hounds come in from quarters, a sharp look-out is kept for the distemper; and as soon as any of its symptoms appear, a dose of cold-drawn castor oil is given, and the following morning a dose of calomel and jalap. About seven grains of the former and twenty of the latter made into a bolus, and put over their throats before they have tasted any thing, and their heads coupled up above the level of their bodies for two hours, so as to prevent them from vomiting up the medicine, which they are certain to do if this is not carefully attended to. They are then to have their broth and their meat. The oil and bolus to be repeated in a day or two as symptoms require; that is to say, if the fever runs high, repeat the bolus, and, if only to keep the bowels open, the oil in small quantities. Indeed the great thing is attending to circumstances, and acting accordingly; as, for instance, nothing can be more different than when flux attends the distemper, and when fits and obstinate costiveness is the case. I believe, however, that at first a good scouring in both cases is of service. In flux, of course, don't repeat the calomel, but take moderate means to stop it, as flux in a minor degree tends to keep off both fever and fits. To allay the flux, arrow-root, or boiled milk and flour porridge. There is no doubt that laudanum is the surest method to stop it, but then it is sure to end with fits. Fits at the beginning are no bad sign, and at the end nothing can be worse. I never either approved of bleeding or vomiting in the distemper; the first weakening too much, the latter creating and adding to the irritableness of their stomachs."

" With the foregoing plain, sensible, and simple treatment," says the noble lord in his comment on the foregoing observations, " my junior experience perfectly agrees with the opinion of ....; but I revert to what he justly adds about ' circumstances,' and differ with him about the bleeding, as I think a good scouring out, and bleeding, before any thing symptomatic of the disease has fairly begun, highly commendable. But, *vice versa*, for instance, if you bleed after the disease has fairly taken root, the lungs, nine cases in ten, being affected, it is ten to one you kill the dog; but if done early in the day, I cannot but think it is of much service, prevents fever, and in many cases makes the disease less violent. I think perhaps the treatment of whelps, after they come in from their healthy walks to the close confinement of sometimes an ill-kept kennel, is the cause of the distemper taking more violent hold of them than it otherwise would do; and amongst the hundred pretended receipts of many huntsmen, the remark is a justly correct one, of what *may* cure one dog will kill another. But here .... and his ' circumstances' put you right. What might be advisable would be this: As soon as your puppies come in, look them attentively over; divide the well-walked whelps from those that have been ill walked; bleed and scour well out the fat lot, paying of course attention to their diet, cleanliness, and exercise; and cherish the poor lot by the best food, giving them the castor oil without the calomel or the lancet. But a lot of well-bred fox-hound whelps are not to be left to the care of a whipper-in or a boiler, unless he is a perfectly sober, attentive, experienced man; for in this disease in the animal, as in the human species, the patient must be most attentively and closely watched."

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[1] Colonel Cook says he has " sometimes" found the following efficacious:—Calomel three grains, cathartic ext. seven ditto, soap seven ditto, emetic tartar one half grain. Make three pills, and give one every other day. Vaccination was tried in some kennels as a preventive, but it failed, and was abandoned.

Kennel Management.

The management of hounds in kennel has undergone great changes for the better since Mr Beckford's day; and, divesting the mind of the inferiority of horse flesh over cow or bullock flesh, the food of hounds, both in its nature and the cooking of it, is such as man might not only not reject, if necessity compelled him to have recourse to it, but such as he would thrive and do well upon. It is a common expression, that "any thing will do for dogs," and experience informs us they will exist upon very miserable fare; but hounds, *to be in condition*, must have every thing good of its kind, and also well cooked. Were a master of hounds, or huntsman, of the present day, to follow Beckford's advice, of putting his hounds to a horse fresh killed, after a hard day, his brother sportsmen would think him mad; nor is there scarcely any thing now used in our first-rate kennels but the best oatmeal (Scotch or Irish is the best), one year old, and well-boiled horse flesh, quite free from taint. The meal is put into the copper when the water boils, and should be boiled up a second time, and, in all, for at least two hours; for nothing is worse for the wind of hounds than meal not thoroughly boiled. When taken out of the boiler, it forms a substance resembling coarse rice pudding; and when the fresh flesh, which is shredded, and the broth in which it is boiled, are added to it in the trough, and very well mixed, it forms the best and highest food that can be given to hounds. In some kennels, after the example of that famous huntsman the late Thomas Oldacre, the meal and flesh are boiled up together, with the idea that more of the virtue of the flesh is then imparted to the meal than when it is merely mixed with the broth; but the practice is not general. But such is the difference of constitution in hounds, and the aptitude of some, over others, to gain flesh, or become foul, persons who are particular as to the condition of their pack have troughs filled accordingly, that is, one with thinner food than another, for hounds of the former description. No animal in the world is so soon up and down in his condition as the dog; and, strange as it may appear, the effect of two or three extra mouthfuls of thick meat will be visible on some hounds on the second day after they have eaten them. Nevertheless, the dog being strictly a carnivorous animal, cannot stand hard work without flesh, which he should have a fair allowance of once a day, according as his constitution may require it. Some masters of hounds, however (the justly celebrated Mr Ralph Lambton one of them), do not feed with flesh on the day before hunting, giving only meal and broth; and this on the supposition that the faculty of scent is more delicately susceptible without it. Young hounds lately come from walks should be fed twice in the day, as they do not always, at first, take to kennel food.

Colonel Cook is thus explicit and correct on the subject of feeding hounds, and their condition, the result of many years experience, and great attention to the kennel. "It is quite certain," says he, "a hound too high in condition cannot run a burst, neither can a poor half-starved one kill an afternoon fox; a hound, therefore, cannot be considered as fit to be brought out, if he is either too high or too low. I like to see their ribs, but their loins should be well filled up, and they should be hollow in their flanks: he that is full in the flanks is sure to be fat in the inside, and consequently not fit for work. The feeding of hounds, and the bringing them to cover, able to run a burst, or kill an afternoon fox, is not altogether a thing so easy as some people imagine; in fact, it requires nearly as much trouble to get a hound into condition as it does a horse; and if the greatest attention is not paid to this particular, you cannot expect to catch many foxes. It is the condition of a hound which gives him the advantage over the animal he hunts. Nevertheless their constitutions differ as much as those of the human species; some require thick food, others thin; the same quantity which may be requisite for Ranter, if given to Rallywood, would render him unable to run a yard. Some time before hunting (say about three weeks), they should have plenty of walking exercise, and salts given them once a week. If a hound is at any time very foul, the following receipt is very efficacious:—Three grains of Æthiops mineral, five grains of calomel, made into a ball: the hound must of course be carefully kept from cold water."

In the summer time, when hounds are out of work, they do not require flesh more than twice a week, and succulent vegetables in their food are at this time useful. They are also physicked and bled at the close of one season, and before the commencement of the next; and, if necessary, dressed over with a sulphureous mixture during the idle months. But some owners of hounds, and huntsmen, object to dressing them, conceiving that it opens their pores too much, and subjects them to rheumatic affections.

One recent and great improvement in kennel discipline is, a small reservoir of water within the walls, of sufficient depth to cleanse the legs of hounds, but not to wet their bodies, which they are made to walk through immediately on their coming home. Upon being turned into their lodging room, they commence licking themselves dry, which, as a dog's tongue is proverbially called his "doctor," is most beneficial to their feet, by clearing them of sand or gravel, as well as healing any trifling wounds which they may have received. In the Duke of Cleveland's kennel, this reservoir is filled with broth, which, in addition to its healing properties, induces hounds to lick their feet still more than water does. In flinty countries, the feet of hounds are very frequently wounded, which is a great disadvantage to those a little inclined to do wrong, as they are compelled to miss their turn, and so get above themselves. It also obliges a gentleman to keep a larger number of hounds than this country would otherwise require.

Hounds are fed on the day before hunting about eleven o'clock A. M., but some delicate feeders require to be let into the troughs a second time. After hunting, they are fed as soon as they have licked themselves dry, which, by the warmth that arises from their bodies when shut up, is very soon effected; and in the summer time it is reckoned safer to feed them in the evening, as they then rest quieter throughout the night, and are less disposed to quarrel.

Colour of Hounds.

Independently of the justness and elegance of figure in animals, which adapt them to the uses or ends of their creation, nature has been profuse in the adornment of the surface of their bodies by various beautiful colours. But in proof that the Creator never errs from his design in any of the qualities he has communicated to his creatures, and that he adorns not merely for the sake of ornament alone, these beauties conferred upon them are found greatly to contribute to their well-being; for with them they have received the consciousness of possessing, and a desire to preserve them. In fact, it is this which attaches them so closely to their being, and renders them so attentive to cleanse, ornament, and take care of themselves, as we every day see they do; and to preserve, in all its lustre, the enamel which nature has given them. And we may go even one step farther than this. An accurate observer of animals will perceive, that they are not only conscious of their own beauty, but are capable of beholding and admiring it in others. This is undoubtedly the case with regard to both sexes of the same species: never are they so attentive to display the graces which nature has bestowed upon them, never are they so ostentatious, as when they are together, which is evident from their gambols and frolics; and, if we may judge of them from our own feelings, how greatly must this disposition contribute to their mutual felicity.

In no animal is variety of colours more conspicuous than in hounds, and it adds greatly to their appearance when we see them in a body in the kennel, but still more so in the field. The prevailing ones with the fox-hound are these: Tan (not common); black (not common); black and white and tan (the most common); milk white (not common); red (very rare); blue (the same). Next come the blended, or mixed colours, known in the kennel as "pies." There is the red pie; the blue pie; the yellow pie; the grey pie; the lemon pie (very handsome); the hare pie; and the badger pie, which last is very characteristic of the fox-hound. The fox-hound is sometimes ticked, that is, his coat is dotted with small white specks on a dark ground, but he is rarely what is called "mottled" (motley); and, we believe, what is known by "a blue mottled hound" is not to be found among fox-hounds, being peculiar to harriers and beagles. There was for many years a pack of "blue mottled" harriers kept near Croydon, in Surrey.

It is asserted that the original colour of the English fox-hound was fallow, or pale yellow (Shakspeare speaks of a fallow *greyhound*); and we are inclined to this opinion from its being spoken of in several old works upon hunting, as the "best colour for hounds that hunt the hart or roe;" and there can be no doubt of our fox-hounds being originally descended from that breed of dog, be it what it may. As we know that a recurrence to original colour frequently takes place in animals and birds, after its disappearance throughout several generations, this may probably account for the various pied hounds we see in kennels, the produce of hounds of distinct colours, perhaps merely black and white, and often of those nearly black. Moreover, at Ashdown Park, in Berkshire, an old seat of the Craven family, there is a picture of a pack of fox-hounds, above a hundred years old, in which every hound is either fallow coloured or red.

The Tongue, or Cry of Hounds.

During the early stages of mental progress, the ear is of more importance to man than the eye. Indeed at all times sounds, by association, become the signs of ideas; and the great variety in the voice of nature must have been designed to meet the peculiar tastes and purposes of the countless multitudes that dwell on the face of the earth. That the cry of hounds is a voluntary noise, proceeding from a powerful organic impulse, is quite apparent, as is also the purpose for which the impulse is given; namely, to announce their having discovered the scent of an animal, either obnoxious to their notice, or desirable as food, and by calling their straggling companions together, and uniting their forces, the better to enable them to secure their prey. On the other hand, here is mercy shown to the prey they are in pursuit of. The tongue of the hound gives notice of his approach; and he does not pounce upon his victim as the silent greyhound does, which Gratius, in his poem on coursing, alludes to in the following verse:—

> "Sic canis illa suos taciturna supervenit hostes."

But the cry of hounds, melodious and heart-cheering as it even now is, has lost much of its poetical interest, from the change man has made in the natural organization of the animal from which it proceeds; and we shall never again hear of a master of a pack, after the manner of Addison's knight, returning a hound that had been given to him as an "excellent bass," whereas the note he wanted was a "counter-tenor." The great Beckford, however, was something of the worthy knight's opinion; for he says, in his *Thoughts upon Hunting*, "If we attended more to the variety of the notes frequently to be met with in the tongues of hounds, it might greatly add to the harmony of the pack." This is well in theory. The natural organization of the dog is musical; he is, in fact, a victim to musical sensibility; and we may reasonably suppose that the notes of his companions in the chase may be as pleasing to himself as to his huntsman; but we more than doubt whether a huntsman of this day would draft a highly-bred and beautiful young bitch, as good too as she looks to be, merely because her light, fox-hunting tongue might be somewhat drowned, and now and then lost, in the general chorus of the pack. He would rather say, "*Let every tongue be a fox*,[1] and I'll leave the rest to chance." But, on a good day for hearing it, what *natural* sound is more delightful and animating than that of hounds in full cry, in the deep recesses of an echo-giving wood? Neither would those writers who have availed themselves of the beauty and sublimity which allusions to sounds in nature stamp on their various compositions, have at all descended from their eminence if they had, like Shakspeare, delighted as much in bringing the soul in contact with such a sound as this, as with the rolling of the thunder, or the howling of the storm.

The Age of Hounds.

The dog exhibits no exact criteria of age after the first two years, during which time the whiteness and evenness of his teeth are a pretty certain test of his not exceeding that period. An old hound, however, cannot be mistaken if only looked in the face, where he shows old age nearly as distinctly as man. As to the length of services of hounds, that depends upon circumstances. Few are found in a kennel after their eighth year, and *very few* after their ninth; and not many hard-working hounds can "run up," or keep pace with the rest, after their fifth season at most. Hounds are in their prime in the third and fourth years; and although there are a few instances, such as Sir Richard Sulton's Lucifer, the Beaufort Nector, and the Cheshire Villager, of their hunting in their twelfth, eleventh, and tenth year, the average of their work cannot, we fear, be placed beyond four seasons. Old hounds are useful in the field, but when they cannot run up with the pack, they should be drafted. The perfection of a pack consists in the great body of it being composed of hounds *quite in their prime.*

Separation of the Sexes.

The separation of the sexes in the kennel *and in the field* is one of the late innovations in the sporting world, and generally considered as a good one. In the first place, it pleases the eye to see a pack of hounds nearly all of a size, which cannot be the case when it is composed of dogs and bitches mixed; and the character of the animal is likewise more uniformly displayed when confined to one individual sex. Secondly, by the total separation of dogs and bitches in the kennel and in the field, the former are less inclined to quarrel, and the latter are more at their ease, than when subject to the constant, and, at times, importunate solicitations, of the male sex. Of their performances in the field, however, when taken into it separately, some difference of opinion exists; and each sex has its advocates. With a good fox before them, and a warm scent, bitches are decidedly quicker, and more off hand in their work, than dog hounds; but with a colder scent, or at fault, the general opinion is, that they are not so patient, and more given to over-run it. That they are superior in "*dash*," which, Beckford says, is the distinctive characteristic of a fox-hound, we believe is universally acknowledged; and a celebrated master of hounds,[1] who hunted them himself several seasons in Leicestershire, has been heard frequently to say, that if his kennel would have afforded it, he would never have taken a dog hound into the field. That, in the canine race, the female has more of elegance and symmetry of form, consequently more of speed, than the male, is evident to a common observer; but there is nothing to lead us to the conclusion, that, in the natural endowment of the senses, any superiority exists. It is however remarkable, that the Latins, when speaking of hunting, or "sporting dogs," as we call them, generally use the feminine gender, one instance of which is to be found in the second ode of the fifth book of Horace (*multa cane*), which ode every sportsman ought to read, as it gives so pleasing a picture of a country life.

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[1] "Every tongue a fox," is a well-known sporting phrase.

Names.

The naming of hounds and horses has nearly exhausted human invention, as well as classical research. Beckford furnishes a list of more than eight hundred names for hounds, alphabetically arranged. But the naming of hounds is somewhat under metrical control; for it is not only confined to words of two and three syllables, but their quantity, or rather their time, must be consulted. For example, a dactyl, as *Lucifer*, answers well for the latter; but who could holloa to *Aurora?* a trochee, or an iambus, is necessary for the former, the spondee dwelling too long on the tongue to be applied smartly to a hound. But there ought to be a nomenclator, as of old, at every kennel door; for it is but few persons unconnected with a pack that can recollect their names until after a rather long acquaintance with them, from the great similarity of form, character, as well as sometimes of colour, in old-established kennels. "How is it possible," said a young master of fox-hounds a few years ago, "that I should distinguish every hound in my kennel by his name, when I find *three* spots on one side of their body, and *five* perhaps on the other?" There have been, however, and still are, persons who can see a large kennel of hounds *once* drawn to their feeding troughs, and call them all by their names afterwards, the result alone of a keen and practised eye.

The price of hounds is strangely altered within the space of half a century, or less; and on this subject we cannot do better than quote Colonel Cook. "Hounds," says he (p. 6), "have always been much undervalued; we sometimes hear of eight hundred or even a thousand guineas as the price of a hunter, and the sum of three or four hundred is often considered as a mere trifle; whereas a pack of hounds, *on which every thing depends*, was only considered worth a few hundreds. Yet Shakspeare himself appears to have known the value of a hound; for in his "Induction" to the *Taming of the Shrew*, a nobleman returned from hunting thus speaks of his hounds with delight to his huntsman:

> *Nobleman.* Huntsman, I charge thee, tender well my hounds;
> Brach Merriman,—the poor cur is emboss'd,
> And couple Clowder with the deep-mouth'd brach.
> Saw'st thou not, boy, how Silver made it good,
> At the hedge-corner, in the coldest fault?
> I would not lose the dog for *twenty pound.*
> *Huntsman.* Why, Belman is as good as he, my lord;
> He cried upon it at the meerest loss,
> And twice to-day pick'd out the dullest scent;
> Trust me, I take him for the better dog.

"The sum of twenty pounds for a single hound in Shakspeare's time," continues the colonel, "and that not the best in the pack either, was no inconsiderable price. I am not alluding to 'a lot of curs;' but surely a well-bred, established pack of fox-hounds, including brood bitches, and puppies at walk, must be cheap at a thousand or twelve hundred pounds."

Now the value of anything is what it will fetch; and how far an established pack of fox-hounds is cheap at a thousand or twelve hundred pounds, is a matter of consideration with reference to concomitant circumstances; but that they will have cost the seller a great deal more, there can be no doubt. We should put the average price at something less than either of the above sums, although, within the last dozen years, several packs have been sold for the former sum; and the justly renowned one of Mr Warde, the present Father of the Field, fetched two thousand guineas; and the late Lord Middleton gave Mr Osbaldeston the same sum for ten couples of hounds out of his kennel.

The Harrier.

The modern harrier bears no greater resemblance to the one in use fifty years back, than the hunter of the present day to that ridden by our grandfathers. In fact, he is now nothing less than the fox-hound in miniature, which it is the endeavour of all breeders to have him. Their qualities also are as opposite as their form, the one delighting to dwell upon the scent, the other a little inclined, perhaps, to the other extreme. But the taste of the day for all sports of the field would not endure the tedious exactness of the old psalm-singing harrier; and not only in point of diversion, but on the score of the *pot*, the balance is greatly in favour of the improved variety. Before the old-fashioned harrier, the hare had time to play all sorts of tricks, to double on her foil, and so stain the ground that she often escaped by such means; whereas the modern hound, if the scent be tolerably good, forces her from her foil to fly the country, and very often beyond her knowledge, when a good straightforward run is the almost invariable result. The observation of Mr Beckford holds good here. He could not, he said, imagine a hound too *well* bred to show sport, and kill his game; but he could readily conceive the reverse, when the game ran stout and well.

To Sir John Dashwood King, Bart. of West Wycombe Park, Bucks, is the credit due for what may be termed the living model of the present improved harrier; and so characteristically stamped are his sort of hound, now widely spread, that they are recognised by a sportsman at the first glance. Their standard height did not exceed eighteen inches, and therefore, in that respect, they were not an overmatch for their game; but from the great equality of their size and speed, combined with rare hunting qualities, they killed more hares, with good runs, than any other pack in the kingdom, and for many, many years in succession certainly "bore the bell." Sir John kept them more than thirty years, at Bourton-on-the-Hill, Gloucestershire, near the four-shire stone on the Oxford and Worcester road, where his father kept them before him; hunting partly in the vales of Warwickshire and Worcestershire, and partly over the Cotswold Hills, which latter country is famous for the stoutness of its hares, frequently standing an hour before this celebrated pack, after having been driven beyond their knowledge by their *pressing* method of hunting up to them, a method quite unpractised by the old long-eared harrier. The parent stock of this pack was a small fox-hound from the Duke of Grafton's kennel, called Tyrant, whose blood, form, and character, were strikingly apparent throughout; and so great was its celebrity, that it fetched the highest price ever known to be given for harriers, namely, seven hundred guineas, by Lord Soudes of Rockingham Castle, Northamptonshire. Sir John, however, deserved success. He bred upwards of seventy couples of hounds every year, and had an establishment of horses, &c. nearly equal to fox-hounds. The hare-hounds bred for many years by Mr Yeatman of Stock House, Dorsetshire (who lately resigned the Blackmore vale country, in which he hunted foxes), came next to Sir John's in the true form and character of the modern harrier.

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[1] Sir Bellingham Graham, Bart. of Norton Conyers, Yorkshire.

The Stag-Hound.

The English stag-hound is now known only by name, as there are none of the breed kept for the purpose of hunting the wild stag; and such deer as are turned out before his majesty's, and the few other packs that follow this game, are hunted by fox-hounds of the highest blood that can be procured. And the change is a good one; for although the English stag-hound was a noble animal of his kind, he was not sufficiently speedy, nor perfect in his work, to satisfy the present taste, and he was likewise too much given to dwell on the scent in chase, as well as of very delicate constitution in kennel. He is originally supposed to be the produce of the old English blood-hound, by a cross of some kind of greyhound, such as the Highland deer-greyhound, approximating his own form. At all events, it is certain that the former, the blood-hound, was the dog first made use of in hunting deer in England; and it is probable that, as the taste for following hounds on horseback increased, a turn of speed was given to the original breed by a cross with a speedier sort. We may add, the old paintings of English stag-hunting favour this hypothesis.

The Beagle.

This variety of the dog is now nearly extinct, and for the same cause as the stag-hound. Time is at present considered as too precious to afford an hour at least, and perhaps two, to the hunting down one hare, which is now accomplished in a more off-hand manner, in twenty minutes. To an admirer of nature, however, and of the endowments given to inferior animals, the busy, intelligent, and highly-gifted beagle certainly affords a treat. His form, also, when not out at his elbows, is handsome in the extreme, and his perseverance in chase is exceeded by none. But he has one of the greatest faults that hounds can possess; he is noisy, and dwells upon the scent, whilst his game is flying the country before him. In fact, his only use or value now is (independently of being looked at and admired, for he is a perfect animal of his kind), to accompany a brace of greyhounds when a hare is wanted, and not ready at hand. There is, however, one pack of beagles kept in Dorsetshire, known as the Mountain Harriers, whose performances are much spoken of in the sporting world.

The Greyhound.

The greyhound has now lost his place in the catalogue of the dogs used in chase, neither can be classed as such, since man has deprived him of the necessary faculty of smell; but he was held in such high estimation in the middle ages, as to be considered as the peculiar companion of a gentleman. He never went abroad without these dogs; the hawk which he bore upon his fist, and the greyhounds which ran before him, were certain testimonies of his rank; and in the ancient pipe rolls, payments appear to have been often made in these valuable animals. But at no period of his existence was the greyhound the symmetrically elegant animal we now see him, nor possessed of nearly so much speed; neither was the diversion of the leash at any time carried on with so much spirit as within the space of the last thirty years, in various parts of Great Britain. But the necessity for, or rather the cause of, the change in the form of the greyhound, may be traced to his being no longer, as formerly, made use of to course and pull down deer, but chiefly to exhibit his speed at our different spirited coursing meetings, for the various prizes contended for, as also in private matches.

The *Courser's Manual or Stud Book*, by Thomas Goodlake, Esq. (1828), has the following interesting passages on the alteration effected in this species of dog. "In the days of Elizabeth," says the author, "the greyhound seems to have been a fine and effective animal, but approaching more to the bony, wire-haired make of the Highland greyhound represented in the pictures of Edwin Landseer, and deficient in the symmetry and fine glossy coat which mark a high-bred kennel of modern times. It is probable, that during the early part of the seventeenth century, judicious crosses were made, partly from the beautiful Italian greyhounds, which we often see in family pictures, accompanying our fair ancestresses in their parks and plaisances, and partly from the stouter breed of dogs represented in Flemish hunting-pieces; and that even Persia and Arabia, whose greyhounds are not to be despised in point of form and speed, contributed their quota of blood; as it is shown by the history of Cromwell's Coffin Nail, that the wealthier gentry of that period spared no expense or pains in improving the more highly-prized breeds of sporting animals. If we mistake not, some of the pictures of Charles the First contain portraits of greyhounds approaching nearly in point of coat and shape to the present breed."

Speaking of the late Lord Orford, who, with respect to modern coursing, laid the foundation-stone of the celebrity to which it has arrived, and who, besides being celebrated for his greyhounds, established the first coursing club that we read of, at Swaffham in Norfolk, in the year 1776, the same writer says, "A few anecdotes of this noble patron of coursing may not be uninteresting. He was passionately fond of the sport; and as he was a man who never would do things by halves, but was zealous beyond measure in succeeding in whatever he undertook, he may be said to have made as much progress as possible in perfecting the breed of the greyhound, and encouraging an emulative spirit in coursing amongst his opulent neighbours, from the time he took it up till his death. Indeed, his extensive property, and his influence as lord-lieutenant of Norfolk, gave him the greatest means of accomplishing his favourite object. He could command such an immensity of private quarters, or walks as they are generally called, for greyhounds, that he bred largely, and few possessed the same advantages of selection. He is recorded as having at one time fifty brace of greyhounds; and it was his fixed rule never to part with a single whelp till he had had a fair trial of his speed; consequently he had chances beyond almost any other individual, of having a collection of very superior dogs. Intent on obtaining as much perfection in the breed as possible, he introduced every experimental cross, from the English lurcher to the Italian greyhound. He it was that first thought of the cross with the English bull-dog, in which he persevered in opposition to every opinion, until, after breeding on for seven removes, he found himself in possession of the best greyhounds at the time ever known; and he considered that this cross produced the small ear, the rat-tail, the fine, thin, silky coat, together with that quiet, innate courage which the high-bred greyhound should possess, preferring death to relinquishing the chase." There is something curiously analogous in the sense conveyed by the concluding words of this extract. His lordship fell dead from his horse immediately after witnessing the triumph of his famous bitch Czarina, in a match at Swaffham, having been in vain admonished on the impropriety of taking the field in his then indifferent state of health; and his memory is introduced as a toast at most coursing meetings, as father and patron of the sport.

The Terrier.

The terrier is no longer the accompaniment to a pack of fox-hounds, and for the best of all reasons,—foxes are not nearly so often digged for as formerly; and his only use was, by his bay, to inform the diggers whereabouts the fox lay; and we suppose he took his name from his being so eager to get under ground. There is also a second reason why he is better left at home. He was seldom steady from *wing*, if he was from *foot*, and thus often the cause of riot. It was, however, a matter of astonishment to behold those which were very highly bred, making their way, as they did, to the end of the longest chases, over strong and wet countries, as well as through the thickest covers, and so often making their appearance at the end of them. At all events, if left behind, they were sure to find their way home in the course of the night, whatever the distance might be. One peculiarity of form was essential to their being sure of getting up to their fox, viz. not too full in the shoulder; and those whose colour was pure white, and who were broken-haired, were generally most esteemed by huntsmen. It was often their lot to lose their life, by scratching up the earth behind them, and cutting off their means of retreat; and they were now and then killed by a fox, the latter a rare occurrence. They were commonly entered to a badger, whose bite is more dangerous than that of a fox. (B. B. B. B.)

HOUNSLOW, a town, part of the parish of Heston, in the hundred of Ossulton and county of Middlesex, ten miles from London. It is on the great western road, and more post-horses are kept there than at any other town in England. Near to it are some considerable powder-mills, and also mills for rolling copper. On what was formerly Hounslow Heath, but now enclosed, there are extensive barracks for cavalry.

HOUR, in *Chronology*, an aliquot part of a natural day, usually a twenty-fourth, but sometimes a twelfth. Originally the word *hora*, or ὡϱα, comes, according to some authors, from a surname of the sun, the father of hours, whom the Egyptians called *Horus*. But others derive it from the Greek ὁϱιζειν, *to terminate*, or *distinguish*; and others again from the word ὑϱον, *urine*, conceiving that Trismegistus was the first who settled the division of hours, from observing an animal consecrated to Serapis, named *cynocephalus*, which made water twelve times a day, and as often in the night, at equal intervals.

An hour with us is a measure or quantity of time, equal to a twenty-fourth part of the natural day, or nycthemeron; or the duration of the twenty-fourth part of the earth's diurnal rotation. Fifteen degrees of the equator answer to an hour, though not precisely, but near enough for common use. The hour is divided into sixty minutes, the minute into sixty seconds, and so on. The most ancient hour is that of the twelfth part of the day. Herodotus, (lib. ii.) observes that the Greeks learned from the Egyptians, amongst other things, the method of dividing the day into twelve parts. The division of the day into twenty-four hours was not known to the Romans before the first Punic war. Until that time they only regulated their days by the rising and setting of the sun. They divided the twelve hours of their day into four, namely, *prime*, which commenced at six o'clock; *third*, at nine; *sixth*, at twelve; and *none*, at three. They also divided the night into four watches, each containing three hours.

HOURS, HORÆ, in the ancient mythology, were certain goddesses, the daughters of Jupiter and Themis. At first they were only three in number, Eunomia, Dice, and Irene; but to these were afterwards added two more, Carpo and Thallote. Homer makes them the doorkeepers of heaven, and Ovid allots them the employment of harnessing the horses of the sun.

HOURS, *Horæ*, in the Roman Catholic church, are certain prayers performed at stated times of the day, as matins, vespers, lauds, and the like. The lesser hours are, *prime*, *tierce*, *sixth*, and *none*, and they are called *canonical hours*, as being prescribed by the canons of the church in commemoration of the mysteries accomplished at those hours. These hours were anciently called *course*, *cursus*; and Mabillon has written a dissertation on them, entitled *De Cursu Gallicano*. The first constitution enjoining the observation of the canonical hours is dated in the ninth century; being found in a capitular of Heito, bishop of Basil, directed to his curates, importing that the priests shall never be absent at the canonical hours either by day or by night.

HOUR-Glass, a popular kind of chronometer or clepsydra, serving to measure the flux of time by the descent or running of sand out of one glass vessel into another.

HOURIS, in modern history, is a name given by the Mahommedans to those females who are designed for the faithful in Paradise. These are not the same as those with whom they had lived on earth, but are formed for this purpose with singular beauty and undecaying charms. Islamism is not more distinguished from Christianity by its inherent character than by the rewards which it holds out to its faithful votaries. The latter is the religion of a civilised people, and is entirely spiritual: the reward which Jesus promises to the elect is that they shall see God face to face. In the Christian religion, therefore, every thing tends to mortify the senses, nothing to excite them. Islamism, on the contrary, is the religion of a people in the infancy of civilisation; it arose in a poor country, destitute of the necessaries of life, amongst a people fierce and warlike, who were incapable of being addressed through the medium of their understandings. Mahommed therefore appealed to the senses. He promised his followers odoriferous baths, rivers of milk, fair black-eyed houris, and groves of perpetual shade. The Arab, thirsting for water, and parched by a burning sun, sighed for shade and coolness, and was ready to do any thing for such a recompense. The religion of Mahommed may consequently be said to be a religion of promise; it appeals to the senses, it addresses the passions, it holds out the prospect of revelling in those pleasures which are most desired and pursued by men in whom the merely sensual predominates over the intellectual part of their nature. But Christianity, which sprung from a purer source, considered the rewards of a future life as insufficient to repress the vices, disorders, and crimes, which spring from the passions, and, superadding to its precepts a penal sanction, may justly be said to be a religion of menace. From these general principles may be deduced the opposite characters of the two religions; the one appealing only to the senses and the passions; the other addressing itself to the minds and consciences of mankind, and having for its grand object to reform, not to debase society.

HOUSE, a habitation, or place built with conveniences for dwelling in. See Architecture and Building.

Houses, amongst the Jews, Greeks, and Romans, were flat-roofed, and had usually stairs on the outside, by which they might ascend and descend without coming into the house. Each house, in fact, was so laid out that it enclosed a quadrangular area or court. This court was exposed to the weather, and being open to the sky, gave light to the house. This was the place where company was received, and for that purpose it was strewed with mats or carpets for their better accommodation. It was paved with marble or other materials, according to the owner's ability, and provided with an umbrella of vellum to shelter them from the heat and inclemency of the weather. This part of their houses, called by the Romans *impluvium*, or *cava ædium*, was provided with channels to carry off the water into the common sewers. The top of the house was level, and covered with a strong plaster by way of terrace. Hither, especially amongst the Jews, it was customary to retire for meditation, private conversation, devotion, or the enjoyment of the evening breezes.

The Grecian houses were usually divided into two parts, in which the men and women had distinct mansions assigned. The part assigned to the men was towards the gate, and called ανδρωνιτις; the apartment of the women was the farthest part of the house, and called γυναικωνιτις. Jews, Greeks, and Romans supposed their houses to be polluted by dead bodies, and to stand in need of purification.

House, in *Astrology*, denotes the twelfth part of the heavens. The division of the heavens into houses is founded upon the pretended influence of the stars, when meeting in them, upon all sublunary bodies. These influences are supposed to be good or bad; and to each of these houses particular virtues are assigned, on which astrologers prepare and form a judgment of their horoscopes. The horizon and meridian are two circles of the celestial houses, which divide the heavens into four equal parts, each containing three houses, six of which are above the horizon, and six below it; of these, six are called *eastern* and six *western houses*.

A scheme or figure of the heavens is composed of twelve triangles, all called *houses*, in which are marked the stars, signs, and planets, so included in each of these circles. Every planet has likewise two particular houses, in which it is pretended that they exert their influence in the strongest manner; but the sun and moon have only one, the house of the former being Leo, and that of the latter Cancer.

The houses in astrology have also names given them according to their qualities. The first is the house of life, which is the ascendant, extending five degrees above the horizon, and the rest below it. The second is the house of riches; the third, the house of brothers; the fourth, in the lowest part of the heavens, is the house of relations, and the angle of the earth; the fifth, the house of children; the sixth, the house of health; the seventh, the house of marriage, and the angle of the west; the eighth, the house of death; the ninth, the house of piety; the tenth, the house of offices; the eleventh, the house of friends; and the twelfth, the house of enemies.

HOUSEHOLD, the whole of a family considered collectively, including the mistress, children, and servants. But the household of a sovereign prince includes only the officers and domestics belonging to his palace.

The principal officers of the household of the king of Great Britain are, the lord steward, the lord chamberlain of the household, the groom of the stole, the master of the great wardrobe, and the master of the horse.

The civil government of the king's house is under the care of the lord steward of the king's household, who, being the chief officer, is entitled to have all his commands observed and obeyed. His authority extends over all the other officers and servants, excepting those of his majesty's chapel, chamber, and stable; and he is the judge of all crimes committed either within the court or the verge.

Under him are the treasurer of the household, the comptroller, cofferer, the master of the household, the clerks of the green-cloth, and the officers and servants belonging to the accounting-house, the marshalsea, the verge, the king's kitchen, the household kitchen, the acatery, bakehouse, pantry, buttery, cellar, pastry, &c. Next to the lord steward is the lord chamberlain of the household, who has under him the vice-chamberlain, the treasurer, the comptroller of the chamber; forty-eight gentlemen of the privy chamber, twelve of whom wait quarterly, and two of them lie every night in the privy chamber; the pages of the presence-chamber; the mace-bearers, cup-bearers, carvers, musicians, and others.

The groom of the stole has under him the eleven other lords of the bed-chamber, who wait weekly in the bedchamber, and also the grooms of the bed-chamber, the pages of the bed-chamber, and back stairs, &c.

The master or keeper of the great wardrobe has under him a deputy, comptroller, clerk of the robes, brusher, &c. and a number of tradesmen and artificers, who are all sworn servants to the king.

The master of the horse has under his command the equerries, pages, footmen, grooms, coachmen, farriers, saddlers, and all the other officers and tradesmen employed in his majesty's stables.

Housing, or *House-Line*, in nautical language, a small line formed of three fine strands or twists of hemp, smaller than rope-yarn. It is chiefly used to seize blocks into their strops, to bind the corners of the sails, or to fasten the bottom of a sail to its bolt-rope, and the like.

Housing, or *Housee*, a cover laid over the saddle of a horse, in order to save it from the weather, dirt, and the like. The word is formed from the French *houssie*, which signifies the same thing, though it anciently denoted a kind of hood worn by country people.

HOUSSA is the name of an extensive portion of Central Africa, which, along with Bornou, bears the general name of Soudan, or Land of the Blacks. It consists of various petty kingdoms or states, which occupy territory stretching east and west from the upper course of the Yeou nearly to the Niger, but the boundaries of which on the south and north are imperfectly defined. This region appears in several respects to be superior to the countries on either side of it. It is less sultry, an advantage which it probably owes to its higher elevation. The face of the country bears marks of greater cultivation, the fields being covered with large crops of wheat, two of which are annually produced; and, to prevent the grain from being destroyed by insects, it is secured in granaries raised on poles. The soil is well watered by the river Quarrama or Zirmie, which, with several tributaries, flows westward to join the Niger. On its eastern quarter it is traversed by the Yeou, and on its southern by the Shary or Tschadda, which also falls into the Niger. Besides these natural supplies of water, artificial irrigation is diligently practised. The predominant people here are the Fellatahs, of whom we shall afterwards speak.

From information afforded by Major Denham, who travelled in this region of Africa, it appears that Houssa is divided into seven provinces or states, to each of which a prince or petty governor was appointed under the Fellatahs, the inhabitants all speaking one language. Over the whole a sultan holds supreme rule. The most fertile province is Kano, the most extensive is Zegzeg, the most warlike Ghoober and Zamfra, which two countries seem to constitute one province under the rule of the Fellatahs; the central province is Kashna or Kassina. Three others, of which our information is very indistinct, are designated Dor or Dowry, Ranoo, and Yarcem. Captain Clapperton mentions a province called Guari, which may correspond to Yareem; and the same traveller speaks of Doura, in immediate connection with the southern part of Zegzeg, as if bordering on it. Another province is called Kotongra or Kotongkora, which may correspond to Ranoo.

Kano, the capital of a province of the same name, and the principal commercial city of Houssa, is situated in latitude 12° 0′ 19″ north, and longitude 9° 20′ east. It may contain between 30,000 and 40,000 inhabitants, of whom a great proportion are slaves. This number is exclusive of strangers, who crowd thither during the dry months from all parts of Africa. The city is of an irregular oval shape, about fifteen miles in circumference, and surrounded by a clay wall thirty feet in height, having a dry ditch on both sides of it. There are fourteen gates made of wood, and covered with sheet iron, and these are regularly opened and shut at sunrise and sunset. A platform inside, with two guard-houses below it, serves to defend each entrance. The houses within the walls do not occupy more than one fourth of the ground enclosed, the remaining space being laid out in fields and gardens. The city is almost divided into two parts by a large morass, which stretches from east to west. This swamp is crossed by a small neck of land, which is overflowed during the rainy season, but in the dry season the market is held upon it. On account of this morass, and also of the many pools of stagnant water made by digging clay for building houses, the city is rendered very unhealthy. Captain Clapperton thus describes the houses of Kano.

"They are built of clay, and are mostly of a square form, in the Moorish fashion, with a central room, the roof of which is supported by the trunks of palm-trees, where visitors and strangers are received. The apartments of the ground-floor open into this hall of audience, and are generally used as store-rooms. A staircase leads to an open gallery overlooking the hall, and serving as a passage to the chambers of the second story, which are lighted with small windows. In a back court-yard there is a well and other conveniences. Within the enclosure in which the house stands, there are also a few round huts of clay, roofed with the stalks of Indian corn, and thatched with long grass. These are usually very neat and clean, and of a much larger size than those of Bornou. The governor's residence covers a large space, and resembles a walled village. It even contains a mosque, and several towers three or four stories high, with windows in the European style, but without glass or frame-work. It is necessary to pass through two of these towers in order to gain the suite of inner apartments occupied by the governor."

The great market, as already observed, is held upon a neck of land which intersects the morass. Here streets consisting of sheds or stalls of bamboo are regularly arranged, different places being allotted to those who traffic in different commodities. The latter consist of cattle, vegetables, fruits, the fine cotton fabrics of the country, goora or kolla nuts, which are called African coffee, and crude antimony, with which every eyebrow in Houssa is dyed. The Arabs also dispose of sundry commodities, such as cast-off dresses. The slaves, who constitute the staple article of trade, have a special market appropriated to them, consisting of two long ranges of sheds, one for males and the other for females. Here these poor creatures, drawn up in regular array, and dressed in attractive attire, are inspected and scrutinized by purchasers, in much the same manner as horses are in the cattle-markets of this country. The market of Kano is under the superintendence of a sheik, who regulates the police, and is said also to possess the exorbitant power of fixing the prices. The medium of exchange consists of the small shells called cowries, four hundred and eighty of which make a shilling, so that paying a large sum is here rather a tedious process. Kano is celebrated all over Central Africa for the dyeing of cloth, for which process there are numerous establishments. Some ingenuity is displayed in the manufacture of leathern jars, which are fashioned upon a clay mould out of the raw hide. The inhabitants are also acquainted with the art of tanning. The negroes here are very polite and ceremonious, especially to those advanced in years. A part of the city is appropriated to the use of those who are afflicted with blindness, which is a prevalent disease.

Adjoining the province of Kano on the west there is a portion of territory called Katagum, which is said by Captain Clapperton to be a distinct province. According to that traveller, it is able to send into the field 4000 horse and 20,000 foot, armed with bows, swords, and spears. The city is built in the form of a square, the sides facing the cardinal points of the compass, with four corresponding gates, which are regularly opened and shut like those of Kano. It is defended by two walls, which have ditches on each side, and one between them. The governor and principal inhabitants have houses made entirely of clay. They are flat roofed, and sometimes consist of two stories, with square or semicircular openings for windows. The city may contain from 7000 to 8000 inhabitants. There are other towns comprised within the boundaries of this province, but none requiring particular description. Many parts of Katagum are highly cultivated, and laid out in plantations of cotton, tobacco, and indigo, which are separated from one another by rows of date-trees, and shaded by large umbrageous trees.

The next considerable town is Soccatoo, situated nearly at the western extremity of Houssa. The country which lies between Kano and Soccatoo is remarkably fine, and under high cultivation. It is diversified with forests of noble trees, and various rivers and streams, and traversed by picturesque ridges of granite, amongst which villages are romantically situated.

Soccatoo stands in latitude 13° 4′ 52″ north, and longitude 6° 12′ E. "It occupies," says Captain Clapperton, "a long ridge which slopes gently towards the north, and appeared to me the most populous town I had visited in the interior of Africa; for, unlike most other towns in Houssa, where the houses are thinly scattered, it is laid out in regular well-built streets. The houses approach close to the walls, which were built by the present sultan in 1818, after the death of his father; the old walls being too confined for the increasing population. This wall is between twenty and thirty feet high, and has twelve gates, which are regularly closed at sunset. There are two large mosques, including the new one at present building by the Gadado, besides several other places for prayer. There is a spacious market-place in the centre of the city, and another large square in front of the sultan's residence. The dwellings of the principal people are surrounded with high walls, which enclose numerous coozees and flat-roofed houses, built in the Moorish style, whose large water-spouts of baked clay, projecting from the eaves, resemble at first sight a tier of guns. The inhabitants are principally Fellatahs, possessing numerous slaves. Such of the latter as are not employed in domestic duties reside in houses by themselves, where they follow various trades; the master, of course, reaping the profit. Their usual employments are weaving, house-building, shoe-making, and iron work: many bring fire-wood to the market for sale. Those employed in raising grain and tending cattle, of which the Fellatahs have immense herds, reside in villages without the city. It is customary for private individuals to free a number of slaves every year, according to their means, during the great feast after the Ramadan. The enfranchised seldom return to their native country, but continue to reside near their old masters, still acknowledging them as their superiors, and presenting them yearly with a portion of their earnings. The trade of Soccatoo is at present inconsiderable, owing to the disturbed state of the surrounding country. The necessaries of life are very cheap; butcher-meat is in great plenty, and very good. The exports are principally civet, and blue check tobes called *sharie*, which are manufactured by the slaves from Nyffee, of whom the men are considered as the most expert weavers in Soudan, and the women as the best spinners. The common imports are brought from the borders of Ashantee; and coarse calico and woollen cloth, in small quantities, with brass and pewter dishes, and some few spices, from Nyffee. The Arabs, from Tripoli and Ghadamis, bring unwrought silk, ottar of roses, spices, and beads. Slaves are both exported and imported. A great quantity of Guinea corn is taken every year by the Tuaricks, in exchange for salt. The market is extremely well supplied, and is held daily from sunrise to sunset. On the north side of Soccatoo there is a low marsh, with some stagnant pools of water, between the city and the river: this, perhaps, may be the cause of the great prevalence of ague, as the city stands in a fine airy situation."

Subsequently to the writing of the above description, nearly two thirds of the city were destroyed by a conflagration; but when Clapperton visited it a second time, it had been rebuilt, in a manner so closely resembling what it had formerly been, that little alteration could be perceived. The palace, or house of the sultan, forms a sort of enclosed town, with an open quadrangle in front. A painted and ornamented cottage constitutes the hall of audience. Soccatoo is likely to decline, on account of the residence of the court having of late been transferred to Magaria.

The countries of Ghoober and Zamfra or Zanfara are inhabited by a rude and warlike race, who have sometimes assumed authority over Houssa, and are at present, or were lately, in open rebellion against Soccatoo. The people are a species of outlaws or robbers, and the high road between Kano and Soccatoo passing through their territory, merchants can only travel between the two cities in numerous armed bodies. Coonia, the capital of Ghoober, is strongly fortified, and in 1829 repulsed the whole military force of Houssa, consisting of 50,000 or 60,000 men. Zirmie, the capital of Zamfra, occupies a peninsula formed by the river Quarrama, which has here very high and steep banks covered with mimosas and prickly bushes, through which a narrow path winds to the gates. It is surrounded with a clay wall and a dry ditch. The governor of this stronghold bears the character of a freebooter, and the inhabitants, whom Clapperton represents as having a reckless independent look, are esteemed the greatest rogues in all Houssa. Runaway slaves from all quarters make Zirmie an asylum, where they are always well received.

To the north of Kano lies the considerable province of Kashna or Kassina, which at one period held supreme sway over all Houssa, and which has recently shaken off the yoke of Soccatoo. Kashna, the capital, is situated in lat. 12. 59. N. on a ridge of sienite, one of a number of ridges of this rock which run from north-north-east to south-south-west. The walls are of clay, and very extensive; but, as in the case of Kano, the houses do not occupy above one tenth of the ground enclosed, the rest being laid out in fields, and covered with wood. The houses are mostly in ruins, the principal commerce of the country having been transferred to Kano since the Fellatah power became predominant. Notwithstanding its abject state, it has nevertheless a considerable trade, which is carried on with the Tuaricks, or with caravans coming across the desert by the route of Ghadamis and Tuat. The manufactures of Kashna are chiefly of leather, such as water-skins, red or yellow cushions, bridles of goat-skin, and hides. There is likewise some trade in fruits, such as figs, melons, pomegranates, and limes.

To the south of Soccatoo and Kano lies the country of Zegzeg, one of the finest in all Africa, and the most extensive province in Houssa. It is bounded on the east by Kano, on the south-east by Yacoba, on the south by a mountainous tract inhabited by Pagans, on the south-west by Nyffee, and on the north and west by Guari and Kashna. Travellers represent Zegzeg as resembling in appearance the finest parts of England, being beautifully variegated with hill and dale, over which are spread rich pastures and extensive fields, yielding plentiful crops, particularly of rice. Zaria, the capital, is situated in lat. 10. 59. N. and long. 8. 42. E. It occupies a great extent of ground, the houses being detached, or rather clustered together in small villages, which are separated from each other by corn fields, and even woods. The whole is surrounded with high clay walls, and the population has been estimated at about 50,000. To the south of Zegzeg, the country, though diversified by rising grounds, is fertile and well cultivated, and contains a number of considerable towns. Lander describes Cuttup as consisting of "nearly five hundred villages almost joining each other, occupying a vast and beautiful plain, adorned with the finest trees. Among these, the plantain, the palm, and the cocoa-nut tree were seen flourishing in great abundance, and the aspect of the country strikingly resembled some parts of Yariba. A considerable traffic is carried on here in slaves and bullocks, which are alike exposed in the daily market. The bullocks are bred by the Fellatahs, who reside here for no other purpose. Among the other articles brought here for sale, are red cloth, gum, salt, goora-nuts, trona, beads, tobacco, native cloth, rings, needles, cutlery, honey, rice, and milk; people from the most distant parts resorting hither in vast numbers." To the south of this place stretch a range of hills, which, Lander was told, were inhabited by a ferocious race of *yamyams* or cannibals, who a short time previously had killed and eaten a whole caravan-full of people. In a country fertile, but rocky, is situated Dunrora, a town containing about 4000 inhabitants. Not far from this place is a large town called Jacoba, which was described to Lander as standing on the river Shary; whilst farther to the east, on the same stream, there was said to be situated another large city called Adamowa; and here our knowledge of this portion of Africa becomes scanty and imperfect.

In the western tracts of Houssa there are few towns of any importance: these were visited, and have been described, by Captain Clapperton. After leaving Boogawa, a small town in the province of Katagum, and passing first through a thickly-wooded tract, and then over an open, well-cultivated country, this traveller reached Katungwa, a walled town. A range of low rocky hills was seen stretching nearly south-west, called *Dooshee* (the rocks), from which a large town takes its name. These were the first rocks that had occurred after leaving the southern borders of the Great Desert, the whole country thus far being soft alluvial clay. Near the extremity of the Dooshee hills is situated Zangeia, within the walls of which town there is a ridge of loose blocks of stone connected with the range. These masses of rock are about 200 feet in height, and give a romantic appearance to the neat huts clustering round the base, and to the fine plantations of cotton, tobacco, and indigo, and the rows of date and other trees. From the extensive walls which remain, Zangeia must have once been a very large town. Now, however, it consists merely of a collection of thinly-scattered hamlets. The country between this place and Kano is highly cultivated, and beautifully diversified by hill and

H den.

dale. Captain Clapperton passed several walled towns, the principal of which was Girkwa. As in the other towns already described, the houses here are in groups, with large intervening vacancies. The disproportion in the size of the walls of towns and the number of houses, to the amount of inhabitants, which is exhibited in many parts of Houssa, is to be accounted for by the usurpation of the country by the Fellatahs, who generally massacred the former occupants, or carried them away captives. To complete our description of Houssa, it will be necessary to give an account of this singular people, who are gradually extending their authority over Central Africa.

By the most correct accounts, it would appear that the Fellatahs are an off-shoot from the Foolahs of Western Africa, and may be identified with them. They are a mixture of Moors, Arabs, Berbers, and probably other races of men. They are much superior to the native negroes, with whom they very rarely mix their blood. Captain Lyon, speaking of the Fellatahs, observes, " their complexion being of a much lighter hue than that of the other tribes, they call themselves white ; their colour resembles that of our gypsies in England. Many female slaves are brought to Mourzouk from their nation, and are very handsome women." Other observers describe their complexion as being very dark, and of a shade intermediate between that of the deepest African and the Moors. The fact seems to be, that their colour varies in a very remarkable manner, from being nearly white to nearly black. Both men and women pay considerable attention to their dress, which amongst the wealthy inhabitants is rather showy. In their domestic habits they are regular, orderly, and cleanly, and the slaves are generally well treated. The Mahommedan is the predominant religion, and considerable attention is paid to keeping up an appearance of it. Prayers are regularly said five times a day in the Arabic language, which both the male and female children of the better sort of Fellatahs are taught to read and write. Their marriages are celebrated without any pomp or noise, and such contracts are of a less arbitrary nature than we find them to be amongst the inferior races of mankind. Captain Clapperton makes the following remarks regarding Houssa :—" The government of the Fellatahs in Soudan is in its infancy. The governors of the different provinces are appointed during pleasure ; and all their property, on their death or removal, falls to the sultan. The appointment to a vacancy is sold to the highest bidder, who is generally a near relation, provided that his property is sufficient to enable him to bid up to the mark. All the inferior offices in the towns are sold in like manner by the governors, who also succeed to the property of those petty officers at their death or removal. In the province of Kano they have no regular system of taxation. A great deal of marketable property is claimed by the governor, such as two thirds of the produce of all the date-trees and other fruit-trees, the proprietor being allowed only the remaining third. A small duty is also levied on every article sold in the market; or, in lieu thereof, a certain rent is paid for the stall or shed. A duty is also fixed on every *tobe* that is dyed blue, and sold. On grain there is no duty. Kano produces the greatest revenue that the sultan receives ; it is paid monthly, in horses, cloth, and cowries. Adamowa pays yearly in slaves ; Yacoba in slaves and lead ore ; Zegzeg in slaves and cowries ; Zamfra the same ; Hadiga, and Katagum, and Zaonima in horses, bullocks, and slaves ; Kashna in slaves, cowries, and cloth ; Ader, or Tadela, in bullocks, sheep, camels, and a coarse kind of cotton cloth, like what is called by us a counterpane." Of the number of negroes and Fellatahs who inhabit the country of Houssa no correct idea can be formed. (R. R. R.)

Howard.

HOVEDEN, Roger de, descended of an illustrious family, was born in Yorkshire, most probably at the town of that name, some time in the reign of Henry I. After he had received the rudiments of education in his native country, he studied the civil and canon law, which were fashionable and lucrative branches of learning. He became domestic chaplain to Henry II. who employed him to transact several ecclesiastical affairs, in the conduct of which he acquitted himself with honour. He was by profession a lawyer, but, like other lawyers of the time, belonged to the church, and also officiated as professor of theology at Oxford. After the death of Henry, he applied himself to history, and composed annals, which commence at the year 731, where Bede's ecclesiastical history terminates, and extend to the third year of King John, or 1202. These annals were first published by Saville, amongst the *Historici Anglici*, 1595, and were reprinted at Frankfort, 1601, in two books, folio. The style of Hoveden is barbarous, like the age to which it belongs ; but in diligence, knowledge of antiquity, and that fidelity which is the first quality of an historian, he not only surpassed the rude historians of the preceding ages, but left an example which many of his successors, in more enlightened times, failed to imitate. According to Vossius, Hoveden also wrote a history of the Northumbrian kings, and a life of Thomas à Becket. Edward III. when endeavouring to ascertain his title to the crown of Scotland, caused a diligent search to be made for the works of Hoveden ; a circumstance which shows the estimation in which they were held, not only by the monarch himself, but by the age in which he flourished. (A.)

HOWARD, Henry, Earl of Surrey, a highly-accomplished nobleman, the son and grandson of two Dukes of Norfolk, was born about the year 1520, and educated in Windsor Castle, with Henry Fitzroy, earl of Richmond, natural son of King Henry VIII. Wood states from tradition that he was for a time a student at Cardinal College, Oxford. In 1532, Howard, with his companion Richmond, was at Paris, where he remained a number of months. The latter died in 1536, after which Howard travelled into Germany, where he visited the emperor's court, and thence proceeded to Florence, where he fell in love with the fair Geraldine, whom his sonnets have immortalized, and, like a true *innamorato*, published a challenge to all comers, whether Christians, Jews, Saracens, Turks, or cannibals, in defence of the beauty of his mistress, and proved victorious in the tournament instituted by the grand duke on the occasion. The duke, it seems, was so delighted with his gallant exploits, that he would gladly have retained him at his court ; but he rejected the invitation, being determined to maintain the superlative beauty of his Geraldine in all the principal cities in Italy. This romantic resolution was however frustrated by the command of his sovereign, Henry VIII. recalling him to England.

In 1540 he signalized himself in a tournament at Westminster, against Sir John Dudley, Sir Thomas Seymour, and others. In 1542 he marched under the command of his father against the Scotch ; and in the same year he was confined in Windsor Castle for eating flesh in Lent, contrary to the king's proclamation. In the expedition to Boulogne in France, he was in 1544 appointed field-marshal of the English army ; and after the taking of that town in 1546, made king's lieutenant and captain-general of the forces in France. He was at this time knight of the Garter. In the same year, having attempted to intercept a convoy, he was defeated by the French, and soon afterwards superseded in his command by the Earl of Hertford.

After his return to England, Surrey, conscious of his former services, and peevish under his disgrace, could not help reflecting on the king and council. This proved the first step towards his destruction. He had married Frances, the daughter of John earl of Oxford ; and after her death he is said to have made love to the Princess Mary. For this the Seymours, rivals of the Norfolk family, and now in favour with the king, accused him of aspiring to the crown, adding, that he had already presumed to quarter part of the royal arms with his own; but, whatever might be the pretence, the real cause of his ruin was the jealousy and power of his enemies. In short, the destruction of the Howards being determined on, Surrey, and his father the Duke of Norfolk, were committed to the Tower, on the 12th of December 1546; and on the 13th of January following, Surrey was tried at Guildhall by a common jury, and beheaded on Tower-Hill on the 19th day of the same month, nine days before the death of the king, who thus, to fill up the measure of his crimes, finished his life with the murder of his best subject. The accusations brought against this young nobleman on his trial were so exceedingly ridiculous, that one is astonished how it was possible, even in that despotic reign, to find a judge and jury so unprincipled as to carry on the farce of a trial and conviction.

As to the character of this unfortunate nobleman, all our poets have celebrated his praise. Mr Walpole commences his anecdotes of Surrey by observing: "We now emerge from the twilight of learning to an almost classic author, that ornament of a boisterous yet not unpolished court, the Earl of Surrey, celebrated by Drayton, Dryden, Fenton, Pope, illustrated by his own muse, and lamented for his unhappy death; a man, as Sir Walter Raleigh says, no less valiant than learned, and of excellent hopes." Leland calls him the conscript enrolled heir of Sir Thomas Wyatt the elder, in his learning and other excellent qualities; and the author of *The Art of English Poetry* says, that the Earl of Surrey and Sir Thomas Wyatt may justly be called the reformers of our poetry and style. His poems were published in 1557, 12mo; and in 1565, 1574, 1585, 1587, 8vo. Several of the sonnets ascribed to him are by Sir Thomas Wyatt and others. He also translated two books of the Æneid, which he executed with fidelity without prosaic servility, and which form the earliest specimen of blank verse in the English language. The diction is often poetical, and the versification varied by suitable pauses. It is probable that he intended to translate the whole; and this is so much more correct and elegant than his other translations, that it appears to have been the production of his happier days.

Howard, *Charles*, an able statesman and experienced seaman, was the son of Lord William Howard, baron of Effingham, and born in 1536. He served under his father, who was lord high admiral of England, till the accession of Queen Elizabeth. In January 1573 he succeeded his father in his title and estate; after which he became successively chamberlain of the household and knight of the Garter, and in 1585 was made lord high admiral, at the critical juncture when the Spaniards were sending an Armada, as they supposed, to the assured conquest of this kingdom. When he received intelligence of the approach of the Spanish fleet, and saw of how great consequence it was to get out the few ships which were ready at Plymouth, he not only gave orders in every thing himself, but even wrought with his own hands, and the first night left the port with six ships. The next morning, though he had only thirty sail, and these the smallest of the fleet, he attacked the Spanish fleet; but first despatched his brother-in-law, Sir Edward Hobby, to the queen, to desire her majesty to make a proper disposition of the land forces for the security of the coast, and to hasten as many ships as possible to his assistance. His valour was conspicuously displayed in repeated attacks of a superior enemy. The coolness of his temper was not less remarkable; and it was owing to his energy and prudence that the victory remained with the English. The queen expressed her sense of his merit in the most honourable terms, and granted him a pension for life. In 1596 he commanded in chief the naval, as Essex did the land, forces sent against Spain, when, in the attack on Cadiz, his prudence and moderation were amongst the principal causes of the success which the English met with in that great and glorious enterprise; and, upon his return the following year, he was advanced to the dignity of Earl of Nottingham. The next eminent service in which his lordship was engaged was in 1599, when the Spaniards seemed to meditate a new invasion. Her majesty, who always placed her safety in being too quick for her enemies, drew together, in a fortnight, a fleet and an army, which rendered hopeless the success of her foreign and domestic enemies; and she gave the earl the supreme command of both, with the title of lord-lieutenant-general of all England, an office unknown in succeeding times. When age and infirmity had unfitted him for action, he resigned his office, and spent the remainder of his life in ease and retirement till the period of his decease, which happened in 1624, in the eighty-seventh year of his age.

Howard, *John*, a man of singular and transcendent humanity, was the son of a reputable tradesman in St Paul's Churchyard, and was born at Hackney in the year 1726. At a proper age he was put as apprentice to Mr Nathaniel Newnham, a wholesale grocer in Watling Street. But not long after this, his father died, leaving only this son and a daughter, to both of whom he bequeathed handsome fortunes; and by his will he directed that his son should not be considered as of age till he had reached five-and-twenty. His constitution was weak, and his health appeared to have been injured by the necessary duties of his apprenticeship; and therefore, at its expiration, he took an apartment in a lodging-house in Church Street, Stoke Newington, Middlesex; but not meeting with the tenderest treatment, he removed to another lodging-house in the same street, which was kept by a widow lady, Mrs Sarah Lardeau, a worthy sensible woman, but an invalid. Here he was nursed with so much care and attention, that out of gratitude for her kindness, he resolved to marry his landlady. In vain did the latter expostulate with him upon the extravagance of such a proceeding, considering the disparity of their ages; but nothing could alter his resolution, and they were privately married about the year 1752. This lady was possessed of a small fortune, which he presented to her sister. During his residence at Newington, the minister of the dissenting meeting-house in that place resigned his office, when a successor was appointed; and Mr Howard, who was bred a dissenter, and all his life stedfastly adhered to that profession, proposed to purchase the lease of a house near the meeting-house, and to appropriate it as a parsonage-house for the use of the minister for the time being, for which purpose he contributed L.50. His wife died on the 10th of November 1755, aged fifty-four; and he was a sincere and affectionate mourner for her death. About this time, it is believed, he was elected a fellow of the Royal Society. In the year 1756 he had the misfortune to experience some of the evils which it afterwards became the business of his life to alleviate. Having embarked that year in a Lisbon packet, the Hanover, in order to make the tour of Portugal, the vessel was taken by a French privateer; and the hardships he suffered during his subsequent confinement in France are naturally supposed to have awakened his sympathies in favour of prisoners, and to have suggested to him the humane enterprise of endeavouring to render prisons less pernicious to health and morality. "Before we reached Brest," says he (*On Prisons*, 4to, 1784, p. 11), "I suffered the extremity of thirst, not having for above forty hours one drop of water, nor hardly a morsel of food. In the castle at Brest I lay six nights upon straw; and observing how cruelly my countrymen were used there and at Morlaix, whither I was carried next, during the two months I was at Carhaix upon parole, I corresponded with the English prisoners at Brest, Morlaix, and Dinnan; at the last of those towns were several of our ship's crew, and my servant. I had sufficient evidence of their being treated with such barbarity, that many hundreds had perished, and that thirty-six were buried in a hole at Dinnan in one day. When I came to England, still on parole, I made known to the commissioners of sick and wounded seamen the sundry particulars, which gained their attention and thanks. Remonstrance was made to the French court; our sailors had redress; and those that were in the three prisons mentioned above were brought home in the first cartel ships. Perhaps," adds Mr Howard, "what I suffered on this occasion increased my sympathy with the unhappy people whose case is the subject of this book."

He afterwards, it is said, made the tour of Italy; and at his return settled at Brokenhurst, a retired and pleasant villa in the New Forest, near Lymington, in Hampshire, having, on the 25th of April 1758, married a daughter of Edward Leeds of Croxton, Cambridgeshire, king's serjeant. This lady died in 1765, in giving birth to her only child, a son, who unfortunately became lunatic. After her death Mr Howard left Lymington, and purchased an estate at Cardington, near Bedford.

But the sphere in which he had hitherto moved was too narrow for his enlarged mind. Being named in 1773 to the office of sheriff of Bedfordshire, from that time his sphere of usefulness was extended. His office, as he himself observes, brought the distress of prisoners more immediately under his notice. A sense of duty induced him personally to visit the county jail, where he observed such abuses and scenes of calamity as he had before no conception of; and he soon exerted himself in order to reform them. With a view to obtain precedents for certain regulations which he proposed, he went to inspect the prisons in some neighbouring counties. But finding in them equal room for complaint and commiseration, he determined to visit the principal prisons in England. The farther he proceeded, however, the more shocking were the scenes presented to his view; and this induced him to resolve upon exerting himself to the utmost, in order to effect a general reform in these horrid places of confinement, considering it as of the highest importance, not only to the wretched objects themselves, but to the community at large. Upon this subject he was examined by the House of Commons in March 1774, when he had the honour of receiving their thanks. This encouraged him to proceed in his design. He revisited all the prisons in the kingdom, together with the principal houses of correction. He also in 1775 enlarged his circuit by going into Wales, Scotland, and Ireland, where he found the same want of reformation.

One grand object which he had in view was, to put a stop to that shocking distemper called the jail fever, which raged so dreadfully in many of the prisons as to render them to the last degree offensive and dangerous; a distemper by which more had been taken off than by the hands of the executioner, and which, in several instances, had been communicated from the prisons into the courts of justice, and proved fatal to the magistrates and judges, and to multitudes of persons who attended the trials, as well as to the families of discharged felons and debtors. Another end he proposed was, to procure the immediate release of prisoners, who, upon trial, were acquitted, but who often continued to be unjustly detained from not being able to pay the accustomed fees; and also to abolish many other absurd and cruel usages which had long prevailed. But the great object of all was, to introduce a thorough reform of morals into our prisons, where he had found the most flagrant vices prevailing to such a degree, that they were become seminaries of wickedness and villany, and the most formidable nuisances to the community, in consequence of the promiscuous intercourse of prisoners of both sexes, and of all ages and descriptions, by which the young and less experienced were initiated, by old and hardened sinners, into all the arts of villany and the mysteries of iniquity; so that, instead of being reformed by their confinement, which should be the chief end of punishment, those who were discharged became more dangerous to society than before.

These laudable endeavours he had the satisfaction to see, in some instances, crowned with success; particularly in regard to the healthiness of prisons, some of which were rebuilt under his inspection. Through his interposition, also, better provision was made for the instruction of prisoners, by the introduction of bibles and other pious books into their cells, and a more constant attendance of clergymen. But in order to introduce a more general and humane regulation, and to conduce to the reformation of criminals, he determined to visit other countries, and examine the plans there adopted, in the hope of collecting some information which might be useful in his own country. For this purpose he travelled into France, Flanders, Holland, Germany, and Switzerland, and afterwards through the Prussian and Austrian dominions. He also visited the capitals of Denmark, Sweden, Russia, and Poland, and some cities in Portugal and Spain. In all these expensive and hazardous journeys, he denied himself the usual gratifications of travellers, and declined the honours which were offered him by persons of the first distinction, applying himself solely to one grand object. To him indeed the inspection of a jail, or an hospital, was more grateful than all the entertainments of a palace. With what astonishment and gratitude he was received by their miserable inhabitants may easily be imagined, since, whilst he made observations on their situation, he meditated their relief; and many distressed prisoners abroad, as well as at home, partook of his bounty, and some were liberated by it; for he considered those of every nation, and people, and tongue, as brethren. On his return, he published, in 1777, the State of the Prisons in England and Wales, with Preliminary Observations, and an Account of some Foreign Prisons, 4to. In the year 1778 he undertook a third journey through the Prussian and Austrian dominions, and the free cities of Germany; and likewise extended his tour through Italy, and revisited some of the countries which he had before examined. The observations he made in this tour were published in an appendix, 1780, containing also some remarks respecting the management of prisoners of war, and the hulks on the Thames. But wishing to acquire some further knowledge on the subject, he, in 1781, revisited Holland and some cities in Germany. He also visited the capitals of Denmark, Sweden, Russia, and Poland, and in 1783 some cities in Portugal and Spain; and returned through France, Flanders, and Holland. The substance of all these travels was afterwards thrown into one narrative, which was published in the year 1784. He likewise published a curious account of the Bastille, in 8vo.

His travels and exertions, however, were not yet at an end. He conceived a further design, which was to visit the principal lazarettos in France and Italy, in order to procure information concerning the best methods of preventing the spread of the plague, with a view to apply them to other infectious disorders. But not obtaining all the satisfaction which he wished for in those countries, he proceeded to Smyrna and Constantinople, where that most dreadful of human distempers actually prevailed; "pleasing himself," as he said, "with the idea of not only learning, but of being able to communicate somewhat to the inhabitants of those distant regions." In the execution of this design, though he was so much exposed to danger, and actually caught the plague, "that merciful

Providence," as he himself piously remarks, "which had hitherto preserved him, was pleased to extend its protection to him in this journey also, and to bring him home once more in safety.". On his way home he revisited the chief prisons and hospitals in the countries through which he passed; and afterwards went again to Scotland, and thence to Ireland, where he proposed a new and very important object, namely, to inspect the Protestant charter-schools, in some of which he had before observed shameful abuses, which he reported to a committee of the Irish House of Commons. In this more extensive tour, he took a particular account of what he had observed amiss in the conduct of this noble charity, with a view to a reformation, and not without considerable success. In the course of these journeys, particular cities and communities were not unmindful of paying him proper respect. At Dublin, he was created a doctor of laws by Trinity College; and the city of Glasgow and the town of Liverpool did honour to themselves by enrolling him amongst their members. Upon his return home, having again inspected the prisons in England, and the hulks on the Thames, in order to see what alterations for the better had been made, and which he found to be very considerable, though still imperfect, he published the result of his last laborious investigations, in an Account of the Principal Lazarettos in Europe, with various Papers relative to the Plague, together with further Observations on some Foreign Prisons and Hospitals, and additional Remarks on the present State of those in Great Britain and Ireland, with a great number of curious plates. The work likewise contained observations on penitentiary houses, which had been encouraged by act of parliament, for the correction and reformation of criminals, and of which he and Dr Fothergill had been nominated by the king superintendents. Besides these, he published the Grand Duke of Tuscany's new code of criminal law, with an English translation; of which, as indeed of all his publications, he gave away a great number of copies amongst his acquaintance. His laying open the horrors of despotism in a neighbouring country, however, had nearly exposed him to suffer them; and had it not been for the timely notice of our ambassador, he would probably have ended his days in the Bastille.

Not satisfied, however, with what he had already done, he concludes his Account of Lazarettos with announcing his intention again to quit his country, for the purpose of revisiting Russia, Turkey, and some other countries, and extending his tour in the East. "I am not insensible," says he, "of the dangers that must attend such a journey. Trusting, however, in the protection of that kind Providence which has hitherto preserved me, I calmly and cheerfully commit myself to the disposal of unerring wisdom. Should it please God to cut off my life in the prosecution of this design, let not my conduct be uncandidly imputed to rashness or enthusiasm, but to a serious, deliberate conviction that I am pursuing the path of duty, and to a sincere desire of being made an instrument of more extensive usefulness to my fellow-creatures than could be expected in the narrower circle of a retired life." Accordingly, to the great concern of his friends, he set out in summer 1789 on this hazardous enterprise; the principal object of which was to administer a medicine in high repute at home in malignant fevers (Dr James's powder), under a strong persuasion that it would prove equally efficacious in the plague. But in this second tour in the East, it pleased God to cut off his life; for, having spent some time at Cherson, a new settlement of the empress of Russia, at the mouth of the Dnieper or Borysthenes, towards the northern extremity of the Black Sea, near Oczakow, he, in visiting the Russian hospital of that place, or, as some say, a young lady, caught a malignant fever, which carried him off on the 20th of January, after an illness of about twelve days; and having been kept five days, according to his express directions, he was buried, by his own desire, in the garden of a villa in the neighbourhood, belonging to a French gentleman, from whom he had received great civilities. While absent on his first tour in Turkey, his character for active benevolence had so much attracted the public attention, that a subscription was set on foot to erect a statue to his honour, and in a short time above L.1500 was subscribed for that purpose. But some of those who knew Mr Howard best never concurred in the scheme, being well assured that he would neither countenance nor accede to it; and in consequence of two letters to the subscribers, from Mr Howard himself, the design was laid aside. It was, however, resumed after his death; and surely, of all the statues or monuments raised by public gratitude to illustrious characters either in ancient or modern times, none was ever erected in honour of worth so genuine and admirable as that of Howard, who devoted his time, his strength, his fortune, and finally sacrificed his life, in the pursuits of humanity; and who, to adopt the expressive words of Mr Burke,[1] "visited all Europe [and the East], not to survey the sumptuousness of palaces or the stateliness of temples; not to make accurate measurements of the remains of ancient grandeur, nor to form a scale of the curiosity of modern art; not to collect medals, or to collate manuscripts; but to dive into the depth of dungeons; to plunge into the infection of hospitals; to survey the mansions of sorrow and of pain; to take the gauge and dimensions of misery, depression, and contempt; to remember the forgotten; to attend to the neglected; to visit the forsaken; and to compare and collate the distresses of all men in all countries. His plan is original, and it is as full of genius as it is of humanity. It is a voyage of discovery, a circumnavigation of charity; and already the benefit of his labour is felt more or less in every country."

HOWDEN, a market-town of the east riding of the county of York, 184 miles from London. It stands in a level and somewhat marshy district, about one mile from the river Ouse, over which there is a ferry. It is very ancient, and was formerly the seat of the Bishop of Durham. There is a market on Saturday, to which much corn is brought; and one of the largest fairs for horses is held in July. The population amounted in 1801 to 1552, in 1811 to 1812, in 1821 to 2080, and in 1831 to 2130.

HOWE, Richard, Earl, an English naval commander of distinguished eminence, was born in the year 1725, being the second son of Lord Viscount Howe, by the daughter of Baron Kilmansegg. From his early attachment to the life of a mariner, he quitted the school of Eton at the age of fourteen, and went on board the Severn, commanded by the Honourable Captain Legge, and destined for the South Seas under Commodore Anson. Mr Howe next appeared in the Burford, Captain Lushington commander, who being killed in an expedition against the Caraccas, Commodore Knowles made Mr Howe an acting lieutenant. At the age of twenty he was promoted to the rank of commander in the Baltimore sloop of war, and joined a squadron at that time cruising off the coast of Scotland, where he met with an opportunity of displaying his undaunted courage and intrepidity, by engaging and beating off two French frigates of thirty guns each, with the assistance of another armed ship, notwithstanding that he was severely wounded in the head during the action. This service was immediately and justly rewarded with the rank of post-captain. He was soon afterwards appointed to the rank of captain on board Commodore Knowles's own ship of eighty guns, with which he returned to England in the year 1748. When hostilities again commenced, he commanded the Dunkirk of sixty guns, in North America; a ship which constituted part of the squadron under Admiral Boscawen, and with which he captured a French man of war of superior metal, off the coast of Newfoundland, namely, the Alcide of sixty-four guns. In order to annoy the coast of France, he received in the year 1758 the command of a small squadron, with which he effected the destruction, at St Malo, of a number of magazines and ships. When he served on board the Essex, Prince Edward, afterwards Duke of York, sailed with him, at which time he powerfully contributed to the reduction of the town of Cherbourg. In 1758 his elder brother fell in North America, in the service of his king and country; upon which occasion the young commodore succeeded to the family title and estate. In the following year he had a share in the victory gained by Sir Edward Hawke over the French fleet under Admiral Conflans. He afterwards served in the Channel, and was captain of the Amelia, the ship of admiral the Duke of York. On the restoration of peace, he was nominated one of the lords of the admiralty, and some time afterwards treasurer of the navy. He was in the year 1770 raised to the rank of rear-admiral of the blue, and chosen commander-in-chief on the Mediterranean station. In 1775 he was promoted to the rank of rear-admiral of the white. In reference to his rapid promotion, Lord Hawke said in the House of Peers, "I advised his majesty to make the promotion. I have tried my Lord Howe on important occasions; he never asked me how he was to execute any service, but always went and performed it."

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[1] Speech at Guildhall in Bristol, 1780.

In the summer of 1776, Lord Howe appeared off Massachusetts, as commander-in-chief of his Britannic majesty's fleet acting in North America, and in the capacity of commissioner for restoring the blessings of an amicable reconciliation. All the provincial governors were made acquainted with his arrival by means of circular letters expressive of the full extent of the authority with which he and his fellow commissioners were invested; but as congress did not deem the conditions which these letters contained to be at all satisfactory, they were ordered to be inserted in all the gazettes for the examination of the people. His powers being thus circumscribed at the very commencement, he could only act in the capacity of naval commander, in which he aided the operations of the land forces with uncommon skill. It was not to be imagined, however, that much glory could redound to his lordship from such an unequal contest, till the junction of France with America placed the contending parties more upon a level. On the arrival of Admiral d'Estaing, in the month of July 1778, off Sandy Hook, Lord Howe was certainly in a very critical situation; but, in consequence of an effort of uncommon skill and dexterity, the French commander deemed it prudent to retire, when he was pursued by Lord Howe to Rhode Island, after obtaining a reinforcement under Admiral Byron. The intentions of the enemy were completely counteracted, and the campaign was finally terminated with honour. Here he resigned his command, and returned to England; but in 1782 he was promoted to the rank of admiral of the blue, made a viscount of Great Britain, and chosen commander of the fleet which was sent for the relief of Gibraltar. The combined fleets of France and Spain were about a third superior to that under Lord Howe, who, with thirty-four sail of the line, appeared off Gibraltar in the month of October, being driven into the Mediterranean by contrary winds. Although he was pursued by the combined fleet, he found means to supply the fortress with provisions. He checked the enemy by a partial action, and notwithstanding he offered to give them battle, it was declined on their part; and he had the satisfaction to execute his commission prior to his return home, in spite of the numerous difficulties which he had to encounter.

On the termination of the war he was nominated first lord of the admiralty, which he both resigned and resumed with the different changes of administration. In the year 1787 he was appointed admiral of the white, and in the following year created an earl of Great Britain. When hostilities were renewed with France in 1793, his lordship, at the express desire of his majesty, accepted the command of the Channel fleet; but he had it not in his power to effect any thing decisive till the summer of 1794. On the memorable first of June, with a fleet consisting of twenty-five sail of the line, he gave battle to a French fleet of twenty-six, and gained a most signal victory over the enemy, capturing seven of their ships, one of which was so shattered as to go to the bottom, whilst several others were very much crippled. His lordship had the good fortune not to lose a ship, and comparatively but few men, considering the great loss sustained by the enemy. The gratitude of the nation was suitable to the importance of this naval victory, and it is more than probable that the first of June will never be forgotten. In 1795 he was made general of marines; but the infirmities which are the usual concomitants of age induced him to resign his naval command in the year 1797, and on his final retreat he was presented with the badge of the Garter. His influence as an officer contributed greatly to stifle a spirit of mutiny and discontent which at this time exhibited alarming symptoms amongst the seamen of his majesty's fleets. He terminated his brilliant and honourable career on the 5th of August 1799, in the seventy-third year of his age, leaving none but female issue behind him. His lordship's valour, always cool and steady, was of that nature which enables a commander to make the most of his situation; his judgment was sound and penetrating, which prevented him from being easily imposed upon by external appearances; and his seamanship was of the most consummate and masterly kind.

Howe's *Island*, in the South Pacific Ocean, discovered by Captain Wallis in 1767. It is about sixty miles long and four broad, and was found by Captain Cook in 1774 to consist of several smaller islands almost joined together by reefs, and to have no inhabitants. Long. 154. 7. W. Lat. 16. 46. S.

HOWITZ, a kind of mortar, mounted upon a field carriage, like a gun. See Gunnery.

HOWTH, a promontory which forms the northern entrance of the Bay of Dublin, having a small village about seven miles north-east from that city, in the province of Leinster. It gives the title of earl to the family of St Lawrence, who were so called from a victory obtained by them over the Irish on St Lawrence's day 1177, their former name being Tristram; and this place has continued in possession of the family above six centuries. Long. 6. 22. W. Lat. 53. 21. N.

HOY, a small vessel chiefly used in coasting, or carrying goods to or from a ship, in a road or bay, where the ordinary lighters cannot be managed with safety or convenience.

Hoy, one of the Orkney Islands, off the north coast of Scotland, is situated between the island of Pomona and the north coast of Caithness, and is separated from the small island of Græmsay by a sound about a mile in breadth. See Orkney Islands.

HOXTER, a city of Prussia, the capital of a circle of the same name, in the Minden division of the province of Westphalia. It is situated on the river Weser, and contains 460 houses, with 3411 inhabitants. The manufactures are linen, leather, and table-cloths. Long. 9. 16. 11. E. Lat. 51. 46. 42. N.

Hoya || Hucknall-Torkard.

HOYA, WITH DIEPHOLZ, a province of the kingdom of Hanover. It has been formed at different periods, a part having belonged to the house of Brunswick since the year 1583, another part which came to that house two years after, and a part consisting of three bailiwicks, which was ceded by the prince of Hesse-Cassel in 1815. It is bounded on the north-west by Oldenburg, on the north by Bremen and Brunswick, on the north-east by Bremen and Verden, on the east by Calenburg and Luneburg, on the south by Prussian Westphalia, on the south-west by Oldenburg, and on the west by Osnabruck. It extends over 1352 square miles, contains one city (Hoya), twenty-four market-towns, fifty-six parishes, and 497 villages and hamlets, and 14,666 dwellings. The number of inhabitants amounted in 1812 to 104,970, but they are estimated to have increased one fifth since that period. The Platt-Deutsche is the common language. The religion is exclusively Lutheran, or at least the Catholics and reformed are in no place so numerous as to hold any public exercise of their forms of worship. It is generally a sandy heath, but towards the river Weser there are some tolerably fertile pasture lands. It yields buck-wheat, rye, barley, and a very small portion of wheat, and produces flax, feathers, wax, and honey. The only manufactures are coarse linens and woollens, made in each peasant's house for his own family. The capital, Hoya, is situated on the Weser, and contains 220 houses and 1867 inhabitants, who carry on some trade by the river with Bremen. Long. 9. 5. 40. E. Lat. 52. 48. 47. N.

HUAHEINE, or AHEINE, signifying, in the native language of the South Sea Islands, *woman*, the easternmost of the group called the Society Islands by Captain Cook. It is twenty-four miles in circumference, and is divided into two peninsulas by an isthmus overflowed at high water. It has a very narrow stripe of fertile low land next the shore, and the hills are in some places highly cultivated. The productions are similar to those of Otaheite, but they are about a month earlier. The inhabitants are larger made and stouter, and the women are in general more handsome. This island has been visited by many navigators since the time of Captain Cook, but their information throws no new light on the productions of the island or the manners of the people. Long. 150. 58. W. Lat. 16. 43. S.

HUBELY, a town of Hindustan, in the province of Bejapoor. It is large and populous, defended by a mud rampart and ditch, and has for many years carried on an extensive trade, particularly with Goa, to which are sent sandal wood and elephants' teeth, and in return raw silk, cottons, woollens, and rice are received. There are also manufactures of raw silk and cotton, great quantities of which are sold for the dresses of the country people. It is a wealthy place, the residence of many rich bankers, who, by means of their agents, extend their commercial intercourse to Surat, Hyderabad, Seringapatam, and even to more distant places on which bills of exchange can be negotiated, and who regulate the standard of the currency in all the adjoining countries. The English East India Company formerly had a factory here, which was plundered by the Mahrattas in 1673, when the Company sustained a great loss. In 1685 it was taken by the Mogul troops of Aurungzebe, and soon after the death of that monarch in 1707 it was again taken by the Mahrattas, and still continues in their possession. Long. 75. 10. E. Lat. 15. 24. N.

HUBNER, JOHN, a learned geographer of Germany, who taught geography at Leipsic and Hamburg with extraordinary reputation; and died at Hamburg in 1732, aged sixty-three. His principal work is a Geographical Treatise, printed at Basil in 1746, in six vols. 12mo.

HUCKNALL-TORKARD, a town in the hundred of Broxtow, in the county of Nottingham, 130 miles from London, where there are manufactures of hosiery. The inhabitants amounted in 1801 to 1497, in 1811 to 1793, in 1821 to 1940, and in 1831 to 2200.

HUDDERSFIELD, an extensive town and parish in the wapentake of Aybrig, of the west riding of Yorkshire, 187 miles from London. It stands on the river Colne, and is connected by canal navigation with the Calder at Wakefield, a distance of fourteen miles. It is a place of great industry, chiefly occupied in the manufacture of woollen goods of various kinds. A cloth market is held on Tuesday, which is very numerously attended by woolstaplers and merchants from Leeds, Halifax, and Wakefield, as well as by some from Manchester, with which it has also a canal communication. A new cloth hall was built in 1765, by Sir John Ramsden, the proprietor of the site of the town, and it is a very fine building. The inhabitants amounted in 1801 to 7268, in 1811 to 9671, in 1821 to 13,284, and in 1831 to 19,035. It has been created a borough by the law of 1832, returns one member to parliament, and has about 600 voters.

HUDSON, HENRY. Of this eminent navigator nothing is known prior to the year 1607, when he was employed by some London merchants in a small vessel, for exploring a north-east passage to China and Japan. He set sail on the 1st of May with only ten men and a boy, and reached as high as 80° of north latitude, where being stopped by the ice, he returned to England in the month of September following. In his next voyage he landed at Nova Zembla; but being unable to make any farther east, he returned in August the following year. The Dutch East India Company fitted him out in the year 1609, with a crew of twenty men, English and Dutch; and after attempting in vain to penetrate eastward, he steered for the American coast, and went as far as Chesapeake Bay. But his crew having mutinied, he durst not attempt a westerly passage through Davis's Strait, and therefore returned home. The knowledge acquired by him in these voyages increased his ardour for discovery, and he again made an offer of his services to the Dutch East India Company, which were not accepted; and for his last voyage, Sir Thomas Smith, Sir Dudley Digges, and some other of his friends, fitted him out. He set sail on the 17th of April, and came in sight of Greenland on the 4th of June. Sailing westward, he reached the mouth of the strait which bears his name, through which he advanced along the coast of Labrador, which he called *Nova Britannia*. Here he hoped to have discovered the long-wished-for passage; but he found he was only in a bay, in the southern part of which he determined to winter. After this he fitted out his shallop for further discoveries; but as he had no means of revictualling his ship, he distributed his last remaining bread, with tears in his eyes, amongst his people, and proposed to return home. But his mutinous crew entered his cabin by night, tied his hands behind his back, and set him ashore at the west end of the straits, with seven of the crew who were most attached to him. They were never more heard of, and it is probable that they were swallowed up by the waves.

HUDSON, *William*, a celebrated English botanist, was born at Westmoreland about 1730. He was bound apprentice to an apothecary in London, whose business he continued, and proved a friend to the widow and daughters of his master. It appears from the testimony of Dr Pulteney, that he had a residence in the British Museum, but we are not informed in what capacity. He died of a paralytic distemper in May 1793. He possessed a comprehensive knowledge of English plants, which induced him to undertake an arrangement of English botany according to the Linnæan classification; a task which had been previously attempted by Dr Hill, but the execution lson's ay | lson's ver.

of which was very imperfect. Hudson's *Flora Anglica* appeared in 1762, in one volume 8vo, the Latin preface to which was written by Mr Stillingfleet, received with great applause, and contributed greatly to the adoption of the sexual system in England.

HUDSON's Bay, a large bay of North America, lying between 51 and 69 degrees of latitude, discovered in 1610 by Henry Hudson. This intrepid mariner, in searching after a north-west passage to the South Seas, discovered three straits, through which he hoped to discover a passage to Asia by America. He had made two voyages before on the same adventure; the first in 1607, and the second in 1608. In his third and last, 1610, he entered the straits leading into this new Mediterranean, the bay known by his name; coasted a great part of it, and penetrated to eighty degrees and a half into the heart of the frozen zone. His ardour for the discovery not being abated by the difficulties he struggled with in this domain of winter, he staid there until the ensuing spring, and prepared in the beginning of 1611 to pursue his discoveries; but his crew, who had suffered equal hardships, without the same spirit to support them, mutinied, seized upon Hudson and seven of those who were most faithful to him, and committed them to the fury of the arctic seas in an open boat. As already mentioned, Hudson and his companions were either swallowed up by the waves, or, gaining the inhospitable coast, were destroyed by the savages; but the ship and the rest of the men returned home. Other attempts towards a discovery were made in 1612 and 1667; and a patent for planting the country, with a charter for a company, was obtained in the year 1670. In 1746 Captain Ellis wintered as far north as fifty-seven degrees and a half; and Captain Christopher attempted further discoveries in 1761. The company being desirous of obtaining information regarding a river called the Coppermine River, directed Mr Hearne, a young gentleman in their service, to proceed over land for that river, which he had orders to survey if possible down to its embouchure; to make observations for fixing the latitudes and longitudes; and to bring home maps and drawings both of it and the countries through which he might pass. Accordingly Mr Hearne set out from Prince of Wales's Fort, on Churchill River, latitude 58° 47½' north, and longitude 94° 7½' west from Greenwich, on the 7th of December 1770. On the 13th of June he reached the Coppermine River, and found it all the way, even to its mouth, encumbered with shoals and falls, and emptying itself into the sea over a dry flat of the shore, the tide being then out, which seemed by the edges of the ice to rise about twelve or fourteen feet. Mr Hearne was nevertheless sure of the place where it emptied itself into being the sea, or a branch of it, by the quantity of whalebone and seal-skins which the Esquimaux had at their tents, and also by the number of seals which he saw upon the ice. It appears from the map which Mr Hearne constructed of this singular journey, that the mouth of the Coppermine River lies in latitude 72° north, and longitude 25° west from Churchill River; that is, about 119° west of Greenwich. Mr Hearne's journey back from the Coppermine River to Churchill lasted till the 30th of June 1772, so that he was absent about a year and seven months. The subsequent progress of discovery in this quarter has been detailed in the article on GREENLAND.

HUDSON's Bay Company. See COMPANY.

HUDSON's River, a large river of North America, which rises on the east of Lake Ontario, and running by Albany, and on the back of the south part of New England through part of New York, falls into the bay of the sea beyond the west end of Long Island, and below the town of New York.

Hue and Cry || Huet.

HUE AND CRY, in *Law*, the pursuit of a person who has committed felony on the highway. Of this custom, which is of British origin, the following deduction is given by Mr Whitaker. "When it was requisite for the Britons to call out their warriors into the field, they used a method that was particularly marked by its expeditiousness and decisiveness, and remains partially among us to this moment. They raised a cry, which was immediately caught by others, and in an instant transmitted from mouth to mouth through all the region. And, as the notice passed along, the warriors snatched their arms, and hurried away to the rendezvous. We have a remarkable description of the fact in Cæsar, and there see the alarm propagated in sixteen or seventeen hours through a hundred and sixty miles in a line. And the same practice has been retained by the Highlanders almost till our own time. When the lord of a clan received intelligence of an enemy's approach, he immediately killed a goat with his own sword, dipped the end of a half-burnt stick in the blood, and then gave it and the notice of the rendezvous to be carried to the next hamlet. This was called the cross-tarric, or fiery cross. It symbolically threatened fire and sword to all his followers that did not instantly repair to the rendezvous. The notice was despatched from hamlet to hamlet with the utmost expedition, and in three or four hours the whole clan was in arms, and assembled at the place appointed. This was the ordinary mode by which the chieftains assembled their followers for war. The first person who received the notice set out with it at full speed, delivered it to the next he met, who instantly set out with the same speed, and handed it to a third. In the rebellion of 1745 it was sent by an unknown hand through the region of Breadalbane; and flying as expeditiously as the Gallic signal in Cæsar, traversed a tract of thirty-two miles in three hours. This quick method of giving a diffusive alarm is even preserved among ourselves to the present day; but is applied, as it seems from Cæsar's account above to have been equally applied among the Celtæ, to the better purposes of civil polity. The *hutesium and clamour* of our laws, and the *hue and cry* of our own times, is a well-known and powerful process for spreading the notice and continuing the pursuit of any fugitive felons. The cry, like the clamour of the Gauls or the summons of the Highlanders, is taken from town to town and from county to county; and a chain of communication is speedily carried from one end of the kingdom to the other."

HUESCA, a city of Spain, in the province of Aragon. It is built at the junction of the two rivers Alcanadre and Isuela, which fall into the Ebro. It is the see of a bishop, and has an episcopal palace, with a very sumptuous cathedral. Within this city is a magnificent university, consisting of two colleges, and both amply endowed. The country around it is highly fertile, and there are manufactories both of linen and woollen. It is a city of very ancient origin, and the walls built by the Romans are still visible around it. It contains 6800 inhabitants.

HUESCAR, a small city of Granada, in Spain. It is near the borders of Murcia, on the banks of the Almanzora. A canal, projected and commenced here formerly, has been suffered to languish, if not to fall into decay. It was designed to irrigate the lands in Lorca, Totana, and other dry parts of Murcia, and to afford water carriage for timber, hemp, flax, and other stores, from the Sierras de Huescar, to the royal arsenal of Carthagena. This city has a castle, and a population of 3000 inhabitants.

HUET, PETER DANIEL, bishop of Avranches, was born at Caen on the 8th of February 1630, and early distinguished for his love of letters and philosophy. His parents having died whilst he was yet an infant, Huet fell into the hands of guardians who neglected him; but his invincible love of learning enabled him to surmount every disadvantage, and he finished his studies in the belles-lettres before he had completed his thirteenth year. He studied philosophy under Father Mambrun, a Jesuit, who, in imitation of Plato, directed him to commence by learning geometry; and Huet contracted such a relish for the mathematics, that he applied himself to almost every branch of the exact sciences, and maintained public theses thereon at Caen. But he was withdrawn from this pursuit by the *Principles* of Descartes on the one hand, and the *Sacred Geography* of Bochart on the other. Of Descartes, then in all his vogue, Huet was a warm admirer, and, for many years, adhered to his philosophy, which, however, he at length saw reason to abandon as visionary. But the work of Bochart, who, like himself, was a native of Caen, made a more lasting impression upon his mind, and inspired him with that taste for erudition by which he was afterwards so much distinguished. In 1652 Huet accompanied Bochart in a visit to Sweden, where he met with a most gracious reception from the queen, Christina. In undertaking this journey he had two objects in view; one was, to see Christina, who was then occupied in regulating and improving her states; and the other to become acquainted with the learned men by whom that princess was surrounded, and to examine the ancient manuscripts in her possession, particularly one of the works of Origen. He returned with literary treasures of more than one kind, which in due time he communicated to the public. Scarcely had he revisited his native city, when, in conjunction with some friends, he formed there an academy for the encouragement of learning, which, we believe, is still in existence. The reputation and merit of Huet, however, had not procured him any solid recompense, when, in 1670, he was united as sub-preceptor with Bossuet, who had just been appointed to superintend the education of the Dauphin. It was at this period that he took occasion to embark in a work which suited him perfectly, and in which he was engaged nearly twenty years. In conformity with a suggestion of the Duke of Montausier, he formed the plan of those editions of the Latin classics, *ad usum Delphini*, destined for the instruction of his illustrious pupil; and it was he who directed the execution of the undertaking. In 1674 he was received into the French Academy; and it may be remarked that, in his inaugural discourse, he complained that ancient learning was then held in little estimation, being almost banished from the commerce of the polite world, and buried in the dust and obscurity of a few cabinets. Fléchier, who was then director of the academy, spoke in reply, and dwelt upon the protracted and useful studies which had been the delight of the Abbé Huet in his early youth, and which formed the sole occupation, as well as passion, of his more mature years. His duties as sub-preceptor did not prevent him from satisfying his ardent taste for the most difficult languages, and the most ancient books. Leaving court in the evening, he occasionally passed entire nights in the libraries of Paris, whence he derived the information which he could not obtain from his own. In 1678 Louis XIV. granted him, as a recompense for his zeal and services, the abbey of Avenay, near Caen, where he composed the greater part of his works. In 1685 he was appointed to the bishopric of Soissons, of which, however, he did not take possession; he had not, in fact, received the bulls in 1689, when M. Brûlart de Sillery, nominated for the bishopric of Avranches, proposed to him an exchange. This latter see was much more acceptable to Huet, because it fixed him at no great distance from his native city and his abbey; but he was not consecrated until 1692, by reason of some differences which had arisen between the court of France and that of Rome. Huet did not neglect his episcopal duties; but when these were discharged, he indulged his love of learning with so much ardour, and passed so much time in his library, that men of the world, and even ecclesiastics, who had business to transact with him, could scarcely obtain access to the studious prelate. An individual who had often been told, when he called, that the bishop could not be seen, because he was occupied among his books, withdrew one day, much dissatisfied; "why," said he, "has the king sent us a bishop who has not yet completed his studies." Huet, however, did not long retain his preferment. Sensible of growing infirmities, and finding that he could not reconcile his tastes with his duties, he resigned his bishopric, and received in exchange the abbey of Fontenay, situated at the gates of Caen. Some time afterwards he repaired to Paris; established himself in the Jesuits' College there, to which he presented his fine library; and, during twenty years, divided his time between prayer and study, for which he preserved his taste to the last. Zealous for the glory of that religion which, in more than one work, he had ably defended, he closed his long and honourable career on the 26th January 1721, at the advanced age of about ninety-one. The works of Huet, the greater part of which continue to be held in high estimation, are, 1. De Interpretatione libri duo, 1°. de optimo genere interpretandi, 2°. de claris interpretibus, Paris, 1661, in 4to; 2. Origenis Commentaria in Sacram Scripturam, Greek and Latin, Rouen, 1668, in two vols. folio; 3. Lettre sur l'origine de Romans, Paris, 1670; 4. Demonstratio Evangelica, Paris, 1679, in folio; 5. Censura Philosophiæ Cartesianæ, Paris, 1689 and 1694; 6. Quæstiones Alnetanæ de Concordia Rationis et Fidei, Caen, 1690; 7. De la situation du Paradis terrestre, Paris, 1691, in 12mo; 8. Nouveaux Mémoires pour servir à l'Histoire du Cartesianisme, 1692, in 16to; 9. Statuts Synodaux, Caen, 1693, in 12mo; 10. Huetii Carmina, Utrecht, 1700, in 12mo; 11. Histoire du Commerce et de la Navigation des Anciens, anonymous, Paris, 1716, in 12mo; 12. Petri Danielis Huetii Commentarius de rebus ad eum pertinentibus, Amsterdam, 1718, in 12mo; 13 Traité Philosophique de la faiblesse de l'Esprit Humain, Amsterdam, 1723, in 8vo; 14. Origines de Caen, Rouen, 1706, in 8vo; 15. Diane de Castro, ou le faux Yncas, 1728, in 12mo; 16. Latin notes on *Manilius*, 1679, in 4to; 17. Dissertations sur diverses matières de Religion et de Philologie, published by the Abbé Tilladet in 1714; 18. Opuscules sur la Langue Française, by the same. (A.)

HUFINGEN, a city, the capital of a bailiwick of the same name, in the duchy of Baden, and circle of the Lake. The bailiwick comprehends four cities or walled towns, twenty-seven villages and hamlets, with a population of 10,950 persons. The city stands on the river Bregach, and contains 201 houses, with 1370 inhabitants, subsisting by agriculture.

HUGUENOTS, an appellation given by way of contempt to the Reformed or Protestant Calvinists of France. The name originated in the year 1560, though authors are not agreed as to the occasion thereof; but the following derivations have been suggested. One of the gates of the city of Tours is called the gate Fourgon, by corruption from *feu Hugon*, the late Hugon. This Hugon was once Count of Tours, according to Eginhard in his life of Charles the Great, and to some other historians. He was it seems a very wicked man, who by his fierce and cruel temper made himself dreaded; so that after his death he was supposed to walk about in the night-time, beating all those he met with. This tradition the learned Thuanus has not scrupled to mention in his history. Davila and other historians pretend that the nickname of *Huguenots* was first given to the French Protestants, because they used to meet in the night-time in subterraneous vaults near this gate of Hugon; and what seems to countenance this opinion is, that they were first called by the name of ulk ll.

Huguenots at this city of Tours. Others assign a more illustrious origin to the name; and say that the Leaguers gave it to the Reformed, because the latter were for keeping the crown upon the head of the line descended from Hugh Capet; whereas the former were for giving it to the house of Guise, as descended from Charles the Great. Others again derive it from a French and faulty pronunciation of the German word *edignossen*, signifying confederates, and originally applied to that valiant part of the city of Geneva which entered into an alliance with the Swiss cantons, in order to maintain their liberties against the tyrannical attempts of Charles III. duke of Savoy. These confederates were called *Eignots*, whence Huguenots.

The persecution which the Huguenots underwent has scarcely any parallel in the history of religion. Though they obtained a peace from Henry III. in 1576, it was only of short continuance; and their sufferings, mitigated by the famous edict of Nantes, granted to them in 1598 by Henry IV. were again renewed, after the revocation of that edict by Louis XIV. in 1685.

HULK, an old ship of war, fitted with an apparatus to fix or take out the masts of ships of the royal navy, as occasion requires.

Hulk is also a name bestowed on any old vessel laid up as unfit for further service. It is probably derived from the ὁλκαδες, or vessels of burthen, of the ancient Grecians.

HULL, a sea-port town of the east riding of the county of York, 234 miles from London by way of York, and 170 by way of Lincoln, and crossing the Humber from Barton. It is situated on a river of the same name, whose waters are received at the town into the Humber. The old part of the town, with the exception of the fine market-place, is ill built, with narrow streets; but that portion near the docks consists of handsome and commodious houses and streets. It is admirably situated for trade, from being at the mouth of the great rivers Humber, Ouse, and Trent, whose tributary streams, and the various canals that branch from them, afford facilities for the conveyance of the productions of a large space of country to Hull, and for receiving from it the requisite articles of foreign growth. These advantages have been improved by the activity of the inhabitants, who have constructed docks and warehouses, which, for accessibility and security, are only inferior to those of London and Liverpool. The building and equipment of ships is an important branch of industry; and those built at Hull are considered as superior to those constructed at the more northern ports. As there is a vast trade with Russia, Prussia, Sweden, and Denmark, centring at Hull, the builders are enabled to procure timber, iron, flax, hemp, and other articles for ship-building, on the most favourable conditions. This is the port from which the greater number of ships are despatched to the whale fishery on the coasts of Greenland. The owners of ships in Hull do not confine themselves to the trade of their own port, but charter them to all parts of the world, by the merchants of London, Liverpool, and other mercantile places. A considerable direct trade is carried on with the West India islands, with South America, the United States, the Mediterranean, and the ports of Holland and Belgium. Though the ancient gates remain, there are no land fortifications; but on the sea side the approach to the town is defended by competent batteries. As Hull is situated in the fertile district of Holderness, it is well supplied with necessaries from that part, as well as from the Lincolnshire country, on the other side of the Humber. It is a county of itself, with its own courts, sheriffs, and assizes; and a branch of the Trinity House has the superintendence of the pilots and the lights. It is governed by a mayor and aldermen, and returns two members to parliament, chosen by the resident freemen and householders, who amount to about 3800. The town was formerly subject to inundations; but, by appropriate embankments and drainage, that inconvenience is no longer felt. The population amounted in 1801 to 29,516, in 1811 to 26,792, in 1821 to 31,425, and in 1831 to 32,958. If to this be added the inhabitants of Drypool, Sutton, and Sulcoates, which form a part of the town, the whole population will be from 45,000 to 50,000.

Hull.

The gradual increase of the foreign trade of Hull may be seen by the following account of the number of vessels which have entered from foreign parts in each year from 1820 to 1833 both inclusive.

Years.	British Vessels.		Foreign Vessels.	
	Ships.	Tonnage.	Ships.	Tonnage.
1820	627	117,434	117	15,111
1821	578	113,133	106	13,820
1822	672	134,999	103	14,011
1823	778	153,313	203	26,103
1824	776	142,615	510	58,603
1825	1,171	227,363	1000	100,773
1826	717	130,674	854	70,137
1827	982	191,364	800	72,338
1828	881	156,925	674	60,082
1829	883	165,791	603	58,854
1830	897	163,657	556	51,015
1831	974	187,361	725	73,547
1832	762	140,788	454	43,481
1833	755	142,301	610	62,403
	11,453	2,167,718	7315	720,278

The amount of duties paid at the custom-house is next in value after London, Liverpool, and Bristol. The sum collected in the year 1833 amounted to L.624,057. 7s. 11d., from which was deducted, for drawbacks, bounties, and over-entry certificates, L.5292. 9s. 3d., and for the payment of salaries and incidents, L.24,470. 4s. 3d.; thus leaving a clear sum of L.594,294. 14s. 3d. remitted to London.

Another criterion of the proportional amount of trade is the amount of postage paid. By this Hull will appear to be the sixth town of England, and the tenth of the united kingdom. The sums collected at the towns at the post-office were,

	1833.	1834.
London	L.632,696	L.642,871
Dublin	80,611	69,096
Liverpool	70,011	74,080
Manchester	53,510	56,287
Edinburgh	42,759	41,864
Glasgow	36,053	36,481
Bristol	33,884	33,242
Birmingham	28,685	28,812
Leeds	20,316	21,331
Hull	14,607	14,853

Without more voluminous accounts than the nature of this work will admit, it is not easy to give a tolerable view of the articles imported at and exported from Hull; but an official account, in a condensed form, of the countries from which the vessels arrived that had entered the port of Hull in the years 1830, 1831, 1832, and 1833, will convey a tolerably accurate view of the nature of the whole trade.

Vessels that entered Hull during Four Years.

Countries.	British Ships.		Foreign Ships.	
	Vessels.	Tons.	Vessels.	Tons.
Russia	266	256,090	60	12,255
Sweden	90	16,700	136	20,163
Norway	3	307	201	23,807
Prussia	160	31,113	228	29,346
Mecklenburg	5	628	58	5,589
Hanover	...	......	115	6,344
Oldenburg	...	......	174	10,911
Hanseatic towns	718	103,910	146	11,557
Netherlands	685	65,728	231	17,467
France	53	4,590	11	814
Portugal and Azores	45	4,223	10	1,134
Spain and Canaries	65	6,823	4	550
Tuscany	3	552	...	......
Naples and Sicily	53	7,153	3	830
Austrian Italy	6	765	...	......
Greek islands	3	580	...	......
Turkey and Continental Greece	7	938	...	......
North Africa	4	1,167	...	......
Mauritius	1	147	...	......
Canada	94	33,682	...	......
New Brunswick	147	50,018	...	......
Nova Scotia	10	2,509	...	......
West Indies	1	153	...	......
United States	16	5,505	1	236
Whale fishery	166	35,377	...	......
Isles of Guernsey and Jersey	16	1,247	...	......
Denmark with Holstein	27	2,935	862	65,006
Ionian Islands	12	1,472	...	......

Hull, in nautical language, is the main body of a ship, without either masts, yards, sails, or rigging. Thus, *to strike a hull* in a storm, is to take in her sails, and to lash the helm on the lee-side of the ship; and *to hull*, or *lie a-hull*, is said of a ship the sails of which are thus taken in, and helm lashed a-lee.

HULST, a city of the Netherlands, in the province of Friesland and circle of Goes. It is strongly fortified, and, by means of a canal, is connected with Helle-Gat, which is joined to the West Scheldt at Ghent. It contains 400 houses, and (in 1830) 2124 inhabitants. Long. 4. 36. 25. E. Lat. 51. 16. 54. N.

HUMAN, in general, is an appellation given to whatever relates to mankind. Thus we say, the human soul, human body, human laws, and the like.

HUMANITY, the peculiar nature of man, by which he is distinguished from all other beings.

Humanities, in the plural, signify grammar, rhetoric, and poetry, known by the name of *literæ humaniores*.

HUME, David, an illustrious philosopher and historian, was born in the south of Scotland, on the 26th of April, old style, in the year 1711. His father was a descendant of the family of the Earl of Home or Hume; and his mother, whose name was Falconer, was descended from that of Lord Halkerton, whose title came by succession to her brother. This double alliance with nobility was a source of great self-complacency to Hume, who was not philosopher enough to despise such distinctions. But being the younger son of a country gentleman of no great fortune, his patrimony was consequently insufficient to support him. For this reason he was destined for the bar, and passed through the usual course of academical study in the University of Edinburgh; but having conceived an early passion for letters, he contracted an insurmountable aversion for any other pursuit; and whilst his friends imagined that he was poring over Voet and Vinnius, he was secretly occupied with Cicero and Virgil. His fortune, however, being small, and his health somewhat affected by close application, he was induced to make a feeble attempt at engaging in business; and in the year 1734, he went to Bristol, with recommendations to some eminent merchants of that city. But the bustle and activity of a mercantile city were by no means suited to his meditative disposition; and, in a few months, he left it in disgust. Immediately after this, he went over to France with the view of prosecuting his studies in private, and established himself first at Rheims, and then at La Fleche in Anjou, where, in order to maintain his independence, he practised the most rigid frugality. The writings of Locke and Berkeley having directed the attention of many learned men towards metaphysics, Mr Hume had early applied himself to studies of this kind, and, during his retreat, composed his Treatise of Human Nature, which he published at London in 1738. This work he had meditated even while at college; a circumstance which proves at once the self-sufficiency of Hume, and the early bias of his mind towards scepticism. He had the mortification, however, to find his book generally neglected, and to perceive that the taste for systematic writing was now upon the decline. "It fell," he says, "dead-born from the press, without reaching such distinction as even to excite a murmur among the zealots." He adds, however, that "being naturally of a cheerful and sanguine temper, he soon recovered the blow." But this pretended equanimity was, we suspect, mere affectation. For the work, so far from passing altogether without notice, was criticised with much ability in the only review of that period, *The Works of the Learned;* and the critique has with some reason been ascribed to Warburton. One remark of the reviewer is singular, and may be almost thought prophetic. "This work abounds with egotisms. The author would scarcely use that form of speech more frequently, if he had written his own memoirs."

In 1742, Mr Hume published, with more success, the first part of his Essays moral, political, and literary. But these, though better received than his former publication, contributed little to his reputation as an author, and still less to his profit; and his small patrimony being now almost spent, he accepted an invitation from the Marquis of Annandale to go and live with him in England. With this nobleman he remained a twelvemonth, during which time his small fortune was considerably increased. He then received an invitation from General St Clair to attend him in the capacity of secretary to the expedition which was at first meant against Canada, but afterwards ended in an incursion on the coast of France. In 1747, he received an invitation from the general to attend him in the same situation in his military embassy to the courts of Vienna and Turin. He then wore the uniform of an officer, and was introduced at these courts as aide-de-camp to the general, along with Sir Harry Erskine, and Captain, afterwards General Grant. These two years were almost the only interruptions which his studies experienced during the whole course of his life; but his appointments made him some compensation on this account, for he was now "master of near L.1000," and, in his own opinion, "independent." In 1749 he returned to Scotland, and lived about two years with his brother at his country-house, where he composed the second part of his essays, called Political Discourses. And now the general approbation of his productions was indicated by a more extensive sale than formerly, and likewise by the numerous answers published by different persons in order to counteract their supposed pernicious tendency. In 1752 were published at Edinburgh his Political Discourses, the only work of his which was well received on its first appearance; and the same year at London, his Inquiry concerning the Principles of Morals, which in his own opinion was incomparably the best of all his works. This year also he was appointed librarian to the Faculty of Advocates at Edinburgh; but the principal advantage resulting from this employment was, that he had thereby the command of a large library. He then formed the design of writing the History of England; but deeming the whole to be too extensive, he confined himself to the history of Britain under the house of Stuart; and in 1754 published the first volume, entitled A Portion of English History, from the Accession of James I. to the Revolution, in 4to. The book, however, was almost universally decried on its first appearance, and soon afterwards seemed to sink into oblivion. Dr Herring, primate of England, and Dr Stone, primate of Ireland, were the only persons of the author's acquaintance who approved of the work, and sent him messages not to be discouraged.

But notwithstanding the approbation of these eminent men, Mr Hume's spirits were so much sunk by his want of success, that he had some thoughts of retiring to France, changing his name, and bidding adieu to his own country for ever. This design, however, was rendered impracticable by the breaking out of the war of 1755 between France and Britain. He then published his Natural History of Religion, to which, soon after its appearance, an answer was published in the name of Dr Hurd, bishop of Lichfield and Coventry, though, in reality, it proceeded from Bishop Warburton, as Dr Hurd afterwards expressly declared. In 1756 was published the second volume of the History of the Stuarts. This was better received, and helped to retrieve the character of the former volume. Three years afterwards his History of the House of Tudor made its appearance, and was almost as ill received as the History of the Stuarts had been, the reign of Elizabeth being particularly obnoxious. The author, however, had now learned to despise popular clamour; and proceeded to finish at his leisure the more early part of the English history, which was published in 1761, and received with tolerable success.

Mr Hume being now turned of fifty, and having obtained by the sale of his books a competent fortune, retired into his native country of Scotland, determined never more to set his foot out of it. From this resolution, however, he was diverted by the Earl of Hertford, whom he attended as secretary in his embassy to Paris in 1763. In 1765, the earl being appointed lord-lieutenant of Ireland, Mr Hume was intrusted with the sole management of the business of the state till the arrival of the Duke of Richmond towards the latter end of the year. In 1767, he returned to Edinburgh, with a much larger income, procured for him by the Earl of Hertford, than he formerly possessed; and now formed the same design he had previously entertained, namely, of burying himself in his philosophical retreat. In this, however, he was again disappointed, by receiving an invitation from General Conway to become under secretary of state; and this invitation he was prevented from declining, both by the character of the person, and his connections with Lord Hertford. In 1769 he returned to Edinburgh, possessed of L.1000 a year, healthy, and, though somewhat stricken in years, yet having a prospect of long enjoying his ease, and of seeing the increase of his reputation. Of his last illness and character he has himself given the following account:—"In spring 1775 I was struck with a disorder in my bowels, which at first gave me no alarm, but has since, as I apprehend it, become mortal and incurable. I now reckon upon a speedy dissolution. I have suffered very little pain from my disorder; and, what is more strange, have, notwithstanding the great decline of my person, never suffered a moment's abatement of my spirits; insomuch that were I to name the period of my life which I should most choose to pass over again, I might be tempted to point to this latter period. I possess the same ardour as ever in study, and the same gaiety in company. I consider, besides, that a man of sixty-five, by dying, cuts off only a few years of infirmities; and though I see many symptoms of my literary reputation breaking out at last with additional lustre, I know that I could have but few years to enjoy it. It is difficult to be more detached from life than I am at present. To conclude, historically, with my own character, I am, or rather was (for that is the style I must now use in speaking of myself, which emboldens me the more to speak my sentiments)—I was, I say, a man of mild dispositions, of command of temper, of an open, social, and cheerful humour, capable of attachment, but little susceptible of enmity, and of great moderation in all my passions. Even my love of literary fame, my ruling passion, never soured my temper, notwithstanding my frequent disappointments. My company was not unacceptable to the young and careless, as well as to the studious and literary; and as I took particular pleasure in the company of modest women, I had no reason to be displeased with the reception I met with from them. In a word, though most men anywise eminent have found reason to complain of calumny, I never was touched, or even attacked, by her baleful tooth; and though I wantonly exposed myself to the rage of both civil and religious factions, they seemed to be disarmed in my behalf of their wonted fury. My friends never had occasion to vindicate any one circumstance of my character and conduct; not but that the zealots, we may well suppose, would have been glad to invent and propagate any story to my disadvantage; but they could never find any which they thought would wear the face of probability. I cannot say there is no vanity in making this funeral oration of myself, but I hope it is not a misplaced one; and this is a matter of fact which is easily cleared and ascertained." His fears concerning the incurableness of his disorder proved too true. He died on the 25th of August 1776, and was interred in the Calton-hill burying-ground, Edinburgh, where a monument is erected to his memory.

Hume's account of his own life is dated only four months previous to his decease; and as he was then aware that a recovery from the malady under which he suffered was hopeless, if not impossible, it may be considered as the testimony of a dying man respecting his own character, conduct, and opinions. But it disappointed those who expected to find in it some acknowledgment of error in speculation, and perhaps also some expressions of regret for the injury done to many by the promulgation of doctrines calculated to unsettle their faith and annihilate their hopes in religion. Hume, however, was not a man from whom any thing of this sort could have reasonably been expected. Devoid of all sense of religion in his own mind, and constitutionally disposed to call in question the received opinions concerning it, he had, from a mere fondness for speculation, mixed with a love of philosophical applause, laboured to extirpate from the human mind all respect for the authority of revelation, or the obligations imposed by it, and had even treated the disciples and advocates of Christianity with a contempt bordering on detestation, "as if he had been revenging a personal injury." Having early imbibed the principles of a philosophy the direct tendency of which was to unsettle all the foundations of belief, philosophical and moral, as well as religious, and thus to undermine the best interests and dissolve the firmest bonds of society, he went on doubting until he even doubted whether he doubted, and at last became so entangled in the inextricable mazes of scepticism, that all kinds of opinion or belief appeared to him involved in nearly equal uncertainty. With a mind thus overclouded by its own speculation, and a natural temper, in which quiet self-love was interwoven with perfect equanimity, it is scarcely to be wondered that Hume, instead of being visited by repentance or regret, should have terminated an otherwise irreproachable life "in such a happy composure of mind that nothing could exceed it." In short, he died in the same state of mind in which he had lived, "believing nothing, and fearing nothing;" and though, to men of different sentiments, there is something sickening in the levity of his imaginary conversations with Charon, when in the near prospect of eternity, yet this seems in no degree inconsistent with our general conception of his character, and still less with the desire of rendering his death a sort of triumph to philosophy, over what he and some at least of his friends deemed superstition. In fact, he was at last surrounded by men who, from congeniality of sentiments, contemplated his end with satisfaction; and it is by no means improbable, that the same love of approbation for which he was distinguished throughout life, should have contributed to give a peculiar colouring to its close. But however this may have been, his social qualities, his wit, his acuteness, his generosity, and, we may add, his fame, preserved to him the regard of his learned countrymen, who forgot the sceptic in the philosopher, and the infidel in the historian.

It is indeed as an historian and a political writer that Hume will perhaps be best known to posterity. Yet even in his capacity of historian he has many faults. As slavish in politics as he was daring in religion, he does not scruple to disguise facts from party motives; and he seldom omits an occasion to sneer at Christianity under the name of fanaticism or superstition. The inexpressible charm of his style has been universally felt and acknowledged; but this is at best only a poor compensation for that negligence which prevents an historian from discovering the truth, or that prejudice which leads him to misrepresent it. Hume, we fear, sinned in both ways; and his reputation has suffered in consequence. His errors have been detected, his misrepresentations exposed, and his unjust aspersions refuted, often by the very authorities which he professed to have consulted. But his political and historical disquisitions display throughout an acuteness, penetration, and comprehensiveness which no writer of modern times has approached, and which, notwithstanding all the defects we have alluded to, will secure to him a rank permanently high in the literature of his country. In his political essays, he anticipated many truths, which it has required more than half a century adequately to unfold and illustrate.

Of the character of Hume as a speculative philosopher the reader will find the most able and exact appreciation in the First and Second Dissertations prefixed to the present work. That he was profound, far-sighted, and even original, in as far at least as originality consists in discovering consequences which had escaped the penetration of others, has been admitted even by his opponents; nor can it be doubted that intellectual philosophy has benefited by the rare sagacity with which he traced some of the prevailing systems to their necessary consequences, and thus showed how dangerous it is to form theories on a subject where the sphere of observation is extremely confined, and direct experiment is in a great measure impracticable.

Few books have been so often reprinted as Hume's History, and none has ever experienced greater injustice, than by being united, in the same form, with Smollett's Continuation. The best and most complete edition of his philosophical works, is that which was published at Edinburgh, 1826, in four vols. 8vo, including all the essays, and exhibiting the more important alterations and corrections in the successive editions published by the author. In this edition, which was superintended by Mr David Constable, the essays are reprinted from that of 1777, corrected by the author for the press a short time before his death, and which he desired to be regarded as containing his philosophical principles; whilst the essays contained in the early editions, but which were omitted in that of 1777, are annexed to the fourth volume, together with two essays, the one on Suicide, and the other on the Immortality of the Soul. In addition to the author's Life, written by himself, the account of his controversy with Rousseau, originally printed in French, and shortly afterwards (in 1766) in English, is also prefixed. The English translation was superintended by Mr Hume himself; and as it relates to an extraordinary occurrence in the lives of these eminent persons, it has justly been thought a suitable appendage to the short memoir which Mr Hume left of his own life.

HUMECTATION, formed of humour, moisture, moistening, in pharmacy, the preparing of a medicine by steeping it for a time in water, in order to soften and moisten it; or to cleanse it, or prevent its subtile parts from being dissipated in grinding, or the like.

Humectation is also used for the application of moistening remedies. In this sense we say, embrocations, emplasters, unctions, humectations, fomentations, and so on.

HUMIDITY, that quality in bodies by which they are capable of wetting other bodies. This differs very much from fluidity, and seems to be merely a relative thing, depending on the congruity of the component particles of the liquor to the pores of such particular bodies as it is capable of adhering to, penetrating a little, or wetting. Thus, for instance, quicksilver is not moist with regard to our hands or clothes, but may be called so in reference to gold, tin, or lead, to whose surfaces it will perfectly adhere, and render them soft and moist.

HUMILIATI, a congregation of religious persons in the church of Rome, established by some Milanese gentlemen upon their release from prison, where they had been confined under the Emperor Conrad, or, as others say, under Frederick I. in the year 1162. This order, which acquired great wealth, and had no less than ninety monasteries, was abolished by Pope Pius V. in 1570, for their luxury and cruelty, and their houses given to the Dominicans and Cordeliers.

HUMILIATION, the act of humbling or of abating a person's pride, and bringing him lower in his opinion. In this sense humiliation is distinguished from mortification; for humiliation brings down the mind, but mortification subdues the flesh.

HUMILITY is a virtue consisting in the moderate value which a person puts upon himself, and every thing relating to him. Or, more particularly, it consists in not attributing to ourselves any excellence or good which we have not; in not overrating any thing which we have or do; in not taking an immoderate delight in one's self; in not assuming more of the praise of a quality or action than belongs to us; and in a lowly sense and acknowledgment of our imperfections, errors, and sins. This virtue expresses itself in the modesty of our appearance, of our pursuits, and of our behaviour towards other men. It is distinguished from affectation, bashfulness, and meanness.

HUMMOCK Island. There are two small islands of this name, in the Eastern Seas, one fifteen miles south of Mindanao, in long. 126. 37. E. and lat. 5. 24. N. The other, which is inaccessible except at one point, lies in long. 123. 40. E. and lat. 24. 15. N.

HUMOUR, from the Latin *humor*, in its original signification, stands for moisture in general; and hence it has been restricted to signify the moisture of animal bodies, or those fluids which circulate through them. As the temper of the mind has been supposed to depend upon the state of the fluids in the body, humour came to be synonymous with temper and disposition.

Humour is often made use of to express a particular species or modification of wit. See Wit.

HUMPHREY, Laurence, a learned English divine, was born at Newport-Pagnell, Buckinghamshire, about the year 1527. He received his school education at Cambridge, and afterwards became a fellow of Magdalen College, Oxford, where he took his degree as master of arts in 1552. In 1555 he retired, with other Protestant refugees, to Zurich, in Switzerland, where he resided for some time; but after the death of Queen Mary he returned to England, where he was restored to his fellowship in Magdalen College, from which he had been expelled, and, in 1560, appointed queen's professor of divinity at Oxford. In 1570 he was made dean of Gloucester; in 1580 he was removed to the deanery of Winchester; and, if he had not been disaffected towards the church of England, in other words, a moderate and conscientious nonconformist, he would probably have been raised to the episcopal bench. Humphrey was considered as a great and general scholar, an able linguist, a profound theologian, and, for his time, an excellent writer. He died early in 1590, leaving a wife who had brought him twelve children. His works are, 1. Epistola de Græcis literis, et Homeri lectione et imitatione, Basil, 1558; 2. De Religionis conservatione et reformatione, deque primatu Regum, Basil, 1559; 3. De Ratione interpretandi auctores, Basil, 1559; 4. Optimates, sive de Nobilitate, ejusque antiqua origine, Basil, 1560; 5. Joannis Juelli Angli, Episcopi Sarisburiensis, Vita et Mors, London, 1573; 6. Two Latin Orations spoken before Queen Elizabeth, one in 1572, and the other in 1575; 7. Sermons; 8. Some Latin pieces against the Papists, particularly Campian. (A.)

Hundred || Hungary.

HUNDRED, Hundredum, or *Centuria*, a part or division of a county, and anciently so called from its containing an hundred families, or from its furnishing an hundred able men for the king's wars. After Alfred's dividing England into counties, and giving the government of each county to a sheriff, these counties were divided into hundreds, of which the constable was the chief officer.

HUNFELD, a town of the province of Fulda, in Hesse-Cassel, the capital of a bailiwick of the same name, which contains one town and thirty-two villages, with 7633 inhabitants. The town is situated on the river Haun, and has some considerable bleacheries, with 1730 inhabitants.

HUNGARY.

This is the largest division of the dominions under the government of the imperial house of Austria. It is formed into three separate parts, politically distinguished as the kingdom of Hungary, the principality of Siebenburgen, and the military districts of Carlstadt, Warasdin, and the Bannat. Although the other parts will be noticed in their alphabetical order in this work, this general head will comprehend such circumstances as may be applicable to the whole, because its chief purpose is to describe what, in the Austrian administration, is denominated the kingdom of Hungary.

The names of the circles, their extent, their population, and the capitals of each circle, are as follow:

Circles.	Extent in Square Miles.	Population.	Capital Cities.
Hither Danube......	21,890	2,572,129	Presburg.
Farther Danube......	17,402	1,943,143	Ungrisch-Altenburg.
Hither Theissa......	15,249	1,597,105	Leutschau or Locse.
Farther Theissa.....	27,368	2,231,353	Szigeth.
Sclavonia..............	3,784	348,340	Eszek or Essegg.
Croatia................	3,786	558,066	Warasdin.
Peculiar (*besondere*) Districts............	15,718	1,121,136	Agram or Zagrab.
	105,197	10,371,272	

The capital of the whole kingdom was formerly the city of Presburg, but since 1784 that honour has been enjoyed by the city called by the Germans Ofen, and by the Hungarians Buda, which is in fact a kind of suburb to the city of Pesth, but separated from it by the river Danube, over which there is a long wooden bridge, which keeps up the communication between the two places, whose united population amounts to 95,000 souls.

Races of the people.

Few countries contain a greater variety of races than are to be found in the population of Hungary, or classes varying more in their language, religion, occupations, manners, and in their progress towards civilization. The most numerous of these races are the *Magyars*, the original inhabitants. They reside chiefly in the central and most fruitful plains, where the agriculture is most easily conducted, and leave to the Sclavonians that part of the country which is mountainous or sterile, or where more severe labour is required. They are remarkable for their strength rather than their height, being very muscular, with broad shoulders, but with rather short legs and arms; and their countenances are distinguished by a conscious expression and a look of self-importance. Their language is clear and concise, and the sound of it is soft and pleasing. They are much attached to it, and generally prefer it to the Latin, which all but the very lowest of them can speak. They are divided into three branches, each of which has its peculiar dialect, and are distinguished by the districts they occupy thus: the Magyars of the Danube, the Magyars of the Theissa, and the Paloczin Magyars. Another of the greater races of the people is the Sclavonian, who inhabit chiefly the mountainous districts within the kingdom, both in the north and the south. They are of a darker complexion than the Magyars, but are well formed, and the females are distinguished by their forms, and graceful figures and movements. This race is distinguished by different names, and they differ much in their several dialects. The Slowaks are the oldest settlers in the hilly district, and amongst them are some originally from Bohemia, some few from Poland, many from Red Russia (called Russniaks), and others in the south from Illyria, sometimes called Serbians. In these are comprehended the greater number of the Croatians, many of the Bulgarians, and, near the sea coast, about Fiume, the Liburini. As these have various dialects, some approaching nearer to the Latin than others, but all in some degree connected with that language, the intercourse between the tribes is maintained by a species, much adulterated, of the tongue of ancient Rome. The Germans in Hungary are a numerous body; and the two descriptions of them are distinguished by the natives as Saxons and Suabians. The first settled in the country some centuries ago, and came as colonists from Saxony and the banks of the Rhine. The second colonists have obtained settlements at various but more recent times. The whole number of this race is estimated at about 700,000. They inhabit a tolerably good and extensive breadth of land along the frontiers of the provinces of Austria and Steyermark, from the Danube to the Raab, and have, in the interior of the land, several cities and towns, as well as numerous small places in the southern and western divisions of Hungary. They mostly retain their original language, which, however, is much corrupted by the adoption of words and phrases from the several tribes with which they are in contact. The smaller settlers in Hungary are the Wallachians, the New Greeks or Macedonians, a colony of French in the county of Torontal, another of Italians on the sea-coasts, and numerous Turkish individuals in all the commercial towns and cities. About 140,000 Jews are established in Hungary, who, with some scattered Armenians in most of the towns, form the retail traders.

Classes of inhabitants.

The inhabitants are divided into nobles, citizens, and peasants. The first class, though differing in titles and rank, have all equal privileges; the principal distinction between them is, that, in the assembly of the states, or diet, the magnates have personally a seat and vote; whilst the other nobles vote by their representatives. The higher clergy are considered as nobles, and enjoy similar privileges. The nobility can alone possess free lands, or those enjoying the *jus dominicale*, and they are exempt from taxes, tithes, and the quartering of soldiers; but, on the other hand, they are bound to perform personal military service, when the pressure of circumstances compels the diet to decree the levy *en masse*, or, as it is called, the *insurrection*.

The citizens or burghers are the inhabitants of those cities which own no superior lord but the monarch. These have privileges similar to the nobility, by which they are exempted from the payment of taxes and tithes, and from the quarterings of the military; and their deputies have seats in the diet. They are governed by their own magistrates, and manage their own local funds. They cannot, however, hold estates out of their cities, nor institute a suit against the nobles in their individual names, but only in that of the corporation to which they belong. The peasants generally are slaves, but with a more or less mitigated degree of servitude; and some few, under the denomination of German, or other colonists, are free. The lot of the common peasants has, however, been of late years much improved. They are more protected against the power of their lords, by being allowed to acquire property, and by being permitted to leave their estates to their heirs, and to become, if they can do so, burghers of the royal cities. Their condition is, however, still a severe one, as they bear almost all the burdens of the state, and are incapable of commencing suits in the courts against either the nobility or burghers.

Religio and edu tion.

Although all the Christian sects enjoy equal civil rights and similar legal establishments, the Roman Catholics are the most numerous body. They consist of two classes, one adopting the Latin ritual, the other adhering to that of the Greek church, and called United Greeks. According to a survey made in 1825, the former amounted to 5,233,952 individuals, and the latter to 624,259. The hierarchy for these 5,858,211 persons consists of three archbishops, in the cities of Gran, Kolocsa, and Erlau; of seventeen bishops, viz. in Agram, Bosnie with Sirmien, Esanad, Fünfkirchen, Grosswardein, Kaschau, Neusol, Neitra, Raab, Roseneau, Steinamanger, Stuhlweisenburg, Szathmar, Veszprim, Waizen, and Zeug with Zips; and, besides these, there are the following dignities, viz. 307 canonries, 160 abbeys, eighty-nine archdeaconries, and 307 vice-archdeaconries. This sect has 3723 parochial churches and numerous chapels, which are served by 6345 priests. Next in number to the Roman Catholic is the orthodox Greek or non-united church, comprising 1,452,516 persons. This church has for its rulers an archbishop at Carlovitz, and seven bishops at the cities of Bacs, Temeswar, Carlstadt, Packracz, Arad, Ofen, and Werschetz. They have sixty presbyteries, twenty-five large convents, 1643 churches, 2122 pastors, and 2781 lay ecclesiastics, who form a kind of monks. The Protestant Reformed church, on the Geneva model, consists almost wholly of Magyars, and amounts to 1,251,226 persons. They are under four superintendencies, established in the cities of Pesth, Papa, Miskolcz, and Debreczin; and under these there are thirty-four synods, 1359 churches, and 1407 pastors. The Lutheran church consists of 667,945 members, and is governed by four superintendents or bishops, residing in the cities of Presburg, Neusol, Odenburg, and Teissholz; under these are thirty-five consistories, with 487 parish churches, many chapels, and 518 ministers. Besides these there are a few assemblies of Armenians, and a few Mahommedans. The Jews have 342 synagogues, and a rabbi to each. Though the population has vastly increased since 1825, it is not supposed that the proportional numbers of the several religious parties has been materially altered. Each of these sects has its separate schools, colleges, and universities; and education is more diffused than in many of the other parts of Europe. In most of the sees schools for Catholics are supported by the prelates; and besides, there are royal academies at Agram, Grosswardein, Kaschau, Presburg, and Raab; and at Pesth there is one of the oldest and richest universities in Europe. In the schools of the higher class, including the university, the number of students is stated at 20,318. The schools for primary instruction in the villages are but slightly encouraged, nor do the peasantry discover much inclination for instruction; but in the cities and large towns there are 103 schools for the use of the Catholics. The Protestants of the reformed class, as well as the Lutherans, have schools for primary instruction in each of their parishes. The former have burgher schools in the cities, and seven gymnasiums, and three colleges at Debreczin, Saros-Patak, and Papa, with 4180 students. The Lutherans have nine gymnasiums and good colleges at Eperies, Presburg, Odenburg, and Kesmark, in which there are 2660 students. The non-united Greeks have till recently much neglected the education of the adherents of their church; but of late years some attempts at improvement have been made. They have established some schools, the best of which are at St Andrew, Alt-Ofen, and Miskolcz. As aids to the higher branches of science, may be noticed the astronomical observatories at Ofen and at Elau, the chemical and mineralogical institutes at Schemnitz, the military academy at Pesth, and the society founded in 1832 in that city, under the title of the Imperial Academy of Sciences.

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The northern and western sides of Hungary are remarkably mountainous. The Carpathian Mountains form a semicircle extending from the south-east portion of the kingdom till it meets the Danube on the western frontier. In the circle they describe, many projecting ranges extend themselves into the level land. On the western side the Carinthian Mountains cover a considerable portion of the kingdom. The highest points of the Carpathian Mountains are, the Lomnitzer Spitze, 8545 feet above the level of the sea; the great Krywan, 8218; the Caesmark, 8194; and the Uniacke, 7597. The loftiest parts of the Carinthian Mountains, though within the Austrian dominions, form no portion of the kingdom of Hungary, nor do any part of the Noric or Rhætian Alps. The greatest extent of level land in Hungary is found to the eastward of the river Theissa, forming a rich plain of more than 20,000 square miles. Another level, called the Three-Cornered Plain, is found to the eastward of the Danube, beginning near Presburg, the base of which line extends 150 miles in length. The soil is as various as the elevation of the land; on the mountains it is dry and sterile; on the terraces that surround them, of moderate fertility, and of most luxuriant richness on the plains, but mixed with considerable tracts nearly barren, where, for many miles, neither tree, stone, bush, nor living creature, are to be seen, with sand-hills, varying their position with the violent storms that frequently occur.

tiva-

Hungary, however, is a country highly productive, yielding the largest proportion of the necessaries of life of any part of the ancient Austrian dominions, and furnishing, from its surplus, large quantities of corn, tobacco, fruit, wine, and cattle, to the neighbouring states. According to the account of Grellman, the extent of land is 39,329,000 jochs, the joch being equal to an English acre and two fifths. Of this land only 23,905,126 jochs are in cultivation; the remainder is composed of sandy deserts, lakes, morasses, and barren mountains. The productive lands are thus divided: 4,897,218 arable, 638,767 gardens, 911,176 vineyards, 2,129,225 meadows, 5,536,000 pastures, 850,000 ponds, and 8,940,740 woods. The northern part of Hungary scarcely produces sufficient corn for its own consumption; but the south is the granary, not only for the northern part of the kingdom, but, after deficient harvests, for a great portion both of Germany and Italy. The corn consists of wheat, rye, barley, oats, peas, and, in the most southern parts, of rice and maize. Next to the cultivation of corn, the growth of wine is the most considerable object of attention, and managed with the greatest care. The wines of Tokay have long been celebrated throughout Europe, and are of the first class of sweet wines; but the wines of Odenburg, of Rust, and of Ofen, are very highly valued, though but little known beyond the boundaries of the Austrian empire. The whole of the annual produce of wine is estimated by Blumenbach at 4,500,000 hogsheads, and valued at nearly ten millions sterling. Notwithstanding the proportion of woodland, the eastern part of the kingdom is much distressed from the want of fuel; but the west furnishes much wood, both for firing and building, and considerable quantities of gall-nuts, turpentine, pitch, tar, and pot and pearl ashes, for the supply of the surrounding countries. The other productions of agriculture which furnish commerce, are hemp, flax, and tobacco. This last article has been long and successfully cultivated; and that produced in the provinces of Tolna, of Fünfkirchen, and in the peninsula of Murakoz, is highly prized for its peculiarly aromatic flavour. The forests are of great extent, covering nearly 15,000,000 English acres. They furnish abundant fuel for home consumption; and some timber, with much charcoal, is exported. Vast quantities of gall-nuts are collected in the woods; and the bark, especially of the oak, is an article of considerable traffic with Turkey, and with other countries.

Cattle.

The breeding of cattle is an important branch of the rural economy of Hungary. The horses, though small, are active and hardy; but, in spite of the measures pursued by the government to improve the races, they are still much inferior to those of most parts of the empire. They are generally set to work at too early a period, and their food is usually scanty and bad. They have, however, been somewhat improved of late years by the institution of studs in different parts, whence stallions are gratuitously supplied. The whole number of horses does not exceed 480,000 of all kinds. The horned cattle are a race much valued in every part of the empire, though they receive but little attention. The extensive *steppes* between Debreczin, Temeswar, Neusatz, and Pesth, are the native homes of these beasts. Their number is 886,900 oxen, and 1,508,100 cows. These, by their sale to the surrounding countries, produce annually nearly L.500,000 sterling. The numbers of the sheep are stated to be upwards of 8,000,000. There are prodigious flocks on the plains between the Danube and the Theissa, and on the elevated grounds of that district. The wool is coarse, and the owners estimate the cheese, milk, and flesh, more than the fleeces. In Western Hungary, on the other hand, the large flocks having been much improved of late years by crosses with the Merino breeds, and with the sheep of Padua, yield fine wool, which, to the value of L.500,000, is exported. Swine are reared in abundance; and though, when cured, they form the principal animal food of the inhabitants, there are yearly from 200,000 to 250,000 of these animals exported. The feathered tribes furnish a part of the annual wealth of the country. The greater part of the goose feathers, in which the Jews of Prague trade, come from Hungary; and the capital of the Austrian dominions is supplied from thence with that commodity. The rearing of silk-worms has been of late much attended to in some of the southern parts of Hungary, especially in the Bannat. The mulberry trees are very flourishing, and great progress is expected in future, but the undertaking is yet in its infancy.

Minerals.

The southern part of Hungary is a country enriched by minerals of various kinds. About two thirds of the mines belong to the crown, and are worked on account of the government, under an expensive system of administration, and with a profusion of royal officers. These are formed into four divisions, the principal seats of which are at Chemnitz, Schmolnitz, Nagybanja, and Oravicza, and employ, in the various operations, about 45,000 workmen. The labourers occupied in these mining operations are generally emigrants from Moldavia and Wallachia. We have no statistical accounts of the actual produce of the mines; but that of gold, silver, and iron has of late years increased. The first two of these metals have advanced, in the last fifteen years, from the value of L.220,000 to nearly L.400,000, and the increase in iron has been in nearly the same proportion.

Manufactures.

The manufactures of Hungary are yet in an infant state. The kingdom has been long accustomed to supply raw materials to the surrounding countries, and to draw from them their manufactured goods. The inhabitants are not disposed to labour in confined houses; and, till within the last twenty years, their principal occupation, exclusively of agriculture, was confined to making very coarse cloths, and various kinds of woodware, for furniture, musical instruments, and toys. The spinning of flax is a domestic manufactory, carried on by the females of almost every peasant's family. The annual quantity produced is estimated at sixteen million of ells, or about ten million yards, the far greater part of which is consumed within the kingdom. The principal bleaching works are at Roseneau, where about 300,000 ells are annually whitened, all of the finer kind. There is much woollen cloth made in small manufactories scattered over the kingdom, but it is of a coarse quality, and adapted only for the use of the peasantry. Within the last thirty years more extensive factories have been established in Gacs, Illawa, Kaschau, Munkatsch, Lipersdorf, Mosztenie, and Presburg. These have been mostly founded by Germans, and the greater part of the operative people are of that nation. At these places the use of various kinds of machinery has been introduced, and the cloth made in them, from the wool of a mixed breed of sheep, partly of the Merino and partly of the Paduan races, is of fine quality and well finished. There are forty paper-mills in Hungary, which produce printing and writing paper, all of a very wretched quality, except some from the mill belonging to the university, which is tolerably good. Silks and ribbons are made at Pesth, Grosswardein, and Presburg, but to a very small extent. The leather of Hungary is much valued throughout the whole Austrian territories, but the quantity of curried leather, prepared mostly at Presburg, is not equal to the consumption; and the hides of their cattle are sent to Germany, from which they return in a state fit for use. The tanneries are numerous in Presburg, Fünfkirchen, Ratko, Zips, and Debreczin. The iron produced by the native mines is manufactured into the various articles which the wants of the inhabitants require, at Zips, Abouigvar, Sarosch, Zemplin, Vorschod, and through the whole county of Gomorer. The best steel is made in Diosgyvor, and the vicinity of Neusol; and the swords and other weapons manufactured in the different hardware districts are esteemed as of excellent quality, though of clumsy and grotesque forms. Glass is made (but scarcely any but green) in twenty-five glass-houses in different parts of the kingdom. The sugar refiners supply the domestic consumption. Snuff and tobacco are made almost exclusively from the plants raised on their own soil. The soap of Hungary, which is very good, is principally made from natron in Debreczin, where there are seventy-eight manufactories of that article. Linseed-oil, oil of turpentine, corn spirits, cordials, especially Rosoglio, and a medicine for wounds, known through Germany by the name of the Hungarian Balsam, refined saltpetre, and pearl ashes, are the productions of the other manufactories.

Commerce. Hungary is surrounded on every side by the other Austrian dominions. The states of that country are proud of their independence as a separate kingdom, and tenacious of their privileges, especially of their exemption from the taxes imposed by the cabinet of Vienna. As the emperor's government has no wish to embroil itself with the states by attempting internal taxation, it extracts a revenue by surrounding Hungary with custom-houses, where tolls are collected on every commodity that enters into the kingdom, or passes from it into the hereditary states. The toll thus collected is one-thirtieth part of the commodity, or three and a third per cent. on the value of it. The very high rate of carriage, arising from the bad state of the roads, is, however, a greater impediment to the exchange of commodities than even this tax at the frontiers. The principal trade of Hungary beyond the immediate boundaries is with Poland and Silesia, which countries draw from thence their wine, and with the north of Italy, to which its surplus corn is transported. The port of Fiume is connected with Hungary by the only good roads the kingdom possesses, and may be considered as its haven for exportation and importation, and as alone bringing it into contact with distant countries. The central point of internal trade is Pesth, where, at four great fairs, the concourse of buyers and sellers is so great, that the prices settled by them, if they do not absolutely govern, in a great degree regulate, those of the other parts of the kingdom. From the central city the commerce diverges in four great branches: 1*st*, Towards the German Austrian dominions by Raab, Presburg, Komorn, and Odenburg, at each of which places considerable business is transacted; 2*d*, towards Gallicia, through Kaschau, Eperies, and Leutschau; 3*d*, to Siebenburgen, Moldavia, and Wallachia, through Debreczin, Ezegedin, and Temeswar; and, 4*th*, to the Turkish dominions beyond the Danube, through Neusatz and Semlin. At all these places considerable annual fairs or markets are held, which are resorted to by vast numbers of merchants, not only from Germany and Poland, but by the Turks, Armenians, Greeks, and even Tartars. Besides the marts at these cities, there are in Hungary sixteen hundred other places where annual fairs are held. The means of internal transit furnished by the rivers are a great assistance to commerce. The Danube is navigable for craft of two hundred tons burden, the Theissa for those of one hundred; and the other rivers, the Save, the Drave, the Waag, the Gran, the Unna, and the Kulpa, are all navigable for smaller vessels of various dimensions. The recent introduction of steam navigation has been extended to Hungary, and promises great advantages to the future commerce with the Black Sea. Some impediments on the Danube have already been removed, and measures are in progress for removing the remainder; but already several steam-vessels have completed their voyage from Pesth to Constantinople. The chief commodities exported from Hungary are the raw products of the soil. The greatest in amount are live cattle; the next in value to these are, corn, tobacco, wine, hides, and wool. The chief imports are, colonial ware, linen, cotton, and woollen articles for clothing, and some few foreign luxuries. The value of the exports is said to exceed that of the imports to the amount of L.750,000 annually.

Constitution. The government of Hungary is a limited monarchy, at present hereditary in the house of Hapsburg; but, in case of the failure of all the branches of that family, the king, or rather dynasty, becomes elective by the assembled states or diet. The laws by which the constitution was founded, and by which it is maintained, are the *Golden Bull* of their king Andreas II., dated in 1222, the magna charta of the nobles, whose privileges are principally regarded; and these have been confirmed by the peace of Vienna in 1606, and of Lintz in 1647. By these two treaties also the free exercise of their religion is secured to the Protestant sectaries. All these interests were further confirmed by the diet of Presburg in 1687, and by the inauguration diploma of Leopold II. in 1790. These various charters and acts of the states have merely secured to the privileged orders their ancient rights, but have left the peasantry, or, in other words, the great mass of the population, in the same state of subjection as before their promulgation.

The kin The whole executive power is vested in the monarch. He is the source of all titles and offices, and nominates to the higher ecclesiastical dignities, and to the benches of justice. He makes war and peace, can call together and dissolve the diet, and draw forth the whole military population. He receives the incomes of all vacant ecclesiastical benefices, and is heir to the property of such noble families as become extinct. The direction of the universities and colleges belongs to the king, but to the higher offices in them he can only appoint those who are of noble birth. The appeals to Rome upon the affairs of the Catholic church can only be made through him, and the royal authority has been constantly exercised to contract the number and to limit the causes of such applications. The king must be of the Catholic religion, and, at his inauguration, must swear to maintain the privileges and rights of the states. Notwithstanding this oath, by various circumstances, many arising out of the late long wars, the power and influence of the crown have been recently very much extended. Within six months after succeeding to the throne, the king must call together the states, and in their presence, in the open air, swear to maintain the privileges of the states, to leave the crown of St Stephen within the kingdom, and to allow the states to elect a king, upon failure of issue both male and female of the Emperor Charles VI. Joseph I. and Leopold I. During a minority, the palatine is guardian of the king and kingdom; but the monarch is capable of assuming the exercise of power when he has completed his fourteenth year.

St s.

The states of Hungary (*status et ordines*) consist of, 1*st*, the prelates, to which class belong the archbishops, bishops, abbots, and priors of the Greek and Catholic churches; 2*d*, the temporal barons and magnates, the high bailiffs of the provinces, and the counts and independent noble proprietors of estates; 3*d*, the nobility or knights, who do not attend personally, but choose two deputies for each county (*komitat*) or province; and, 4*th*, the deputies from the royal cities. These members are said to be the representatives of Hungary, whilst the mass of the inhabitants, described in their law as *misera plebs contribuens*, have no connection with public affairs, except by paying taxes and furnishing recruits, from both which services the nobles and clergy are exempt. The purposes for which the states assemble are, the coronation of the king, the election of a palatine, the admission to or exclusion of nobles and cities from their rank, the granting subsidies and imposing taxes, and the framing new laws, or rather giving the assent of the assembly to such laws as the king may enact. By the constitution, the states should be convened every five years, or whenever any pressing circumstances require their assembling. Of these circumstances the king must judge, as the states are only convened by his summons. They meet in two chambers, or, as they are denominated, tables. The magnates' table is composed of the royal barons, the high hereditary officers of the kingdom, and the prelates, counts, and free landlords. The other chamber, called the states' table, consists of the deputies of the *komitats*, or the supleans of the nobles, the representatives of the royal free cities, and the persons appointed by such magnates as do not attend, who are called *ablegati absentium*. Though the states meet but in two chambers, yet they vote in four distinct bodies, and the absolute majority of those present determine each question in that body. If the king and three of these bodies determine any point, it becomes a law; and the fourth body has no suspending power. The king appears personally, or by his commissioner, and claims his prerogatives, and the states demand a confirmation of their rights. At the diet in 1792 there were present thirty bishops and other ecclesiastics, 178 counts, 131 hereditary officers and barons, sixteen law officers, thirty deputies of chapters, ninety-eight representatives of *komitats*, 115 supleans of absent magnates, and eighty-two deputies of cities. The sitting of the diet depends on the king, who has usually dismissed them as speedily as possible, out of regard to the general welfare of the people. During the meeting of the diet, all the courts of justice are shut up, and the deputies of the free cities and of the *komitats* are maintained at the time of the session at the expense of the people who send them, whilst the hereditary officers are kept by the crown. From these regulations, it is not to be wondered at that no anxiety for the meeting of the diet is manifested by any part of the kingdom. The king is well aware that no considerable sum beyond what is necessary for the expenses of the local government will often be granted by the diet; and when it is granted, as the whole is squeezed from the hard earnings of the peasants, it is collected with difficulty, and produces great oppression. As each *komitat* has its own provincial diet, in which its affairs are discussed and regulated, and to which appeals from the courts of justice of the nobles (*herren stuhls*) can be made, there is less occasion for the assembling of the general diet; and though, by the constitution, that body should meet every five years, yet, by a general acquiescence, its periodical convocation has been of late dispensed with. Whenever the diet is convoked, the summons of the monarch states the purposes for which they are to meet, in the orders to these subordinate diets; and no other proposition is or can be produced at the assembly. The local diets thus have an opportunity of discussing the propositions that are to be made to the general assembly, of determining what part to take, and of instructing their deputies in what manner to vote. No project of a new law originates with any of the states; and the sittings, though they were formerly very stormy, have of late been rather in compliance with ancient forms, and for purposes of display, than for any objects of great utility.

Great officers.

The principal officer of the kingdom is the palatine, who is the representative of the king, president of the diet, and of the supreme court of justice, dispenser of pardons, and mediator between the monarch and the states; his office continues only one year, but he may be re-appointed. Next to him is the judge of the supreme court, who is the president of the other two, and fills the office of palatine in the absence of that chief. The ban of the Croats follows next in rank, but has no official duties, unless at the coronation, when he carries the golden ball. The hereditary treasurer (*tavernicus*) has a seat in the supreme council, and is captain of the noble Hungarian body guards, who perform the palace duty.

Chancery court.

The administration is conducted by the emperor, through the means of the Hungarian court of chancery in Vienna, which is constituted of twenty-four state councillors, viz. three ecclesiastics, eleven magnates, and ten of knightly rank, all nominated by the monarch. This college exercises the superintendence over churches, schools, and charitable establishments, administers the funds of the universities and convents, and regulates the agriculture, the trade, and the feudal claims. This body has no original jurisdiction in matters of finance or of justice, but may be appealed to by the provincial diets or the local courts of law.

Oppressed state of the people.

The primary courts of law are under the control of the nobles, who appoint the judges and direct the procedure. The oppression in such courts towards those not noble has long been excessive, and, though somewhat mitigated since the reign of Maria Theresa, bears still the deep impression of the worst periods of the feudal government. The whole system of law seems calculated only to secure and perpetuate to the nobility the enormous power they possess. The nobles are exempt from all taxes and imposts of every kind; the only duty they owe to the state is that of personal service in war. If a person not noble assaults one who is so, the legal punishment is death, which is, however, now usually commuted into the forfeiture of all his property, with the privilege of reclaiming it whenever he shall have the means of paying for it a stipulated portion of the value. If a peasant is injured by a noble to whose estate he is attached, he can have no redress, since he can only sue for it in the name and through the medium of the very person against whom he seeks it. The court in which his complaint is to be heard, not only consists of persons who are generally the dependents of the presumed offender, but moreover they can only be assembled at his summons. If a peasant is injured by any other noble, he cannot seek redress in his own person, but only through the intervention of him on whose estate he lives; and such is the contempt in which the peasantry are held, that even this privilege must very often be nugatory. The law of entail is another injurious privilege of the nobility, common, indeed, to all the feudal countries, which puts it out of their power to alienate the estates to the detriment of the successors. The effect of this is, that the possessions of the nobles are of enormous extent, embracing often whole *komitats;* and they are held upon tenures which convert them into the nature of principalities. The kingdom indeed partakes more of the nature of a great military confederation of subordinate chiefs, under one hereditary leader, than of any other known form of government. As all the descendants of noble families are themselves noble, whilst property remains almost unalienable, the poverty into which individuals belonging to distant branches of these families fall is in proportion to their number. In Hungary it is estimated that one person in twenty is of noble birth, all possessing the obnoxious privileges here noticed; many of them, though free from all taxes, sunk to a state of most abject poverty, and some of them filling the offices of peasants or servants. The inhabitants of the free cities are supposed to be about equal in numbers to the nobility; and the remainder of the people, according to these estimates, amounting to eighteen out of every twenty, can have no protection from the laws, nor any resource when injured or oppressed by their superiors. "The noble," says Dr Bright, "pays no tribute, and goes freely through the country, subject to neither tolls nor duties; but the peasant is subject to pay tribute; and although there may be some nominal restrictions to the services due from him to the government, it can safely be said that there is no limit in point of fact to the services which he is compelled to perform. Whatever public work is to be executed, not only when a road is to be prepared, but when new roads are to be made, or bridges built, the county meeting gives the order, and the peasant dares not refuse to execute it. All soldiers passing through the country are quartered exclusively upon the peasantry. They must provide them, without recompense, with bread, and furnish their horses with corn; and, whenever called upon, by an order termed a *forespan order*, they must provide the person bringing it with horses and means of conveyance. Such an order is always employed by the officers of government; and whoever can in any way plead public business as the cause of his journey, takes care to provide himself with it. In all levies of soldiers, the whole falls upon the peasant, and the choice is left to the arbitrary discretion of the lord and his servants."

From the same intelligent traveller we learn, what, indeed, the observations of all ages have taught, that whilst the nobles are hospitable, high spirited, well informed, and zealous to promote such institutions and projects as they think calculated to benefit their country, the peasantry are not only poor, but idle, dissolute, and dishonest. Perhaps in no other country of Europe is highway robbery so frequent; and, as a remarkable trait in the character both of the noble and the peasant, we are told that to every nobleman's house a prison is attached, in which are to be constantly found from ten to twenty miserable wretches, pinioned in a way which would not be tolerated in England towards the worst felons. The dungeons in which they are immured are far more dismal and wretched than any prison in London can exhibit. The extreme viciousness of the Hungarian peasantry seems to have extinguished all feeling in the breasts of the higher nobles for their degraded state; and, instead of the wise policy which, by meliorating their condition, would improve their morals, they are left to endure those punishments which a different state of society would be likely to render unnecessary.

Militar force, a finance.

The military force and the financial affairs of this kingdom are so mixed up with those of the general administration, of the extensive expenditure of which they form a part, that it would be both difficult and tiresome to enter into the representation of them; and, besides, they vary so much from political events at different periods, that what would be correct at one time, would be defective at others.

Langua and lite ture.

Though Hungary has a national language, yet it is not generally spoken, nor supposed to be understood, by more than one third of the inhabitants. The only written language, until within a very late period, was the Latin, in which all their laws and public proceedings were promulgated; and it is still the most common medium of communication. It was not till the reign of Maria Theresa that any experiments were made to improve and polish the national language. When she formed her Hungarian guards, a number of young men of noble families were drawn to Vienna, where they had means of knowing the estimation in which the cultivation of learning was held in the more civilized parts of Europe, and were taught to feel the inferiority of their native country, in not possessing a national language and national literature. This stimulated them to exertions to remove the stigma, and gave birth to most of those writings of which the Hungarians boast. The cultivation of the vernacular tongue was further promoted by the attempt of the Emperor Joseph to introduce the German tongue into their public transactions; this roused the patriotic spirit of the Hungarians, and the effect of that spirit became visible in the extension and improvement of the native language. Since that period the study of this language has produced some good poets, who have generally dedicated their powers to the praises of their country, and to recording the merits of its most distinguished natives. As the subjects of their poetry are very little known beyond the limits of the country, we must trust to the reports of those who feel the most interest in the subjects of which it principally treats, and who, for that reason, may not be the most unbiassed critics.

The principal cities, and their population in 1834, were as follows:—

Pesth, with Buda or Ofen	95,000
Debreczin	46,000
Presburg	36,000
Theresienstadt	34,000
Szegedem	34,000
Misklaz	28,500
Nyir-Egybaza	20,000
Stuhlweisenburg	20,000
Komorn	18,500
Schemnitz	17,500
Raab	17,500
Grosswardein	17,000
Mako	17,000
Gyongyos	15,500
Boszormeny	15,000
Szathmar	14,500
Gyula	14,500
Fileghyaza	14,500
Kaschau	14,000
Odenburg	13,500

Esongrad	13,000
Temeswar	12,500
Gran	12,000
Szolnok	12,000
Pecs	11,500
Nagy-Karoly	11,500
Agram	11,500
Eszeck	11,500
Veszprim	10,500

The early history of this important kingdom is highly interesting, both as marking the tribes from Asia who established and finally spread themselves over the whole of Europe, and as illustrating the origin of that feudal system which ultimately produced the present state of civilization.

The inhabitants of this country are not to be confounded with those tribes called the Hunns, whom we are accustomed to consider as their progenitors, on account of the similarity of the names; a similarity which does not exist in their native language, but which has been given to them by foreigners.

The Hunns were, according to De Guignes's history of that people, a powerful but uneducated nation of Tartary, against whose incursions the great wall of China was constructed, about 209 years before the Christian era. In the time of Augustus they inhabited the shores of the Caspian Sea, from whence, being pressed westward by other tribes, they became the scourge of Europe, and gradually attained great power, which was at length wielded by Attila. But after his death in the year 453, the nation fell to ruin, though some of them were long to be found on the north of the Danube, and some on the shores of the Palus Mæotis, or Sea of Azoph, till at length their name totally disappeared.

The present people of Hungary, or, in their own language, the Magyars, made their first appearance in Europe in the year 894 of our era, having advanced from the southern shores of the Black Sea, under a leader named Almus. By himself and his son Arpad, the Bulgarians, the Slawen, the Wallachians, the Germans, Croatians, and Dalmatians, who were settled there, were either subdued, driven out, or extirpated, by the year 900. The land was at first divided amongst the heads of the several families; but in a short time the power was conceded to the chief, who assumed the title of duke, and the right of granting land to reward any deed of warlike merit.

The Magyars were no sooner in possession of the rich country, than their interference was requested by their rival neighbours for aid against each other; a request which, by such warriors, excited by their recent conquests, was not received with hesitation or delay. They soon extended their power in every direction by collecting a large and active body of cavalry, which was not to be resisted by any forces that could be collected to oppose them. They soon spread themselves, and in a few years were feelingly known to the north in Hamburg and Bremen, to the west in France, to the south in Otranto, and to the east at Constantinople. In the year 933 they first came, under their duke Zwenlibold, in contact with the Emperor of Germany, Henry I., whom they defeated in a great battle near Merseburg, on the river Saal, in Saxony. They penetrated into Franconia, but there, at Drommling on the Ohr, they met a severe repulse. In a subsequent incursion into Bavaria, after some early successes, they experienced a sanguinary defeat on the river Lech, from the German king Otho I., in the year 955. The continued attacks of the more civilized people of the west drove them in the course of a few years wholly out of Germany. As they became settled in their country, they gradually adopted more tranquil habits. They had learned something of the simplest arts of agriculture in the countries which they had invaded; and the numerous prisoners whom they had brought with them were made to cultivate the land, and to practise the simplest mechanic arts. This progress continued under one of their dukes, Taksony, who used his power to convince his followers that there were other ways of extending their authority than by warlike expeditions. Under Geysa or Geesa, the great-grandson of Arpad, who married Carolta, a Christian princess, an important event took place. He was celebrated for his hospitality, and invited foreigners to settle in his country; and, amongst others, he, at the instigation of his wife, called in some of the priests. By gradual steps their religion was also introduced; and in the year 973 Geysa and some thousands of his chief people embraced the Christian faith, and were admitted into the bosom of the church by a public baptism.

By the aid of the Bishop Pellegrin of Passau, and of the Bishop of Prague, Adelbert, he strove to overcome the reluctance felt by the greater part of his people to adopt the new religion. This task was left to his son and successor Stephen, who for his success in conversion, and for his extirpation of heathenism, was canonized after his death; and in his lifetime was presented by Pope Silvester II. with a crown, the remains of which are still preserved, a patriarchal crucifix, and the title of apostolic king. The throne of Hungary was thus founded in the year 1000, and was surrounded by an aristocracy and an hierarchy calculated to support it. The king endowed ten rich bishoprics, and divided his dominion into seventy-two countships (*gespanschafts*), over each of which was placed a chief, with full civil and military authority, in the exercise of which he was alone accountable to the monarch himself.

These nobles and prelates were formed into a senate, and, in conjunction with them, the king framed a constitution, which has in its groundwork existed to the present time. In the year 1002, the chief of Siebenburgen, named Gyula, remained in heathenism, and had contracted alliances with the yet unconverted subjects of Stephen. He was attacked and subdued, and his dominions added to the kingdom of Hungary. Stephen married a sister of the Emperor of Germany, Henry II.; and being thus connected, was universally acknowledged as a king, and the succession declared to be hereditary in his descendants. But he died leaving no issue, and for several years the kingdom was in a state of anarchy, some parts of it acknowledging one sovereign, and others a different one, and contending with greater violence, because during the contests the remains of heathenism still continued, and its adherents formed a powerful party. They were, however, suppressed by one of the race of their ancient kings, Ladislaus, who, in 1077, united in himself the supreme power, and added to its strength by conquering and enclosing within his dominions the provinces of Croatia and Sclavonia. In this course he was followed by his son Solaman, who increased his dominion in 1095 by the subjugation of Dalmatia and Bosnia. A daughter of this King Ladislaus, named Sophia, married a prince of the house of Hapsburg, Dukes of Austria; and it is through this lady that the present occupiers of the imperial throne trace their pedigree up to Arpad, one of the earliest founders of the kingdom of Hungary. Both these kings were of great benefit to the country, by the wise laws they introduced, and the internal regulations which they established. Under them and their successors colonists were introduced both from Flanders and from Alsace, and many Germans from various circles. These were mostly established in Siebenburgen; but everywhere they communicated better practices in cultivation, and in the various arts of civilized life. Belas II. one of their kings, who had been educated at the court of Byzantium, induced the Hungarians, who had been accustomed to pass the greater part of their time under tents, to build permanent houses, and to erect towns and cities, which were endowed with privileges; and, in imitation of what he had seen in the Greek capital, he established a court, with great offices of state, to give dignity and power to his throne.

In the year 1186, this Belas married Margaretta, daughter of Henry king of France, the widow of the son of Henry II. king of England. She brought with her to the Hungarian court some degree of French elegance, and induced several of the younger nobles to repair to Paris for their improvement in learning and in military exercises.

Under his successor Andreas II. the power of the great nobles was exercised to compel that weak prince to extend and strengthen their influence, and they extorted from him a treaty in their favour in 1223, which has been denominated the Golden Bull.

Belas IV. was anxious to make some alterations, and before he could adopt and prepare them, was interrupted by incursions from the Mongul tribes, who for a time spread devastation over a great part of the country. They were, however, ultimately repulsed, and the king restored to his authority. He then drew to Hungary a vast number of German colonists, which improved the state of civilization; and he founded several cities, fortified them, and conferred extensive privileges upon the burghers, who thus became in process of time a counterbalance to the power of the nobles. In 1241 his son Stephen was crowned as co-regent with the father. This gave rise to contests between the two sovereigns, by which the royal power suffered severely. Andreas IV. succeeded to the throne, and dying in 1301, the male line of the Arpad race became extinct. The female line gave the crown to the family of Anjou, under whose princes Hungary attained its highest pitch of prosperity and power. Louis, the first of the new dynasty, was the son of Robert, originally the Norman, who ruled in Sicily, and had married the Princess Elizabeth of Poland. Under this prince the thrones of Hungary and Poland were united, he having obtained the first in 1342, and the second on the death of his uncle in 1370, and became the greatest power in Europe, extending from the Adriatic to the Baltic Seas. The several public institutions were improved, the better cultivation of the soil was promoted, the administration of justice established, and cases which had before been decided by wager of battle determined by judges. This prince also endeavoured to introduce learning, and with that view established a university at Ofen, and a free school in Fünfkirchen. He relieved commerce from many burdensome imposts, and, according to the policy of the age, sought to preserve his subjects from heavy usury, by banishing all the Jews from his dominions.

Louis died without male issue, and his two daughters, Hedwig and Maria, divided his dominions. The former ascended the throne of Poland, and the latter that of Hungary. Maria married Siegmund, the son of the Emperor Charles IV. who, with his wife, was crowned in 1387.

Siegmund's reign was distinguished by his contests with the nobles, who held him a prisoner at one period, during which Red Russia was seized upon by the Poles, a portion of Dalmatia by the Venetian republic, and some parts of the eastern frontier by the Turks, who since their appearance began to annoy Hungary, which thus became the bulwark of Europe against the infidels. In this reign also commenced the religious wars of the Hussites. Siegmund left only a daughter, Elizabeth, who married the Archduke Albert of Austria; the latter died in 1436, leaving her pregnant with a son, Ladislaus, who bore the surname of Posthumus. He was declared king, and the government conducted by John de Hunoyed, who, under the title of stadtholder, saved Belgrade, and indeed Hungary, from the Turks. On attaining his majority in 1456, Ladislaus was dissatisfied with his great benefactor, and most unjustly persecuted his family. The eldest of the Hunyades was put to death, and the youngest, named Mathias, distinguished by the surname of Corvinus, was imprisoned. Ladislaus died in 1457, without issue, when Mathias seized on the vacant throne, and was confirmed in it by an assembly of the states collected at Pesth, in spite of the strong pretensions of the Emperor Frederick III.

Under the new reign great vigour was displayed. Mathias, though an elected king, knew how to emancipate himself from the dominion of those who had chosen him, as well as to oppose with success all external enemies. He recovered the provinces which had been lost by his predecessors, and by hostilities gained others. He drove the Turks out of Bosnia. In a war with George, king of Bohemia, he seized Moravia, Silesia, and Lausatia, and deprived the emperor himself of some of his provinces, especially of the land below the Ens. His active spirit enlivened commerce, improved agriculture, and formed excellent institutions for judicial and fiscal administration. To all his other watchful precautions he added that of maintaining a constant regularly-armed force.

This flourishing state of Hungary vanished speedily after the death of Mathias, when, in 1490, Wladislaus of Bohemia, the grandson of Albert and Elizabeth, was raised by the states to the throne. He had from the first powerful parties to contend with amongst the nobles, and at length a kind of servile war to engage in. The peasants rose in every part at the instigation of some amongst the nobles, and the insurrection was not quelled till 1512, and then only with the loss of the lives of 40,000 of these miserable people, and the condemnation of others to the condition of slaves.

During this reign Count John Zapolya raised a powerful faction in the assembly of the states, by proposing a law in 1505, to revive an ancient enactment, that in case of the death of a king without issue, the states should elect to the throne none but a native of Hungary. This attempt was frustrated by a treaty entered into with the emperor, and after the death of the king his son Ludwig succeeded him; but in an unhappy battle with the Turks at Mohacz in 1526, Ludwig fell, and Zapolya was declared by his party the successor to the throne. A larger party of the states, however, declared in favour of Ferdinand, who had married Anna, the daughter of Wladislaus. A civil war ensued, which drove Zapolya from the station he had assumed, and, as a denounced traitor, he fled to the Turks, by whose assistance he was enabled to make a predatory incursion, which was repressed after some time; and though Ferdinand, now become emperor, was fairly established, Zapolya was restored to his estates and his dignities, and the peasants who had lost their privileges by the insurrection of 1512 were re-instated in the rights they had before possessed. The want of success in the attempts of Zapolya has been attributed to his avowed persecution of heretics, by which the Protestants, who had become numerous, were induced to strengthen the party of the house of Austria, who, after being safely placed on the throne, were far from acting in conformity with the views of those who maintained that they had turned the scale in favour of that family.

At length, at an assembly of the states held in 1547, the hereditary right of the house of Austria to the throne of Hungary was solemnly established; and from that period the history of Hungary is included in that of the imperial house which long gave a succession of emperors to Germany, and has at length assumed the title of Emperors of Austria.

Hungary-*Water*, a distilled water prepared from the tops of flowers of rosemary, and so denominated from a queen of Hungary, for whose use it was first made.

HUNGER, an uneasy sensation occasioned by long abstinence from food when the body is in a healthy state. The following useful observations upon hunger or famine are extracted from a paper by Dr Percival in the second volume of the *Manchester Transactions.*

In a state of famine, life may be protracted, with less pain and misery, by means of a moderate allowance of water. For the acrimony and putrefaction of the humours are obviated by such dilution; the small vessels are kept permeable; and the lungs are furnished with that moisture which is essential to the performance of their functions. Fontanus, a writer of respectable authority in the estimation of Morgagni, relates the history of a woman who obstinately refused to take any sustenance, except twice, during the space of fifty days, at the end of which period she died. But he adds, that she used water by way of drink, though in small quantity. Redi, who made many experiments (cruel and unjustifiable in our opinion) to ascertain the effects of fasting on fowls, observed that none were able to support life beyond the ninth day to whom drink was denied, whereas one indulged with water lived more than twenty days.

Hippocrates has observed, that children are more affected by abstinence than young persons, these more than the middle-aged, and the middle-aged more than old men. The power to endure famine, however, must depend no less upon the state of health and strength than upon the age of the sufferer. There are also particular constitutions which do not suffer much pain from the calls of hunger. Dr Percival was informed by a young physician from Geneva, that when he was a student at Montpellier he fasted three nights and four days, with no other refreshment than a pint of water daily. His hunger was keen, but never painful, during the first and second days of his abstinence; and the two following days he perceived only a faintness when he attempted either bodily or mental exertion. A sense of coldness was diffused over his whole frame, but more particularly affected the extremities. His mind was in a very unusual state of pusillanimity; and he experienced a great tendency to tears whenever he recollected the circumstance which had been the occasion of his fasting. During the whole period, the alvine excretions were suppressed, but not those by the kidneys; and at the close of it his skin became tinged with a shade of yellow. The first food he took was veal broth, which had something of an intoxicating effect, producing a glow of warmth, and raising his spirits, so as to render him ashamed of his despondency. Perhaps, in the case of Sextius Baculus, as recorded in the Commentaries of Cæsar (lib. vi.), the extraordinary courage and prowess which he suddenly exerted might be aided by the exhilarating effect of sustenance, which, under such circumstances, it is probable he would no longer decline. The fact, however, evinces that neither his sickness nor the sensations of hunger had been so violent as much to impair his strength of body or vigour of mind. Pomponius Atticus, the celebrated friend of Cicero, who put a voluntary end to his life in the seventy-seventh year of his age by refusing all food, appears to have experienced ease from his disorder, rather than any acute sufferings, by famine. "Sic cum biduo cibo se abstinuisset, subito febris decessit, leviorque morbus esse cœpit; tamen propositum nihilo secius peregit. Itaque die quinto, postquam id consilium inierat, decessit."[1] From the former circumstance, it has been conjectured that he did not wholly deny himself the use of water, or of some other diluent. But though a few examples of this kind may be produced, we have the evidence of numerous melancholy facts to show that the pressure of want is agonizing to the human frame. "I have talked," says an ingenious writer,[2] "with a captain of a ship who was one of six that endured it in its extremity, and who was the only person that had not lost his senses when they received accidental relief. He assured me his pains at first were so great as to be often tempted to eat a part of one of the men who died, and which the rest of his crew actually for some time lived upon. He said that, during the continuance of this paroxysm, he found his pains insupportable, and was desirous at one time of anticipating that death which he thought inevitable. But his pains, he said, gradually decreased after the sixth day (for they had water in the ship, which kept them alive so long), and then he was in a state rather of languor than desire; nor did he much wish for food, except when he saw others eating; and that for a while revived his appetite, though with diminished importunity. The latter part of the time, when his health was almost destroyed, a thousand strange images rose upon his mind, and every one of his senses began to bring him wrong information. The most fragrant perfumes appeared to him to have a fetid smell; and every thing he looked at took a greenish hue, and sometimes a yellow. When he was presented with food by the ship's company that took him and his men up, four of whom died shortly after, he could not help looking upon it with loathing instead of desire; and it was not till after four days that his stomach was brought to its natural tone, when the violence of his appetite returned with a sort of canine eagerness."

To those who by their occupations are exposed to such dreadful calamities, it is of serious importance to be instructed in the means of alleviating them. The American Indians are said to use a composition of the juice of tobacco, and the shells of snails, cockles, and oysters calcined, whenever they undertake a long journey, and are likely to be destitute of provisions. It is probable the shells are not burned into quicklime, but only so as to destroy their tenacity, and to render them fit for levigation. The mass is dried, and formed into pills of a proper size to be held between the gum and lip, which, being gradually dissolved and swallowed, deaden the sensations both of hunger and of thirst. Tobacco, by its narcotic quality, seems well adapted to counteract the uneasy impressions which the gastric juice makes on the nerves of the stomach when it is empty; and the combination of testaceous powder with it may tend to correct the secretion that is supposed to be the chief agent in digestion, and which, if not acid, is always united with acidity. Certain at least it is, that their operation is both grateful and salutary; for we find the luxurious inhabitants of the East Indies mix them with the betel-nut, to the chewing of which they are universally and immoderately addicted. Perhaps such absorbents may be usefully applied, both to divide the doses and to moderate the virulence of the tobacco. For, in the internal exhibition of this plant, much caution is required, as it produces sickness, vertigo, cold clammy sweats, and a train of other formidable symptoms, when taken in too large a quantity. During the time of war, the impressed sailors frequently bring on these maladies that they may be admitted into the hospitals, and released from servitude. It would be an easy and safe experiment to ascertain the efficacy and to adjust the ingredients of the Indian composition mentioned; and there is reason to believe that the trial would be in some degree successful; for it is known that smoking tobacco gives relief to those habitual pains of the stomach which appear to arise from the irritation of the gastric secretion. The like effect is sometimes produced by increasing the flow of saliva, and swallowing what is thus discharged. And Dr Percival has related the case of a gentleman who used to masticate, many hours daily, a piece of lead, which being neither hard, friable, nor offensive to the palate, suited his purpose, as he thought, better than any other substance. He continued the custom for many years, deriving great ease from it, and suffering no sensible injury from the poisonous quality of the metal. On mentioning this fact to a navy surgeon, the doctor was told that the sailors, when in hot climates, are wont to mitigate thirst by rolling a bullet in their mouths. A more innocent mean, the doctor observes, might be devised; but the efficacy of this evinces, that the salivary glands are for a while capable of furnishing a substitute for drink. When a scarcity of water occurs at sea, Dr Franklin has advised that the mariners should bathe themselves in tubs of salt water. For, in pursuing the amusement of swimming, he observed, that however thirsty he was before immersion, he never continued so afterwards; and that, though he soaked himself several hours in the day, and several days successively, in salt water, he perceived not, in consequence of it, the least taste of saltness in his mouth. He also further suggests, that the same good effect might perhaps be derived from dipping the sailors' apparel in the sea, and expresses a confidence that no danger of catching cold would ensue.

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[1] Corn. Nepos, *in Vita Pompon. Attici.*

[2] Dr Goldsmith's *History of the Earth*, vol. ii. p. 126.

To prevent the calamity of famine at sea, it has been proposed by Dr Lind, that the powder of salep should constitute part of the provisions of every ship's company. This powder and portable soup, dissolved in boiling water, form a rich thick jelly; and an ounce of each of these articles furnishes one day's subsistence to a healthy full-grown man. Indeed, from Dr Percival's experiments it appears, that salep contains more nutritious matter, in proportion to its bulk, than any other vegetable production now used as food. It has the property also of concealing the nauseous taste of salt water; and consequently may be of great advantage at sea, when the stock of fresh water is so far consumed that the mariners are put upon short allowance. By the same mucilaginous quality, it covers the offensiveness, and even in some measure corrects the acrimony, of salted and putrescent meats. But, as a preservative against hunger, salep would be most efficaciously combined with an equal weight of beef suet. By swallowing little balls of this lubricating compound at proper intervals, the coats of the stomach would be defended from irritation; and as oils and mucilages are highly nutritive, of slow digestion, and indisposed to pass off by perspiration, they are peculiarly well adapted to support life in small quantities. This composition is superior in simplicity, and perhaps equal in efficacy, to the following one, so much extolled by Avicenna the celebrated Arabian physician, to whom we are indebted for the introduction of rhubarb, cassia, tamarinds, and senna, into the materia medica. "Take sweet almonds and beef suet, of each one pound; of the oil of violets two ounces; and of the roots of marshmallows one ounce; bray these ingredients together in a mortar, and form the mass into boluses about the size of a common nut." Animal fat is singularly powerful in assuaging the most acute sensations of thirst, as appears from the narrative of the sufferings experienced by those who were confined in the black hole at Calcutta. A hundred and forty-six persons, exhausted by fatigue and military duty, were there thrust together into a chamber of eighteen cubic feet, having only two windows, strongly barred with iron, from which, in a close sultry night, and in such a climate as that of Bengal, little or no circulation of fresh air could be enjoyed. In a few minutes these unhappy wretches fell into such a profuse perspiration, that an idea can hardly be formed of it; and this again was succeeded by a raging thirst, which increased in proportion as the body was drained of its moisture. Water, water, became the universal cry; and an old soldier on the outside, through pity, furnished them with a few skinfuls of it. But these scanty supplies, like sprinklings thrown on the fire, served only to feed and increase the flame. From this experience of its effects, Mr Holwell, their chief, determined to drink no more, and kept his mouth moist by sucking the perspiration out of his shirt sleeves, and catching the drops as they fell from his head and face. "You cannot imagine," says he, "how unhappy I was if any of them escaped me." He came into the prison without his coat, the season being too hot to bear it; and one of his miserable companions, observing the expedient he had hit upon of allaying his thirst, robbed him from time to time of a considerable part of his store. This plunderer, whom he found to be a young gentleman in the service of the East India Company, afterwards acknowledged that he owed his life to the many comfortable draughts which he derived from him. Before Mr Holwell adopted this mode of relief, he had attempted, in an ungovernable fit of thirst, to drink his own urine; but it was so intensely bitter that a second taste could not be endured; whereas, he assures us, no Bristol water could be more soft and pleasant than his perspiration. And this, we may presume, consisted chiefly of animal fat, melted by excessive heat, and exuding from the cellular membrane through the pores of the skin.

Persons who have been accustomed to animal food are soon reduced when supplied only with the farinacea. Several years ago, to determine the comparative nutritive powers of different substances, an ingenious young physician, as Dr Percival informs us, made a variety of experiments on himself, to which he unfortunately fell a sacrifice. He lived a month upon bread and water; and under this regimen of diet he every day diminished much in his weight.

In attempts to recover those who have suffered under the calamities of famine, great circumspection is required. Warmth, cordials, and food, are the means to be employed; and it is evident that these may prove too powerful in their operation, if not administered with caution and judgment. For the body, by long fasting, is reduced to a state of more than infantile debility; the minuter vessels of the brain, and of the other organs, collapse for want of fluids to distend them; the stomach and intestines shrink in their capacity; and the heart languidly vibrates, having scarcely sufficient energy to propel the scanty current of blood. Under such circumstances, a proper application of heat seems an essential measure, and may be effected by placing on each side a healthy man in contact with the patient. Pediluvia or fomentations may also be used with advantage. The temperature of these should be lower than that of the human body, and gradually increased according to the effects of their stimulus. New milk, weak broth, or water gruel, ought to be employed both for the one and the other; as nutriment may be conveyed into the system this way, by passages probably the most pervious in a state of fasting, if not too long protracted. "A lad at Newmarket[1] having been almost starved in order that he might be reduced to a proper weight for riding a match, was weighed at nine o'clock in the morning, and again at ten; and he was found to have gained near thirty ounces in weight in the course of an hour, though he had only drank half a glass of wine in the interval. The wine probably stimulated the action of the nervous system, and incited nature, exhausted by abstinence, to open the absorbent pores of the whole body, in order to suck in some nourishment from the air." But no such absorption as this can be expected in a state of extreme weakness and emaciation gradually induced, because the lymphatics must partake of the general want of tone and energy. And notwithstanding the salutary effects of wine in the case of the jockey, who, it is likely, had been reduced by sweating as well as by abstinence, such a stimulant might prove dangerous, and even fatal, in other cases. It appears safer to advise the exhibition of cordials in very small doses, and at first considerably diluted. Slender wine whey will perhaps best answer this purpose, and afford, at the same time, an easy and pleasant nourishment. When the stomach has been a little strengthened, an egg may be mixed with the whey, or administered under some other agreeable form. The yolk of one was, to Cornaro, sufficient for a meal; and the narrative of this noble Venetian, in whom a fever was excited by the addition of only two ounces of food to his daily allowance, shows that the return to a full diet should be conducted with great caution, and by very slow gradations.

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[1] Watson's *Chemical Essays*, vol. iii. p. 101.

HUNGERFORD, a market-town of the county of Wilts, in the hundred of Kentbury, but a part of it is within the county of Berks. It is sixty-eight miles from London, on the road to Bath, and is watered by the river Kennet. It has some trade by the Kennet and Avon Canal, both with London and with Bristol. There is a market, which is held on Wednesday. The church is a very ancient building.

HUNINGEN, a town of the arrondissement of Altkirch, in the department of the Upper Rhine, in France. It is on the Rhine, and was strongly fortified till 1815; and being within two miles of the Swiss frontier, was deemed of military importance, as commanding the river. It contains about 1000 inhabitants. Long. 7. 30. E. Lat. 47. 42. N.

HUNNS, a fierce and savage nation, who formerly inhabited that part of Sarmatia bordering on the Palus Mæotis and the Tanais, the ancient boundary between Europe and Asia. Their country, as described by Procopius, lay north of Mount Caucasus, which, extending from the Euxine to the Caspian Seas, separates Asiatic Sarmatia from Colchis, Iberia, and Albania, and occupies the isthmus between the two seas above mentioned. Here they resided, unknown to other nations, and themselves ignorant of other countries, till the year 376. At this time, a hind pursued by the hunters, or, according to some authors, an ox stung by a gad-fly, having passed the marsh, was followed by some Hunns to the other side, where they discovered a country much more agreeable than their own. On their return, having acquainted their countrymen with what they had seen, the whole nation passed the marsh, and having attacked the Alans, who dwelt on the banks of the Tanais, almost exterminated them. They next fell upon the Ostrogoths, whom they drove out of their country, and forced to retire to the plains between the Borysthenes and the Tanais, now known by the name of Podolia. They next attacked the Visigoths, whom they obliged to shelter themselves in the most mountainous parts of their country; and at last the Gothic nations, finding it impossible to withstand such an inundation of barbarians, obtained leave from the Emperor Valens to settle in Thrace.

The Hunns thus became in 376 masters of all the country between the Tanais and Danube, where they continued quietly till the year 388, when great numbers of them were taken into the pay of Theodosius I.; but, in the mean time, a party of them, called the Nephthalite or White Hunns, who had continued in Asia, overran all Mesopotamia, and even laid siege to Edessa, where they were repulsed with great slaughter by the Romans. The European Hunns frequently passed the Danube, and committed the greatest ravages in the western empire; sometimes they also fell upon the eastern provinces, where they put all to fire and sword. They were often defeated and repulsed by the Romans; but the empire was now too weak to subdue or prevent them from making excursions; so that they continued to make encroachments, and became every day more formidable than before. In 411, the Hunns, under Attila, threatened the western empire with total destruction. This monarch, having made himself master of all the northern countries from the confines of Persia to the banks of the Rhine, invaded Mæsia, Thrace, and Illyricum, and made such progress, that the emperor not thinking himself safe at Constantinople, withdrew into Asia. Attila then broke into Gaul, where he took and destroyed several cities, and massacred the inhabitants with the greatest cruelty. At last he was driven out with great slaughter by Ætius the Roman general, and Theodoric king of the Goths, and could never afterwards make any great progress. About the year 452 or 453 Attila died, and his kingdom was immediately split into a number of small ones by his numerous children, who waged perpetual war with one another. The Hunns then ceased to be formidable, and became daily less able to cope with the other barbarous nations whom Attila had kept in subjection. Still, however, their dominion was considerable; and in the time of Charles the Great they were masters of Transylvania, Wallachia, Servia, Carniola, Carinthia, and the greater part of Austria, together with Bosnia, Sclavonia, and that part of Hungary which is situated beyond the Danube. In the year 776, whilst Charles was in Saxony, two princes of the Hunns, Caganus and Jugunus, sent ambassadors to him, desiring his friendship and alliance. Charles received them with extraordinary marks of friendship, and readily complied with their request. However, they not long afterwards entered into an alliance with Taffila duke of Bavaria, who had revolted from Charles, and raised great disturbances in Germany. Charles dissembled his resentment till he had entirely reduced Bavaria, when he resolved to revenge himself on the Hunns for the underhand succours they had given to his enemy. Accordingly, he ordered levies to be made throughout his dominions, and having assembled a very numerous army, divided it into two bodies, one of which he commanded himself, and the other he committed to the care of his generals. The two armies entered the kingdom of the Hunns at different places, ravaged their country far and wide, burned their villages, and took all their strongholds. This he continued for eight years, till the people were almost totally extirpated; nor did the Hunns ever afterwards recover the blow, or appear as a distinct nation.

There were two different nations which went by the name of Hunns; the Nephthalite or White Hunns, and the Sarmatian or Scythian Hunns. The former inhabited a rich country bordering to the north on Persia, and at a great distance from the Sarmatian or Scythian Hunns, with whom they had no intercourse, nor the least resemblance either in their persons or manners. They were a powerful nation, and often served against the Romans in the Persian armies; but in the reign of the Emperor Zeno, being provoked by Perozes king of Persia laying claim to part of their country, they defeated the Persians in two pitched battles, slew their king, overran all Persia, and held it in subjection for the space of two years, obliging Cabades, the son and successor of Perozes, to pay them an annual tribute. These Hunns, called by the writers of those times the White Hunns, did not wander, like the others, from place to place; but, contented with their own country, which supplied them with all necessaries, they lived under a regular government, subject to one prince, and seldom made inroads, unless provoked, either into the Persian or Roman territories. They lived according to their own laws, and dealt uprightly with one another, as well as with the neighbouring tribes. Each of their great men used to choose twenty or more companions to enjoy with him his wealth, and partake of all his diversions; but, upon his decease, they were all buried with him in the same grave. This custom savours of extreme barbarity; but in every other respect the Nephthalite were a less ferocious race than the Scythian Hunns, who, breaking into the empire, filled most of the provinces of Europe with blood and slaughter.

The latter were, according to Ammianus Marcellinus, a savage race, exceeding in cruelty the most barbarous nations. According to Jornandes, they began to practise their cruelty upon their own children the very first day they came into the world, cutting and mangling the cheeks of their males, to prevent the growth of hair, which, contrary to the sentiments of other nations, they must have looked upon as unbecoming and unmanly. They had, perhaps, in this practice another view, which Jornandes seems to insinuate elsewhere, namely, to strike terror into the enemy with their countenances thus deformed and covered with scars. They had no other food but roots and raw meat, being quite unacquainted with the use of fire; they had no houses at all, not even huts; they lived constantly exposed to the air, in the woods and on the mountains, where, from their infancy, they were inured to hunger, thirst, and all manner of hardships; and they had such an aversion to houses, which they called the sepulchres of the living, that, when they migrated into other countries, they could hardly be prevailed upon to come within the walls of any house, not thinking themselves safe when shut up and covered. They used even to eat and sleep on horseback, scarcely ever dismounting; a circumstance which, in all likelihood, induced Zosimus to assert that the Hunns could not walk. They covered their nakedness with goats' skins, or the skins of a sort of mice sewed together. Day and night were indifferent to them, as to buying, selling, eating, and drinking. They had no law, nor any kind of religion, but complied with their inclinations, whenever these prompted them, without the least restraint, or distinction between good and evil. In war they began the battle with great fury and a hideous noise; but if they met with a vigorous opposition, their fury began to abate after the first onset; and when once put into disorder, they never rallied, but fled in the utmost confusion. They were quite unacquainted with the art of besieging towns; and authors observe, that they seldom or never attacked the enemy's camp. They were a faithless nation, and thought themselves no longer bound by the most solemn treaties than they found their advantage in observing these. Hence we often find them, upon the least prospect of obtaining more advantageous conditions, breaking into the Roman empire, in defiance of the most solemn oaths and engagements. Several corps of Hunns, after their coming into Europe, served in the Roman armies against the Goths and other nations; nay, they were ready for hire to fight against each other, being blind to every consideration excepting that of interest. For further information on this subject, the reader is referred to the learned and profound work of De Guignes, of which some account is given in the biographical notice of the author. See article GUIGNES.

HUNTER, a name given to a horse qualified to carry a person in the chase. See HORSE.

HUNTER, *Dr William*, a celebrated anatomist and physician, was born on the 23d of May 1718, at Kilbride, in the county of Lanark, in Scotland. He was the seventh child of John and Agnes Hunter, who resided on a small estate in that parish called Long Calderwood, which had been long in the possession of his family. His great grandfather by his father's side was a younger son of Hunter of Hunterston, chief of the family of that name. At the age of fourteen his father sent him to the College of Glasgow. In this seminary he passed five years, and by his prudent behaviour and diligence acquired the esteem of the professors, and the reputation of being a good scholar. His father had designed him for the church; but the idea of subscribing to articles of faith was so repugnant to the liberal mode of thinking which he had already adopted, that he felt an insuperable aversion to theological pursuits. In this state of mind he happened to become acquainted with Dr Cullen, afterwards so celebrated as professor at Edinburgh, who was then just established in practice at Hamilton under the patronage of the Duke of Hamilton. Dr Cullen's conversation soon determined him to lay aside all thoughts of the church, and to devote himself to the profession of physic. His father's consent having been previously obtained, Mr Hunter in 1737 went to reside with Dr Cullen. In the family of this excellent friend and preceptor he passed nearly three years; and these, as he was often heard to acknowledge, were the happiest of his life. It was then agreed that he should go to prosecute his medical studies at Edinburgh and London, and afterwards return to settle at Hamilton in partnership with Dr Cullen. He accordingly set out for Edinburgh in November 1740, and continued there till the following spring, attending the lectures of the medical professors, and amongst others those of Dr Alexander Monro, who, many years afterwards, in allusion to this circumstance, styled himself his old master.

Mr Hunter arrived in London in the summer of 1741, and took up his residence at the house of Dr Smellie, who was at that time an apothecary in Pall Mall. He brought with him a letter of recommendation to Dr James Douglas, from Mr Foulis, printer in Glasgow, who had been useful to the doctor in collecting for him different editions of Horace. Dr Douglas was then intent on a great anatomical work on the bones, which he did not live to complete, and was looking out for a young man of abilities and industry whom he might employ as a dissector. This induced him to pay particular attention to Mr Hunter; and finding him acute and sensible, he desired him to make him another visit. A second conversation confirmed the doctor in the good opinion he had formed of Mr Hunter; and without any further hesitation he invited him into his family to assist in his dissections, and to superintend the education of his son. Mr Hunter having accepted Dr Douglas's invitation, was by his friendly assistance enabled to enter himself as a surgeon's pupil at St George's Hospital under Mr James Wilkie, and as a dissecting pupil under Dr Frank Nichols, who at that time taught anatomy with considerable reputation. He likewise attended a course of lectures on experimental philosophy delivered by Dr Desaguliers. Of these means of improvement he did not fail to make a proper use. He soon became expert in dissection, and Dr Douglas was at the expense of having several of his preparations engraved. But before many months had elapsed, he had the misfortune to lose this excellent friend. The death of Dr Douglas, however, made no change in the situation of our author. He continued to reside with the doctor's family, and to pursue his studies with the same diligence as before.

In 1743 he communicated to the Royal Society an essay upon the structure and diseases of articulating cartilages. This ingenious paper, on a subject which till then had not been sufficiently investigated, affords a striking testimony of the rapid progress he had made in his anatomical inquiries. As he had it in contemplation to teach anatomy, his attention was directed principally to this object; and it deserves to be mentioned as an additional mark of his prudence, that he did not precipitately engage in the attempt, but passed several years in acquiring such a degree of knowledge, and such a collection of preparations, as might ensure his success. Dr Nichols, to whom he communicated his scheme, and who about that time declined giving lectures in favour of Dr Lawrence, did not give him much encouragement to prosecute it. But at length an opportunity presented itself for the display of his abilities as a teacher. A society of navy surgeons had an apartment in Covent Garden, where they engaged the late Mr Samuel Sharpe to deliver a course of lectures on the operations of surgery. Mr Sharpe continued to repeat this course, till finding that it interfered too much with his other engagements, he declined the task in favour of Mr Hunter, who gave the society so much satisfaction that they requested him to extend his plan to anatomy, and at first he had the use of their room for his lectures. This happened in the winter of 1746. He is said to have experienced much solicitude when he began to speak in public; but the applause he met with soon inspired him with courage; and by degrees he became so fond of teaching, that for many years before his death he was never happier than when employed in delivering a lecture. The profits of his first two courses were considerable; but, by contributing to the wants of different friends, he found himself at the return of the next season obliged to defer his lectures for a fortnight, merely because he had not money enough to defray the necessary expense of advertisements.

In 1747 he was admitted a member of the corporation of surgeons; and in the spring of the following year, soon after the close of his lectures, he set out, in company with his pupil Mr James Douglas, on a tour through Holland and France. His lectures suffered no interruption by this journey, as he returned to England soon enough to prepare for his winter course, which commenced about the usual time.

At first he practised both surgery and midwifery; but to the former of these he had always an aversion. His patron, Dr James Douglas, had acquired considerable reputation in midwifery; and this probably induced Mr Hunter to direct his views chiefly to the same line of practice. His being elected one of the surgeon-accoucheurs, first to the Middlesex, and soon afterwards to the British Lying-in Hospital, assisted in bringing him forward in this branch of his profession, in which he was recommended by several of the most eminent surgeons of that time, who respected his anatomical talents, and wished to encourage him. But these were not the only circumstances which contributed to his success. He owed much to his abilities, and much to his person and manner, which eminently qualified him for the practice of midwifery.

In 1750 he seems to have entirely relinquished his views in surgery, as in that year he obtained the degree of doctor of physic from the university of Glasgow, and began to practise as a physician. About this time he quitted the family of Mrs Douglas, and went to reside in Jermyn Street. In the summer of 1751 he revisited his native country, for which he always retained a cordial affection. His mother was still living at Long Calderwood, which had now become his property by the death of his brother James. Dr Cullen, for whom he always entertained a sincere regard, was then established at Glasgow, and had acquired considerable reputation both as a practitioner and teacher of physic; so that the two friends had the pleasure of being able to congratulate each other on their mutual prosperity. During this visit he showed his attachment to his little paternal inheritance by giving many instructions for repairing and improving it, and for purchasing any adjoining lands that might be offered for sale. After this journey to Scotland, to which he devoted only a few weeks, he was never absent from London, unless his professional engagements, as sometimes happened, required his attendance at a distance from the capital.

In 1755, on the resignation of Dr Layard, one of the physicians of the British Lying-in Hospital, we find the governors of that institution voting their "thanks to Dr Hunter for the services he had done the hospital, and for his continuing in it as one of the physicians;" so that he seems to have been established in this office without the usual form of an election. The year following he was admitted as a licentiate of the Royal College of Physicians. Soon afterwards he was elected a member of the Medical Society; and to the *Observations and Inquiries* published by that society he at different periods contributed several valuable papers.

In 1762 we find him warmly engaged in controversy, supporting his claim to different anatomical discoveries, in a work entitled *Medical Commentaries,* the style of which is correct and spirited. As an excuse for the tardiness with which he brought forward this work, he observes in his introduction that it required a good deal of time, and he had little to spare; that the subject was unpleasant, and therefore he was very seldom in the humour to take it up. In this publication he confined himself chiefly to a dispute with the professor of anatomy at Edinburgh, concerning injections of the testicle, the ducts of the lachrymal gland, the origin and use of the lymphatic vessels, and absorption by veins. He likewise defended himself against a reproach which Professor Monro senior had cast upon him, by giving a concise account of a controversy he was involved in with Mr Pott, concerning the discovery of the *hernia congenita.* It was not long before Mr Pott took occasion to give the public his account of the dispute; and, in reply, Dr Hunter added a supplement to his Commentaries. No man was ever more tenacious than Dr Hunter of what he conceived to be his anatomical rights. This was particularly evinced in the year 1780, when his brother communicated to the Royal Society a discovery he had made twenty-five years before, relative to the structure of the placenta, the communication between it and the uterus, and the vascularity of the spongy chorion. At the next meeting of the society a letter was read, in which Dr Hunter put in his claim to the discovery in question. This letter was followed by a reply from Mr John Hunter, and here the dispute ended.

In 1762, when the queen became pregnant, Dr Hunter was consulted; and two years afterwards he had the honour to be appointed physician extraordinary to her majesty. About this time his avocations were so numerous that he became desirous of lessening his fatigue; and having noticed the ingenuity and assiduous application of Mr William Hewson, who was then one of his pupils, he engaged him first as an assistant, and afterwards as a partner, in his lectures. This connection continued till the year 1770, when some dispute happened which terminated in a separation. Mr Hewson was succeeded in the partnership by Mr Cruikshank, whose anatomical abilities were deservedly respected.

In 1767 Dr Hunter was elected a fellow of the Royal Society, and in the year following communicated to that learned body observations on the bones, commonly supposed to be elephants' bones, which have been found near the river Ohio in America. This was not the only subject of natural history on which our author employed his pen; for, in a subsequent volume of the Philosophical Transactions, we find him offering his remarks on some bones found in the rock of Gibraltar, and which he proves to have belonged to some quadruped. In the same work, likewise, he published an account of the nyl-ghau, an Indian animal not described before. In 1768, Dr Hunter became a fellow of the Society of Antiquaries; and the same year, at the institution of a Royal Academy of Arts, he was appointed by his majesty to the office of professor of anatomy. This appointment opened a new field for his abilities; and he engaged in it, as he did in every other pursuit of his life, with unabating zeal. He now adapted his anatomical knowledge to the subjects of painting and sculpture; and the novelty and justness of his observations proved at once the readiness and extent of his genius. In January 1781 he was unanimously elected to succeed the late Dr John Fothergill as president of the Medical Society. As his name and talents were known and respected in every part of Europe, so the honours conferred upon him were not limited to his own country. In 1780, the Royal Medical Society at Paris elected him one of their foreign associates; and in 1782 he received a similar mark of distinction from the Royal Academy of Sciences in that city.

The most splendid of Dr Hunter's medical publications was the Anatomy of the Human Gravid Uterus. The appearance of this work, which had been begun as early as the year 1751 (when ten of the thirty-four plates it contains were completed), was retarded till the year 1775, in consequence of the author's desire of sending it into the world with fewer imperfections. This great work is dedicated to the king. In his preface to it, we find the author very candidly acknowledging, that in most of the dissections he had been assisted by his brother Mr John Hunter, "whose accuracy," he adds, "in anatomical researches is so well known, that to omit this opportunity of thanking him for that assistance would be in some measure to disregard the future reputation of the work itself." He likewise confesses his obligations to the ingenious artists who made the drawings and engravings; "but particularly to Mr Strange, not only for having by his hand secured a sort of immortality to two of the plates, but for having given his advice and assistance in every part with a steady and disinterested friendship."

When Dr Hunter began to practise midwifery, he was desirous of acquiring a fortune sufficient to place him in easy and independent circumstances. Before many years had elapsed, he found himself in possession of a sum adequate to his wishes in this respect; and this he set apart as a resource of which he might avail himself whenever age or infirmities should oblige him to retire from business. After he had attained this competency, as his wealth continued to accumulate, he formed a laudable design of engaging in some scheme of public utility, and at first had it in contemplation to found an anatomical school in the metropolis. For this purpose, during the administration of Mr Grenville, he presented a memorial to that minister, in which he requested the grant of a piece of ground in the Mews, for the site of an anatomical theatre. Dr Hunter undertook to expend L.7000 on the building, and to endow a professorship of anatomy in perpetuity. This scheme did not meet with the reception it deserved. In a conversation on this subject, which he had soon afterwards with the Earl of Shelburne, his lordship expressed a wish that the plan might be carried into execution by subscription, and very generously requested to have his name set down for a thousand guineas. Dr Hunter's delicacy would not allow him to adopt this proposal. He chose rather to execute it at his own expense, and accordingly purchased a spot of ground in Great Windmill Street, where he erected a spacious house, to which he removed from Jermyn Street. In this building, besides a handsome amphitheatre and other convenient apartments for his lectures and dissections, there was one magnificent room, fitted up with great elegance and propriety as a museum. Of the magnitude and value of his anatomical collection some idea may be formed, when we consider the number of years he employed in making the anatomical preparations, and in the dissection of morbid bodies, added to the eagerness with which he procured additions from the collections of Sandys, Hewson, Falconer, Blackall, and others, that were at different times offered for sale in this metropolis. His specimens of rare diseases were likewise frequently increased by presents from his medical friends and pupils; who, when any thing of this sort occurred to them, very justly thought they could not dispose of it more properly than by placing it in Dr Hunter's museum. Speaking of an acquisition in this way in one of his publications, he says, "I look upon every thing of this kind which is given to me, as a present to the public; and consider myself as thereby called upon to serve the public with more diligence."

Before his removal to Windmill Street, he had confined his collection chiefly to specimens of human and comparative anatomy, and of diseases; but now he extended his views to fossils, and likewise to the promotion of polite literature and erudition. In a short space of time he became possessed of a most magnificent collection of Greek and Latin books. A cabinet of ancient medals contributed likewise much to the richness of his museum. A description of part of his coins in this collection, struck by the Greek free cities, was afterwards published by the doctor's learned friend Mr Combe. In the preface some account is given of the progress of the collection, which has been brought together since the year 1770, with singular taste, and at the expense of upwards of L.20,000. In 1781, the museum received a valuable addition of shells, corals, and other curious subjects of natural history, which had been collected by the late worthy Dr Fothergill, who gave directions by his will, that his collection should be appraised after his death, and that Dr Hunter should have the refusal of it at L.500 under the valuation. This was accordingly done, and Dr Hunter purchased it for the sum of L.1200.

Dr Hunter, at the head of his profession, honoured with the esteem of his sovereign, and in possession of every thing that his reputation and wealth could confer, seemed now to have attained the summit of his wishes. But these sources of gratification were embittered by a disposition to the gout, which harassed him frequently during the latter part of his life, notwithstanding his very abstemious manner of living. On Saturday the 15th of March 1783, after having for several days experienced a return of a wandering gout, he complained of great headach and nausea. In this state he went to bed, and for several days felt more pain than usual, both in his stomach and limbs. On the Thursday following he found himself so much recovered, that he determined to give the introductory lecture to the operations of surgery. It was to no purpose that his friends urged to him the impropriety of such an attempt. He was determined to make the experiment, and accordingly delivered the lecture; but towards the conclusion his strength was so exhausted that he fainted away, and was obliged to be carried to bed by two servants. During the night and the following day his symptoms were such as indicated danger; and on Saturday morning, Mr Combe, who made him an early visit, was alarmed on being told by Dr Hunter himself, that during the night he had certainly had a paralytic stroke. As neither his speech nor his pulse were affected, and he was able to raise himself in bed, Mr Combe encouraged him to hope that he was mistaken. But the event proved the doctor's idea of his complaint to be but too well founded. He died on Sunday the 30th of March 1783.

By his will, the use of his museum, under the direction of trustees, devolved to his nephew Dr Matthew Baillie, and in case of his death, to Mr Cruikshank, for the term of thirty years; at the end of which period the whole collection was bequeathed to the university of Glasgow, where it is now deposited.

HUNTER, *John*, an eminent surgeon, was the youngest child of John Hunter of Kilbride, in the county of Lanark. He was born at Long Calderwood on the 13th of July 1728. His father died when he was about ten years of age, from which circumstance his mother was induced to grant him too much indulgence. In consequence he made no progress at the grammar school, and was almost wholly illiterate at the age of twenty, when he arrived in London. His brother Dr W. Hunter was at that time the most eminent teacher of anatomy, and John expressed a wish to attend him in his researches. The doctor, anxious to make trial of his talents, gave him an arm to dissect for the muscles, with proper instructions how it was to be performed; and the dexterity with which he managed his undertaking exceeded the expectations of his brother.

Having acquired some reputation from this first attempt, his brother employed him in a more difficult dissection, which was an arm in which all the arteries were injected, and these and the muscles were to be preserved and exposed. In the execution of this task he also gave the highest satisfaction, and his brother predicted that he would become a good anatomist, and never want employment. Under the instructions of his brother, and Mr Symonds his assistant, he enjoyed every favourable opportunity of increasing his anatomical knowledge, since that school monopolized all the dissections then carried on in London.

He was admitted into partnership with his brother in the winter of 1755, and a certain department of the lectures was allotted to him; and he also lectured when the doctor was called away to attend his patients. The mind of Mr Hunter was peculiarly fitted for the study of anatomy, and the indefatigable ardour with which he prosecuted it is scarcely to be equalled. He applied to human anatomy for ten years, during which period he made himself master of every thing then known, and also made some considerable additions. He was the first who discovered the existence of the lymphatic vessels in birds.

In 1760 his friends advised him to go abroad, as he exhibited many symptoms of an incipient consumption. In October that year he was appointed a surgeon on the staff by the inspector-general of hospitals, Mr Adair, and in the spring of the ensuing year he went to Belleisle with the army. He served, during the continuance of the war, as senior surgeon on the staff, when he acquired his knowledge of gun-shot wounds. He settled in London on his return to England; but finding that his half-pay and private practice could not support him, he taught practical anatomy and surgery for several winters. He built a house near Brompton, where he pursued the study of comparative anatomy with unabated ardour. He discovered the changes which animal and vegetable substances undergo in the stomach by the action of the gastric juice; the mode in which a bone retains its shape during its growth; and explained the process of exfoliation, by which a piece of dead bone is separated from the living.

On the 5th of February 1767, he was chosen a fellow of the Royal Society. In the year 1768 he became a member of the incorporation of surgeons, and in the following year was elected one of the surgeons of St George's Hospital, through the influence of his brother. He published his treatise on the natural history of the teeth in May 1771; and in July the same year he married Miss Home, daughter of Mr Home, surgeon to Burgoyne's regiment of light horse. His private practice and professional reputation advanced with rapidity after his marriage; and although his family increased, he devoted much of his time to the forming of his collection. He discovered the cause of failure in the cure of every case of hydrocele, and proposed a mode of operating in which that event may certainly be avoided. He ascertained that simple exposure to the air can neither produce nor increase inflammation; and he considered the blood as alive in its fluid state. He also discovered that the stomach after death is sometimes acted on and dissolved by the gastric juice, respecting which he communicated a paper to the Royal Society.

Comparative anatomy occupied the greater part of his time and attention, and he suffered no opportunity to escape him. He dissected the torpedo in 1773, and laid an account of its electrical organs before the Royal Society. A young elephant which had been presented to the queen having died, it was given to Dr Hunter, and afforded him an opportunity of examining the structure of that monstrous animal, as did also two others which died in the queen's menagerie. In the year 1774 he published an account, in the Philosophical Transactions, of certain receptacles of air in birds, communicating with the lungs, and lodged in the muscular parts and hollow bones of these animals. Several animals belonging to the species called *Gymnotus electricus* of Surinam having been brought alive to Britain in 1775, their electrical properties excited a considerable share of the publication, and Mr Hunter purchased many of them after they died, for the purpose of prosecuting his favourite experiments. He published an account of their electrical organs in the Philosophical Transactions for 1775; and in the same volume appeared his experiments on the power of animals and vegetables to produce heat.

Mr Hunter was appointed surgeon-extraordinary to his majesty in 1776, in the autumn of which year he became extremely ill, when both himself and his friends apprehended that his life was in danger; but he happily recovered so far as to be able to publish the second part of his treatise on the Teeth in 1778, which completed the subject; and in 1779 he published in the Philosophical Transactions his account of the Free Martin. He was chosen a fellow of the Royal Society of Sciences and Belles Lettres at Gottenburg, and in 1783 he became a member of the Royal Society of Medicine and the Royal Academy of Surgery in Paris. When Mr Adair died Mr Hunter was appointed inspector-general of hospitals, and surgeon-general to the army. This event happened in 1792, at which time he was elected honorary member of the Chirurgo-Physical Society of Edinburgh, and one of the vice-presidents of the Veterinary College of London, then first established. He published also three papers on the treatment of inflamed veins, on intro-susception, and on the mode of conveying food into the stomach in cases of paralysis of the œsophagus.

On the 16th of October 1793, when in his usual state of health, he went to St George's Hospital, and meeting with some things which irritated his mind, and not being perfectly master of the circumstances, he withheld his sentiments; in which state of restraint he went into the next room, and turning round to Dr Robertson, one of the physicians of the hospital, he gave a deep groan, and dropt down dead, being then in his sixty-fifth year, the same age at which his brother Dr Hunter had died.

HUNTER'S Isles, a cluster of small islands lying off the north-west extremity of Van Diemen's Land, and frequented by numerous sea-fowls and seals. Long. 145. E. Lat. 40. 30. S.

HUNTING.

Nature has prepared many advantages and pleasures for the use of mankind, and given them the taste to enjoy them, and the sagacity to improve them; but of all the out-of-door amusements that have occupied the modern world, at least the male part of it, nothing has better stood the test of time than the noble diversion of hunting.

> "Of all our fond diversions,
> A hunter's is the best;
> In spite of wars, and petty jars,
> That sport has stood the test."

And why has it stood the test? Not merely because the passion for the chase is interwoven closely with our nature; not because it originated in necessity, therefore originated in nature; but because it has been encouraged and approved of by the very best authorities, and practised by the greatest men. It cannot now, then, be supposed to dread criticism, or require support; neither can any solid objections be raised against a reasonable enjoyment of the sports of the field in general, provided what ought to be the pleasing relaxation of a man's leisure hours be not converted into the whole business of his life. But hunting, above all others, is a taste characteristically manly and appropriate to the gentlemen of Great Britain; and it has likewise another advantage over all other sports of the field, which adds much to its value in this land of liberty, and especially in the present age: it is a kind of Saturnalian amusement, in which the privileges of rank and fortune are laid aside, the best man in the chase being he who rides the best horse, and who is best skilled in the use he should make of his superiority.

But let us look a little into the origin of hunting, the encomiums passed upon it, and the advantages derived from it.

We shall commence with the sacred history itself, which describes the first warriors under the denomination of hunters; and not only did the passion for the chase form a kind of society between the dog, the horse, the falcon, and man, but Pliny is quite correct in saying that hunting was not only one of the first exercises of man, but that it gave rise to monarchical states. For example, Nimrod, *the first king*, who reigned at Babylon, devoted himself to hunting, and delivered his subjects from the savage beasts that desolated the country; and in the sequel, by making soldiers of his companions in the chase, employed them in extending his empire, and establishing his conquests. In fact, nothing in those days procured a man so much esteem as being an expert sportsman or hunter; and had not Nimrod been a sportsman, he would not have been a king. People submit themselves to government by force, as wild animals do, and not by choice; and he erected himself into a monarch by finding himself stronger than his neighbours. He taught the people to make up companies for *the chase;* and, after exercising them for this purpose in the first instance, he led them on by degrees to a social defence of one another, and thus laid the foundation of his authority and his kingdom. It is no wonder, then, that so many of the first kings or heroes of whom antiquity makes mention should be characterised as celebrated hunters, and destroyers of noxious animals; an employment prescribed in the Book of Moses, and deified in the theology of the Pagans. Bacchus is drawn by tigers, because he subdued them; Apollo obtained the laurels that encircle his brow, by killing the serpent Python; and Hercules got his lion's skin by his exploits in the forest of Nemæa. Diana was worshipped in her temple, the finest the world ever saw, in honour of her skill in destroying noxious animals; even Venus herself took the field, and Adonis was killed in the chase. The Egyptians, also, in their most splendid ages, were much addicted to hunting; and it was the common exercise of the children educated in the court of Sesostris.

But there would be no end to these examples of the acknowledged benefits of the chase, on the manners and characters of nations. The ancient Persians considered hunting not only as a serious employment, but an excellent preparation for war, in which the same weapons were used as in the chase; and their renowned monarch, Cyrus, was the first sportsman of his day. With the Athenians the passion for the sports of the field was so strong, that Solon was obliged to restrain the ardour for hunting, to prevent the people neglecting the mechanic arts, which it was his wish they should cultivate; and the Lacedemonians, who were warriors by profession, cultivated hunting with incessant care. It was not only their ruling passion, but there is reason to believe they exercised in it the greatest skill; and, as we learn from Virgil, in his third Georgic, they were celebrated for their breed of speedy dogs. But there is not a nation in which it has not been found necessary to restrain by laws the excessive love for the chase; so natural is it to man, and so apt to degenerate into a passion injurious both to health and to society.

One of the greatest compliments paid to the chase is, its having been considered as a theme worthy the pens of the ablest writers of the most refined periods of the world. Whilst Greece was the nursery and residence of every branch of polite literature, and of all the arts and sciences then known to mankind; whilst every study that depends on the powers of the imagination, or the faculties of the understanding, was there carried to the very summit of perfection; we find Xenophon composing his Κυνηγετικος, treating of every description of field-sports. He, according with the custom of the times, opens the subject with fable, and tells us that hunting, which he calls the gift of the gods, and the use of dogs, originated with Apollo and Diana, and that the invention was made a present of to Chiron, who took pupils in the art, each of whom was, in his turn, honoured by the gods (ἀπο θεων ἐτιμηθη). His real object, however, was to encourage in the youth of his country a taste for the pleasures of the chase, and other manly pastimes, as the best preparation for war, the senate, and the world. Whilst he condemns the effeminate man as shamefully useless to his country, he represents the well-trained sportsman as not only mighty in war, but ready to sacrifice his person and his wealth to the public good. As a preparation for war, and particularly the higher branches of the soldier's profession, we need not the testimony of Xenophon; for our own experience has shown us, that, speaking generally, no man takes a view of a country, at first sight, with equal facility to a sportsman, particularly a sportsman who has been accustomed to follow hounds. Indeed, unless he have what is called in the field, "a good eye to a country," he cannot ride with judgment after hounds in our enclosed or woodland districts; and when the chase is concluded, it is surprising to witness the rapidity with which an experienced fox-hunter sees the points of a country in which he is a stranger, that must lead him towards his wished-for home. With respect to the other advantages alluded to by Xenophon, he had very good authority for what he asserted of them. The

Olympic games were established by the Greeks for two distinct purposes: first, to inspire their youth with a love of glory, as well as a taste for manly and invigorating exercises, conducive to contempt of danger, and coolness when exposed to it; and, secondly, with a view of drawing together the leading men of the different states of Greece, which gave them an opportunity of deliberating upon matters of general concern. As regarded the other various occupations of life which a gentleman is called upon to fulfil and do honour to, we may remark, that an irreproachable moral character was a necessary qualification for a competitor at those games or sports. Drawing something like a parallel here, then, we may add, that neither is a sportsman in our own country esteemed, how skilful soever he may be, if his character be tainted with fraud; and we are not unmindful of the advantages derived from the mixture of society in the hunting-field, or of the many valuable and lasting friendships that may be dated from accidental meetings by the cover's side. But Xenophon wrote in praise of hunting rather perhaps as a soldier than a philosopher, giving it as his opinion, that the exercise of the chase formed the best soldiers in the world; that it habituated men to cold, heat, and fatigue; that it kindled courage, elevated the soul, and invigorated the body; that it retarded the effects of age, and rendered the senses more acute; and, finally, that the pleasure it afforded was a sovereign remedy against all mental uneasiness; in which latter sentiment he is seconded by a modern author of celebrity, who says that "the chase fortifies the heart as well as the body." Nor is Xenophon the only eminent soldier or philosopher of his renowned country who has written in commendation of hunting. Aristotle wrote a treatise on field-sports, by order of Alexander the Great; and Polybius, one of the greatest soldiers of any age, relates that Maximus restored discipline in the Roman legions, by often exercising them in hunting; and he even goes so far as to celebrate one individual sportsman, Ptolemy Epiphanes, for his dexterity in killing a wild bull. Amongst the poets of Greece, Oppian distinguished himself highly by his poems on hunting. So excellent, indeed, were they considered by his emperor, that he is said to have presented him with a piece of gold for every verse they contained, and thus they acquired the honourable appellation of "the golden verses of Oppian." Several of the most splendid similes of Homer are taken from hounds in chase, and it is in the manly character of Achilles that we chiefly recognise him as his hero.

The Romans at one time discouraged hunting amongst the upper orders of society, from the fear of its becoming a passion which might divert them from their essential duties. But here they committed an error; for, aware of its beneficial effects in forming their people for war, they substituted public exhibitions of animals destroying each other in an amphitheatre, which could only have hardened the heart, without advantage to either body or mind. Yet we find many of their emperors encouraging hunting, and many of their best writers extolling it. The learned and polished Hadrian was so passionately addicted to hunting, and also to horses and dogs, that he erected monuments to the memory of the latter, and built a city on the spot on which he had killed a wild boar, after a desperate encounter with him, and which he called by a word which, being interpreted, signifies Hadrian's chase. Amongst the celebrated writers of the Augustan age, we may mention two, who, not being themselves sportsmen, could only have made sporting a subject for their pens, from a sense of the benefits arising from it. Virgil makes his young Ascanius a sportsman as soon as he is able to sit his horse; and he also makes him, at a very early age, the first in the fight (*primum bello*), as he had been the first in the field. In the speech addressed to him by the bold Numanus, which cost that hero his life, we have the finest contrast of the evils of effeminate habits with the benefits of manly pursuits, that the pen of a satirist could produce. The words, *O veræ Phrygiæ, neque enim Phryges!* "Oh, worse than women in the shape of men," convey the severest rebuke a nation could receive for having made themselves contemptible to their enemies, by the effects of an effeminate life, and pursuits unworthy of men; whereas the advantages of the manly exercises of youth are finely set forth in the vaunting exclamation of this hardy Rutulian. Neither is Horace behind his contemporary poet in his disgust of an effeminate youth. In the twenty-fourth ode of his third book, he beautifully contrasts those softening pleasures which emasculate the mind and enervate the body, with the opposite effects of manly sports and exercises; and, in his justly celebrated Epistle to Lollius, he recommends the chase, not only as a noble exercise, but as contributing to health and peace of mind. His *Carmen Sæculare* was also written in honour of manly exercises; and in another of his odes we find him upbraiding a young Roman for giving up the manly exercise of riding; and glancing at the destruction of Troy, and the feminine education of Achilles, seeming to insinuate, that effeminacy was likely to destroy the energies of his own countrymen, as it had those of others. That his apprehensions were not unfounded, a few centuries proved; for the Romans, after the conquest of Persia and other distant kingdoms, participating in their luxurious habits, became as easy a prey to the Goths and Vandals, as the Grecians and other nations had before been to themselves; and, in the decline of the republic, the few victories which they gained were achieved but by the terror of their name. Minor poets have also made sporting their theme. Gratius wrote a poem on coursing. He was contemporary with Ovid, and a sportsman, as the knowledge of his subject denotes. Nemesianus also, three centuries afterwards, wrote some poems on hunting, though they have not been so highly esteemed. But the sports of the field are alluded to by innumerable classic writers, and made the groundwork of their most beautiful allegories and fables, both in verse and prose; and perhaps, after all, the greatest compliment that can be paid to them, as well as the best answer to the assertion that any man can make a sportsman, is to be found in the latter department of literature. We allude to the letters of that accomplished country gentleman and scholar, Pliny the consul, in which he speaks of his prowess in the chase. In one addressed to Tacitus the historian, boasting of a famous day's sport he had been enjoying, he also boasts of the good effect it had had on his mind, telling him that Minerva accompanied Diana on the hills; and in the eighteenth letter of the fifth book he goes a point beyond this: "As for myself," says he to his friend Macer, "I am employed at my Tuscan villa in hunting and studying, sometimes alternately, and sometimes both together; *but I am not yet able to determine in which of those pursuits it is most difficult to succeed.*"

It is not surprising that hunting should have been the theme of poets, as poetry then ceases to be the language of fiction; neither can the subject itself be deemed unpoetical, as it affords an opportunity to expatiate, not merely on the beauties, but also on the endowments of nature. That the feelings of nature have more of rapture in them than those which are excited through the medium of science, is a fact which cannot, we think, be denied; and thus do we account for the exhilarating passion of the chase. To describe a chase, however, is a task of no small difficulty, and perhaps more so in prose than in verse, as the imagination must be powerfully excited by the transporting scenes on which it has dwelt, and cannot well be restrained in a mere recital of facts. When the noise of the battle is over, powerful must be the pen that could revive the clang of arms. "The chase is done," sings Ossian; "and nothing is heard on Ardven but the torrent's roar."

Somerville's poem of *The Chase* will live to the end of time; for although it was not faultless in the eyes of the perhaps too rigid Johnson, it is written with the spirit and fire his subject demanded; and many of the instructions it conveys, when stripped of their poetical dress, are esteemed by sportsmen of the present day. "Manners," says Lord Kames, "are never painted *to the life* by any one to whom they are not familiar;" neither could a man have written the poem we speak of unless he had been himself a sportsman. Indeed his descriptions of hunting the hare, the stag, and the fox, place the objects clearly and beautifully before our eyes, and show that the poet had often witnessed with rapture the scenes to which he devoted his muse. The following passage, descriptive of the feelings of a master of hounds on a hunting morning, is not merely truly natural, but at the same time highly poetical:

"Hail, gentle dawn! mild, blushing goddess, hail;
Rejoic'd I see thy purple mantle spread
O'er half the skies; gems pave thy radiant way,
And orient pearls from every shrub depend.
Farewell, Cleora! here, deep sunk in down,
Slumber secure, with happy dreams amused.
..............Me other joys invite;
The horn sonorous calls, the pack awak'd
Their matins chaunt, nor brook my long delay:
My courser hears their voice;—See there! with ears
And tail erect, neighing, he paws the ground:
Fierce rapture kindles in his redd'ning eyes,
And boils in ev'ry vein."

Although hunting *songs* are a species of ancient lyrics, of which the specimens are rare, and in our own country "the songs of the chase" do not appear to include any earlier than the middle of the seventeenth century, we have some of a more modern date that have been highly popular with the public, and no doubt have given the original impulse to many a good sportsman. The power and force of national songs have never been disputed in any age; and he who said, that if he were allowed to compose the ballads of a nation, he would soon alter its form of government, uttered a boast not altogether unfounded in the principles of human nature. Compositions of this kind, then, that tend to encourage a love of manly pursuits and pastimes, and give a relish to a country life, should by no means be thought lightly of by a people who, like ourselves, have ever been conspicuous for our excellence in the one, and our fondness for the other; but which, in the opinion of some, appear to be on the wane, as the natural consequence of our present state of almost excessive refinement. This would be a real cause for regret. The fondness for rural life amongst the higher order of the English has hitherto had a great and salutary effect upon the natural character of their country; and there cannot be found a finer race of men than the country gentlemen of Great Britain. Instead of the softness and effeminacy which characterise the men of rank of most other nations, they exhibit a union of *natural* elegance and strength, a robustness of frame and freshness of complexion, which are to be attributed to their living so much in the open air, and pursuing so eagerly the invigorating recreations of a country life. Their hard exercise produces a healthy tone of mind and spirits, as well as of body, accompanied with a manliness and simplicity of manners, which even the follies of a town cannot easily pervert, and can never entirely destroy. Let us, however, hope that the fears on this head are groundless; let us hope that what Horace sighed for, what Cato, Plato, and Cicero recommended, what Bion eulogised, what all the best poets of antiquity sang the praises of (according to the poets, the golden age was spent in the country), and for which kings and emperors quitted their thrones, will never be ill suited to, or considered as beneath the taste of a British country gentleman, in what circle soever he may move. That the sports of the field are classical, the authority of all ages will vouch for; neither is the man of fashion, or *haut ton*, by any means incompatible with the country gentleman and sportsman. On the contrary, how has the character of Paris been handed down to us by the poets? Was he not the finest gentleman, the greatest favourite of the female sex, the greatest beau of his day? Such he is represented to have been; but although a prince, he had been bred a shepherd; and from the robust habits he had acquired in his youth, he was the only man who could stand up against the powerful arm of Dares, the great champion of his day. What was the all-accomplished Pliny, or Lollius whose education Horace had superintended?

Again; on the score of health, the chief felicity of man, were it not for the sports of the field, the softness and effeminacy of modern manners, in the higher walks of life, would soon exhibit their pernicious effects on forthcoming generations, by depriving them of their natural defence against diseases incident to our climate, by subjecting them to that morbid debility and sensibility of the nervous system which lays the foundation of most diseases, as also depriving them of the courage to support them. And who enjoys the blessing of health equally with the country gentleman and sportsman? Somerville says,

"In vain malignant steams and winter fogs
Load the dull air, and hover round our coasts;
The huntsman, ever gay, robust, and bold,
Defies the noxious vapour, and confides
In this delightful exercise to raise
His drooping head, and cheer his heart with joy."

Certain is it, the rough sports of the country have been known not only to cure diseases of long standing in the human frame; but the exercise of hunting, *with the temperance it enjoins*, absolutely steels the constitution, as the poet expresses himself, against the attacks of the most common of the diseases peculiar to this variable climate. Its effect on the mind, which he also alludes to, is of no less value; for, from the very exhilarating nature of the amusement, it relieves it from dwelling upon its anxieties, from which few persons are free; and it is one of the best cures for the heartach, or any of those shocks which our flesh is heir to:—

"Dona cano divum, *lætas venantibus artes*,
Auspicio, Diana, tuo,"

sang the poet Gratius; and Horace's description of a sportsman's return to his family, after the toils and perils of the day, is a true picture of a country life, replete with every possible enjoyment.

Objections have been made to encouraging youth in a love of our national field-sports, on the score of their engrossing too much of their time and attention, to the neglect of more necessary attainments. "It is true," says a Roman historian, "the masters in every branch of learning, whom the accomplished father of Commodus provided for his son, were heard with inattention and disgust; whilst the lessons of the Parthian, or the Moor, in the arts of the javelin and the bow, could not be too often repeated." But where is the pursuit that may not be carried to excess? and yet without zeal no person ever succeeded in field-sports of any kind, much less in hunting. "Whatever thy hand findeth to do, do it with all thy might," said Solomon; and had not Providence implanted this zeal in man's nature, he never would have been what man now is, but, comparatively, a useless being. Objections are again made, that the sports of the field, hunting animals with dogs especially, are cruel; but the charge, if proved, does not altogether lie against man. The beasts and birds of the field have been given to him, as well as the way to procure them pointed out to him; or wherefore the almost unsearchable faculties of the dog? Some persons, however, have thought otherwise: "Is it a labour worthy of man," says a very celebrated English writer, "to watch from day to day, from night to night, the haunts of our fellow animals, that we may destroy them? To triumph over a poor mangled hare or hind, after we have harassed them up and down the country for many hours together with an army of dogs and men? Is it an exercise becoming the majesty of a rational spirit to run yawling with a parcel of hounds, perhaps a whole day together, after some timorous animal?" In answer to this it may be urged, that we knew no other method of availing ourselves of them when first they were given for our use; and it may be strongly urged, that the destruction of wild animals was never so speedily, and therefore humanely accomplished, as it is at the present day. A century or two ago, the fox lingered all night in a trap, and then too often was subjected to a lingering, if not an agonizing death. He is now killed by hounds, generally in a short time, if he cannot escape from what may be deemed his lawful pursuers. The buck in the forest of the king, or in the park of the nobleman, is now no longer hunted down by the slow but sure blood-hound, a race nearly extinct, but the unerring eye of the rifle-shot seals his doom on the spot. We agree with the poet, that

> "Poor is the triumph o'er the timid hare;"

but she was given for our use, and must be taken, as Esau took the venison, *by hunting her;* and here likewise is an improvement. A hundred years back she was trailed up to her form, the operation perhaps of an hour, with the terror-striking notes of the hounds all that time in her ear; and then pursued for at least two hours more, by animals with not half her speed, but with a power of following her by the foot, which it was nearly impossible to evade. At the present day she is whipped out of her form, twenty minutes generally deciding her fate; and, in consequence of her being now pursued in the forenoon, instead of, as before, just on her return from her walk, she escapes oftener than she is killed. Animals destined to fall by the gun are now nearly certain of meeting with instant death. In addition to the increased skill of our marksmen, the improved formation of the gun enables it to carry destruction with a much surer hand, owing to the force and precision with which it carries its shot. Thus, if the game be stricken, it is stricken to instant death, not wounded and mangled by weak, scattered shot. Another consideration presents itself in the discussion of this subject. Life is said to be "sweet;" but strip it of intellectual enjoyment, and its sweetness is very considerably abated. But we will go one step farther. The natural death of wild animals must generally be lingering, and often painful in the extreme; they have no relief to fly to, but perish as it were by inches. This being admitted, perhaps the hand that instantly deprives them of life may be deemed the hand of a friend.

An old English writer on field-sports thus forcibly, though somewhat boldly, expresses himself on the alleged cruelty of hunting the hare to death. "What can be a more convincing proof of God's infinite wisdom, or even of his indulgence to the sons of men, than the formation of this animal (the hare), which naturally flies from creatures she never beheld in her life, makes use of the most refined politics to escape their pursuits (although she cannot foresee whether they are the effects of love or anger), and yet is forced to leave behind her such particles of matter as betray her flight? Again, of how nice and curious a contexture must be the innumerable pores or pipes of the dog's nostrils, which serve as so many sheaths, or canals, to convey the said particles to the brains of the hounds, there to animate and put in motion every limb, joint, and muscle of their bodies. How excellent was the Hand that furnished these creatures with such tuneful notes to assemble their fellows, and give tidings to their masters, with such an amazing art to unravel the various windings of the fugitive, with so relentless fury to pursue her to the death."

But our sensibilities towards the sufferings of animals are limited, not only in wisdom, but in mercy (for, increase our sensibilities, and who could live?) and let us not charge a sportsman with cruelty because he is the destroyer of that part of the brute creation which was evidently intended should be destroyed by some one. Sportsmen have existed, and must for ever exist, from necessity. They have extirpated some animals, and culled out such as are serviceable to man, and submit to his will and government. Those that will submit are his friends, those that will not are his foes; and so it was intended to be since the charge was given to Adam, and the subsequent commission to Noah. The sports of the field, indeed, as now followed, are generally allowed to have a tendency to improve and promote a free and generous conduct, as well as that manly spirit which is the very reverse of cruelty; and, in the harmless exercise of our imagination, looking at that law of nature which enjoins the destruction of one animal for the good of another, so far from passing a hard sentence on the sportsman, we think with the poet, that

> "His life is pure, who wears no fouler stain!"

No great satisfaction would arise from a reference to the practices of the ancients in the field, who, it appears from Virgil, hunted any thing, from the wild ass to the stag; but, we have reason to believe, without much system, as far as their dogs had to do with it. We conceive the ancient Germans and Gauls to have been the best early sportsmen upon system; and the ancient Britons, who came originally from Gaul, and, according to Cæsar and Tacitus, were one of the widely-extended Celtic tribes, introduced, or rather brought with them from Gaul, that ardent passion for the chase for which Great Britain has ever since been remarkable. The Anglo-Norman and early English monarchs likewise all appear to have had a passion for the chase; and although a code of laws relative to hunting was formed by one of the Welsh princes in the twelfth century, containing a list of animals, climbing ones, for example, which does not accord with the present idea of *hunting*, we hear nothing of fox-hounds *per se*, till we find them in the kennel of Edward I., and an item in his wardrobe book of L.21. 6s. as the annual expenses of his pack, consisting of six couples. Soon after this period, at all events in the course of the next king's reign, the diversion of hunting in England may be said to have been first reduced to something like a science; treatises having been written on the subject for the instruction of young sportsmen, as well as rules laid down for the observation and conduct of those who filled the various offices, in the forest, the kennel, and the stable. One of the most curious of these performances, is a manuscript written in the beginning of the fourteenth century, in Norman French, by William Twice, huntsman to Edward II., an ancient translation of which occurs amongst the Cottonian manuscripts. In it are enumerated and described the different beasts that were then objects of the chase in England; and, in the manner of a dialogue, the huntsman is informed how he should blow his horn at the different points of a chase. But the generally rude system of hunting in the earlier days of England had previously been in some measure improved and amended by William the Conqueror, of whom Somerville thus writes:—

> "Victorious William to more decent rules
> Subdued our Saxon fathers; taught to speak
> The proper dialect; with horn and voice
> To cheer the busy hound, whose well-known cry

His list'ning peers approve with joint acclaim.
From him successive huntsmen learn'd to join
In bloody social leagues, the multitude
Dispers'd; to size, to sort, their warrior tribes,
To rear, feed, hunt, and discipline the pack."

Edward III. was a great stag-hunter; and even at the time he was engaged in war with France, and resident in that country, he had with him, attached to his army, sixty couples of stag-hounds, and an equal number of hare-hounds. We also learn from Froissart, that the Earl of Foix, a foreign nobleman, contemporary with King Edward, had one hundred and fifty couples of hounds in his castle. But it does not appear that the fox was much in esteem for the chase by any of the Anglo-Norman sportsmen; for in Twice's Treatise on the Craft of Hunting, he is classed last of all the beasts of venery, excepting the martern and the roe; nor does Somerville in his poem treat him with the respect that he pays to the stag or the hare. The first public notice of him occurs in the reign of Richard II., who gave permission, by charter, to the Abbot of Peterborough, to hunt him. Hunting, however, in all its branches, appears to have advanced steadily till the last century, when it flourished greatly by the encouragement given to it by George III.; and as time improves every art, it has at length, we believe, attained perfection.

Whatever pastime mankind indulge in, their first endeavour should be to make themselves acquainted with the best means of pursuing it, which will greatly increase the pleasure derived from it. But as the philosopher was laughed at for his offer of teaching Alexander the Great the art of war, so the theory of no pastime is worth any thing unless it be based on practice. And, perhaps, of all sports invented by reason for the use and amusement of mankind, there is none to which theory would avail so little as the noble and popular one of hunting. Indeed, the practical part of hunting, notwithstanding its popularity, is but little known, at least but little understood, from the perplexing difficulties that accompany it; and there is reason to believe it was still less understood before the appearance of a work, in which the whole system is minutely and accurately detailed by an eminent sportsman, and master of fox-hounds, of the early part of the last century. It is scarcely necessary to observe, that the work alluded to is "Beckford's Thoughts upon Hunting, in a series of familiar Letters to a Friend;" of which it has been said, "they are so truly the effusions of sound judgment, and so replete with the useful remarks of an experienced sportsman, that there is no room for any thing new or additional to be introduced upon the subject." It is true, this has been considered, and will continue to be considered, as a standard work amongst sportsmen; but as systems and habits change with time, and many of both have been materially changed since Beckford's day, another work on fox-hunting, also from a practical pen, made its appearance in 1826, and was well received by the sporting world, viz. "Observations on Fox-Hunting, and the Management of Hounds in the Kennel and the Field, by Colonel Cook," several years a master of fox-hounds; hunting various English counties, but principally the Rodings of Essex, celebrated for the stoutness of its foxes.

It is only within a very short space of time that sportsmen have been given to communicate their thoughts, or the result of their experience in the field, to the public, unless under fictitious signatures. In proof, however, of the benefit derived from such contributions to the stock of sporting *science*, if such a term will be allowed; and likewise in confirmation of what has been advanced on the subject of change of systems and habits that occurs in the course of time, we will make a few comments on the practices of one of the most conspicuous sportsmen England ever gave birth to, the celebrated Hugo Meynell, Esq. of Quorndon Hall, Leicestershire, and made partially known through the medium of a small pamphlet, entitled "The Meynellian Science, or Fox-Hunting upon System," by the late John Hawkes, Esq. a personal friend of Mr Meynell's. That Mr Meynell studied fox-hunting as a science, we believe no one will deny; and that his master-mind was quite equal to the task he imposed upon himself, is also an admitted fact; for he was a man of more than ordinary acuteness, coupled with a close and accurate observation of every thing that passed under his eye; and all this with the benefit of an education perfected beyond the usual extent of that bestowed upon, or, perhaps we may say, submitted to, by young gentlemen of large fortune in his day, having studied nearly three years under a private tutor after he became of age. That he shone beyond all others who had preceded him, in the breeding and management of hounds, is a fact universally admitted, producing, as Mr Hawkes says of them, "the steadiest, best, and handsomest pack of fox-hounds in the kingdom;" adding also the emphatic remark, that his object was to combine strength with beauty, and steadiness with high mettle. His idea of perfect shape was, short backs, open bosoms, straight legs, and compact feet; and the first qualities of hounds he considered to be fine noses and stout runners, opinions which all found to hold good.

But there were peculiarities in Mr Meynell's system of hunting, to which, as detailed by Mr Hawkes, we scarcely know how to reconcile ourselves. For example, he tells us that his young hounds were broken in to *hare* in the spring of the year, "to find out their propensities, which, when at all flagrant, they early discovered, and he drafted them according to their defects;" and in the same page he adds, "after hare-hunting, they were, the remaining part of summer, daily walked amongst riot." Now we cannot approve of entering hounds to an animal they are not intended to hunt, and are at a loss to comprehend what is here meant by the word "riot," unless it be hares (as the term generally implies) or deer (which were never found wild in his country), which they had been previously instructed to hunt. Their "propensities," also, by which is here generally understood their steadiness or unsteadiness, must, under such circumstances, have been rather difficult to pronounce an opinion upon, with the exception of their promising to be true to the line, and not given to skirt. The goodness or badness of nose could of course have been discernible when hunting their own game (the fox), to which, in our opinion, all fox-hounds should be entered. Beckford, we remember, speaks of his huntsman letting his puppies enter to a cat; but we cannot approve of such a practice.

Early in the autumn Mr Meynell hunted his woodlands, Charnwood Forest chiefly, with his whole pack, and then divided them into "the old" and "the young pack;" but, to show the disadvantage of this system, Mr Hawkes says, "the young hounds were hunted twice a week, as much in woodlands as possible, and in the most unpopular districts." The present plan of mixing young and old hounds together is far preferable to this, not only as they can then take their turn in the good and popular "districts," but, by having the assistance of older hounds in chase, the younger ones are less likely to do wrong.

Mr Meynell's idea of *perfection* in hounds, in chase, Mr Hawkes says, "consisted of their being true guiders in hard running, and close and patient hunters in a cold scent, together with stoutness." Their imperfections, "over-running the scent, and babbling, were considered their greatest faults." To all this every sportsman must assent.

The following passage contains perhaps rather more of enthusiasm than of fact, although a qualification is given to it in the concluding sentence. "Mr Meynell's hounds," says Mr Hawkes, "were criticised by himself and his friends in the most minute manner. Every hound had his peculiar talents, and was sure to have a fair opportunity of displaying them (!) Some had the remarkable faculty of finding a fox, which they would do, almost invariably, notwithstanding twenty or thirty couple were out in the same covert. Some had the propensity to hunt the doubles and short turns. Some were inclined to be hard runners. Some had a remarkable faculty of hunting the drag of a fox, which they would do very late in the day. And sometimes the hardest runners were the best hunters; and fortunate was the year when such excellencies prevailed."

"Mr Meynell," continues Mr Hawkes, "prided himself on the steadiness of his hounds, and their hunting through sheep and hares, which they did in a very superior manner. He seldom or never attempted to lift his hounds through sheep; and from habit, and the great flocks the hounds were accustomed to, they carried the scent on most correctly and expeditiously, much sooner than any lifting could accomplish." We are far from advocates for lifting hounds when it can be avoided; but knowing the so often insurmountable difficulties occasioned by flocks of sheep and herds of cattle in the country Mr Meynell hunted, in addition to a crowd of horsemen pressing upon the heels of the pack, we consider that, if, under such circumstances, hounds do not almost instantly recover the scent, the assistance of the huntsman is called for. The "steadiness and docility" of Mr Meynell's pack, we have reason to believe, were remarkable, and are vouched for by other authority than Mr Hawkes's. "A most extraordinary instance of discipline in hounds," says Colonel Cook (p. 202), "occurs to me, which I ought to have mentioned when speaking of that unrivalled sportsman the late Mr Meynell. He met in the Market Harborough (Leicestershire) country, at a small patch of gorse on the side of a hill, in a very large pasture field: the hounds feathered as they went in, and found instantly. The covert being only about two acres, and open, Mr Meynell immediately saw that the fox was in danger of being chopped; he therefore called out to Jack Raven, the huntsman, "Jack, take the hounds away;" and, at one of his usual *rates*, every hound stopped, and the pack were taken to the hedge side, when Mr Meynell called out three steady hounds, and threw them into the cover. The fox was so loath to break, that the three hounds kept hunting him for ten minutes, in the hearing of all the pack, who lay perfectly quiet at Raven's horse's feet, till the fox went away over the finest part of the country; and the moment Mr Meynell gave his most energetic, thrilling holloo (Mr Hawkes speaks of the power of Mr Meynell's cheering holloa, which, he says, "thrilled through the heart and nerve of every hearer"), every hound flew to him; the burst was the finest that any sportsman ever beheld, and after an hour and ten minutes they killed their fox." This is doubtless an astonishing instance of command of hounds with a scent before them, particularly so to those persons who are aware of the generally uncontrollable power of the impulse given to them by nature at that particular time; and were it not for the high reputation of the pack alluded to, we should, as we cannot doubt the fact, be inclined to say, it savoured a little of slackness, or, at all events, of a too severe discipline, bordering upon the annihilation of the distinguishing natural properties of the fox-hound, namely, high mettle and dash.

"Mr Meynell," adds Mr Hawkes, "was not fond of casting hounds; when once they were laid upon the line of scent, he left it to them; he only encouraged them to take pains, and kept aloof, so that the steam of the horses could not interfere with the scent. It is true, hounds should not be cast, if they can do the work themselves; and if the authority of Mr Meynell could restrain a Leicestershire field of horsemen to keep aloof when his hounds were at check, more time may have been given them to make their own cast; but it must be recollected that, when the hounds are at fault, the fox is not." Again, "when his hounds came to a check, every encouragement was given to them to recover the scent, without the huntsman getting amongst them, or whippers-in driving them about, which is the common practice of most packs. The hounds were holloa'd back to the place where they brought the scent, and encouraged to try round in their own way, which they generally did successfully, avoiding the time lost in the mistaken practice of casting hounds at the heels of the huntsman. When the hounds were cast, it was in two or three different lots, by Mr Meynell, his huntsman, and whipper-in; and not driven together in a body, like a flock of sheep. They were allowed to spread, and use their own sagacity, at a very gentle pace; and not hurried about in a blustering manner. It was Mr Meynell's opinion, that a great noise, and scolding of hounds, made them wild. Correcting them in a quiet way was the most judicious method. Whippers-in also should turn hounds quietly, and not call after them in a noisy, disagreeable manner." In all the foregoing remarks we coincide with the opinions of these two celebrated sportsmen. We think a huntsman should never be nearer than from sixty to a hundred yards of his hounds when they first check; nor can a whipper-in execute his office of turning or stopping a hound at this moment too quietly and discreetly; but no general line of conduct for either the one or the other can be laid down. Some hounds, and especially if they have been pressed upon by horsemen, will not turn to either horn or holloa, without a smack of the whip, or at all events a *rate;* nor will the body of the pack, if a little blown, or excited by a previous holloa, always try for their fox so well and *quickly* as they should do, if left quite to themselves; or, as Mr Hawkes so properly expresses himself, if left to "their own sagacity." That a great noise makes hounds wild no one doubts, and the system of holloaing is every year on the decrease. As for the division of the pack into three lots when at fault, that perhaps originated with Mr Meynell; indeed we believe it did; but the practice is now become not uncommon, of its being divided into two, namely, one lot with the huntsman, and the other with the first whipper-in.

"When hounds are going to the cry," writes Mr Hawkes, "they should be encouraged in a pleasant way; not driven and rated, as if discord was a necessary ingredient in the sport and music of a fine cry of hounds. Whippers-in are too apt to think their own importance and consequence consist in shouting, holloaing, and unnecessary activity. When hounds can hear the cry, they get together sooner than any whipper-in can drive them. If any hound is conceited, and disinclined to go to cry, he should immediately be drafted."

On the subject of blood, that is, killing and eating foxes, we entirely assent to the following remarks: "Blood was a thing Mr Meynell was more indifferent about than most masters of hounds. The wildest packs of hounds were known to kill the most foxes in cover, but very seldom showed good runs over a country. Hounds chopping foxes in cover is more a vice than a proof of their being good cover-hounds. Murdering foxes is a most absurd prodigality. Seasoned foxes are as necessary to sport as experienced hounds." Our own opinion of the value of blood to hounds perfectly accords with that which, it appears, was entertained by Mr Meynell; namely, that it is far from a *sine qua non* to the well-doing of fox-hounds, or any other hounds, as is apparent at once from the modern system of hunting the stag. If it be possible, the pack are not permitted to break his skin, much more to devour him; still, despite of the rating and flogging they get to prevent their injuring the object they are pursuing, they do pursue it to the last with all their might and main. But let it not be supposed that we set no value on what may be termed well-carried blood. On the contrary, we think the flesh and blood of a fox well found, and handsomely killed, by hounds in the moments of high excitement, must be very beneficial to them. But when chopped in a cover (generally the effect of accident, and not, as Mr Hawkes supposed, of vicious propensity in any individual hound), we consider a round of beef would be a more acceptable present to them; nor is the case much altered when a fox is digged out of an earth, after perhaps an hour's delay. We remember to have heard Mr Osbaldeston assert, that the best week's sport he ever had in Leicestershire when he hunted it, was after his hounds had been out nine days in succession without tasting a fox.

"Mr Meynell's natural taste," continues Mr Hawkes, "led him to admire large hounds; but his experience convinced him that small ones were generally the stoutest, soundest, and in every respect the most executive. His hounds had more good runs than any pack of his day. Two very extraordinary ones happened of a very rare description. One was a run of one hour and twenty minutes without a *check*, and killed their fox. The other was two hours and fifty minutes without a *cast*, and killed. The hounds in the first run kept well together, and only two horses performed it; the rest of the field were unequal to its fleetness. The other run alluded to was performed by the whole of the pack; and though all were up at the death, two or three slackened in their pace just at the last. One horse only went the whole of it."

Mr Hawkes thus speaks of the necessary qualifications of hounds to show sport:—"To obtain a good run, hounds should not only have good abilities, but they should be experienced, and well acquainted with each other. To guide a scent well over a country for a length of time, and through all the difficulties usually encountered, requires the best and most experienced abilities. A faulty hound, or injudicious rider, by one improper step, may defeat the most promising run." It is evident, from the above judicious observations, that an old-established pack of hounds must have great advantages over one of an opposite character.

We shall finish our extracts from this little pamphlet, which was merely circulated privately amongst the author's friends, but valued as from the pen of so eminent a sportsman as the late Mr Hawkes proved himself to be, both in the field and on the race-course, where he shone conspicuously as one of the best gentlemen-jockeys of his day, with his judicious remark on the conduct of sportsmen who follow hounds. "Gentlemen, and every person who makes hunting his pursuit," says he, "should learn to ride judiciously to hounds. It is a contemplative amusement; and much good diversion might be promoted by a few regular precautions. The principal thing to attend to is, not to ride too near the hounds, and always as much as possible anticipate a check. By which means the leading men will pull their horses up in time, and afford the hounds fair opportunity to keep the line of scent unbroken. Sheep, cattle, teams at plough, and arable land, are all causes of checks. Thoughtless sportsmen are apt to press too much on hounds, particularly down a road. Every one should consider that every check operates against the hounds, and that scent is of a fleeting nature, soon lost, never again to be recovered."

The following is the concluding paragraph, affording a good specimen of the writer's enthusiastic love of fox-hunting, as also of a cultivated mind:—"Fox-hunting," he asserts, "is a manly and fine exercise, affording health to the body, and matter and food for a contemplative mind. In no situation are the faculties of man more displayed. Fortitude, good sense, and collectiveness of mind, have a wide field for exercise; and a sensible sportsman would be a respectable character in any situation in life. The field is a most agreeable coffee-house, and there is more real society to be met with there than in any other situation of life. It links all classes together, from the peer to the peasant. It is the Englishman's peculiar privilege. It is not to be found in any other part of the globe, but in England's true land of liberty; and may it flourish to the end of time!"

There is perhaps no part of the material of fox-hunting more interesting than the management of hounds in the kennel, which, we do not hesitate in saying, presents one of the most curious scenes that are anywhere displayed in the whole circle of the transactions of mankind with the inferior animal creation. To see sixty couples of those animals, all hungry as tigers, standing aloof in their yard (as is the practice in some kennels), and, without even hearing, much less feeling, the whip, not daring to move until the order is given to them to move. And what is the order given? why, at the words, "Come over, *Bitches*," or, "Come over, *Dogs*," every hound of each individual sex comes forward, as the sex it belongs to may be called for, leaving those of the other sex in their places. Then the act of drawing them to the feeding troughs is an exceedingly interesting sight. Often, with the door wide open, and the savoury meat in their view, the huntsman has no use for his whip, having nothing to do but to call each hound by his name, which of course he readily answers to. The expression of countenance, too, at this time, is well worthy of notice; and that of earnest solicitation, of entreaty, we might almost say of importunity, cannot be more forcibly displayed than in the face of a hungry hound awaiting his turn to be drawn. He appears absolutely to watch the lips of the huntsman, anticipating his own name. A view of a pack of fox-hounds likewise in their lodging-rooms, is a most agreeable sight to those who love to see animals in a high state of enjoyment, which no doubt hounds are when reposing on their well littered-down benches after a hard day's work, and with their bellies well filled. They absolutely appear to feel for each other's comforts, in placing themselves in situations that enable their fellow-creatures to repose parts of their bodies upon their own, to render their position for sleep and rest more agreeable to them.

The system of fox-hunting has been much changed since that sport commenced. Almost all foxes were once found by the drag, and the first challenge was loudly cheered in days when the game was scarce. A long drag, however, although a great test of *nose*, is by no means desirable, as, if it happens to be down wind, the fox takes the hint, and is off long before the hounds can hunt up to his kennel. It was nevertheless a fine feature in the sport, as the gradual increase of cry, the cheering holloas of the sportsmen, and the crash when the fox was unkennelled, contributed greatly to ennoble the scene, and created, as it were, two climaxes in a chase, when it ended in blood. But another disadvantage attended it. Hounds could not be depended upon, taking the average of scent, to hunt a drag that had become cold; so they were obliged to be out very early in the morning, which was not only disagreeable, as encroaching upon the sportsman's rest, but was coupled with the disadvantage, at all events with the risk, of finding a gorged fox, too full to run far, much less to run fast. The modern system does not require the drag, as woodland covers are comparatively small to what they used to be; gorse covers made for the purpose of holding foxes are easily accessible to hounds accustomed to draw them; and the game is in most countries so plentiful, that if a fox be not found in one cover, he is almost certain to be found in another, and that not far off. The consequence is, no more time is now lost in drawing two or three gorse covers, than the drag of one fox formerly occupied; neither did that always lead to a find. Moreover, at the present hour of finding, there is but little chance of unkennelling a gorged fox.

It is by some asserted, that what are called woodland foxes are stouter runners than those bred in the artificial gorse and other covers, and we have good reason to believe they are so. But the great objection to large woodlands is the uncertainty of getting a run, from the difficulty of making foxes break from them, as they naturally hang to places which appear to afford them security; and it often happens that hounds, and the horses of the servants, have done a fair day's work before the run begins. On the other hand, we admit that a fox found in a wood of considerable extent is more likely to show a decidedly good day's sport, than one found in an artificial cover, and for this reason: he slips away unperceived, eight times out of ten, and consequently has time to look about him, and make his points, ere the chase commences; whereas a fox viewed away from a small gorse cover, within sight of a hundred or two of horsemen, is bullied, frightened, and soon blown, which occasions him to run short; and, of course, if the scent serves, and the hounds are good, he cannot live long, half an hour being as much as can be calculated upon under such circumstances. Gorse covers, however, if not too small,—not under three or four acres,—are indispensable in a hunting country, as foxes are very fond of them for their security against any thing but fox-hounds; and another great advantage attending them is, that they can be placed wherever it may be thought desirable to place them.

The making of gorse covers requires no small attention, we had nearly said *skill*. The ground is all the better for being trenched to the depth of from a foot to a foot and a half, and it should be made as clean and in as good condition as if it were to be the seed-bed of turnips. The seed should be minutely examined, as it often fails from having lost its germinating properties; and it should be drilled in the ground, and hoed, after the manner of a turnip crop. By keeping it clean by the hoe, it will, if the seed be good, *and the land dry*, often hold a fox in the second year, but will seldom fail in the third. Some writers, Colonel Cook among the number, speak of broom being sown amongst gorse. This should never be, as all huntsmen who draw, or run through, broom covers, can vouch for their being decidedly inimical to scent. A novel description of fox-cover came into fashion a few years back in Leicestershire, but is not highly approved of, from the difficulty hounds experience in drawing it. Strong black thorn stakes are driven into the ground endways, at a small distance apart, and the rank grass and weeds growing rapidly over, and entwining with them, form a strong cover the first year; and it is found proof against a fall of snow, which gorse covers are not, and are often forsaken by foxes on that account. All artificially-made covers should be not nearer than half a mile at the least to any house or village; and if on a gently sloping bank, facing the south, foxes will like them better.

Some sportsmen object to many rides being cut through covers, as they are so often the cause of foxes being headed by the horsemen. The objection in part holds good; but a certain number of rides are necessary in all large covers, to enable the servants to get near their hounds, who might otherwise be disposed to run riot, as they soon discover when they are out of the reach of either rate or whip. Woodlands, with rides in them, are essential to the making of young hounds in all countries; and the finest in England are those of the Duke of Buccleuch, near Kettering in Northamptonshire, within the limits of the Pytchley Hunt, with rides, or, speaking more properly, avenues in them, to the extent of upwards of fifty miles.

When speaking of the disadvantages of large woods, in which foxes are apt to hang or dwell, Colonel Cook recommends killing a fox, and letting the hounds eat him, in the middle of them; which we believe will generally have the desired effect. On the other hand, should a fox be killed in a small cover, he should, if possible, be carried out of it before the hounds break him up, for reasons which are obvious from the foregoing remark.

The arrangement of earths, and the stopping of them, are matters of no small importance in a hunting country. Artificial ones are sometimes made, but they are reckoned unhealthy for foxes; and the best are those made by badgers, which can always be commanded at pleasure, by turning out those animals in pairs. On the proper and careful stopping of earths every thing depends; for nothing can be more annoying to sportsmen than to have their fox get to ground, just as the hounds have well settled to the scent of him, with every prospect of a run. There are various methods of stopping earths, but none more secure than by a bunch of gorse, or furze, crammed well into the mouth of them, with the stalks pushed inwards. When earths are only slightly stopped, a fox will scratch his way into them; and as this very often happens, it shows the necessity of a careful and experienced earth-stopper; and we agree with Colonel Cook in thinking it better to pay for each day's stopping, rather than annually in the lump, reserving the power to withhold payment in case of evident neglect. The expense of earth-stopping varies according to the nature of the soil, covers, &c.; but in certain countries it amounts to as much as L.200 per annum. It may also surprise some persons to hear, that the rent paid for artificial covers, that is, for the land on which they are made, in one hunt alone, in Leicestershire, amounts to upwards of L.700 per annum.

The following calculations of the expenses of a pack of fox-hounds, varying, of course, with the extent of them, are given by Colonel Cook, and admitted to be very near the mark; making allowance for the difference in the price of markets at the time he made them, and at others.

For hounds hunting twice a week:—

Six horses, including groom and helpers	L.300
Hounds' food, for 25 couples	150
Firing	30
Taxes	80
Whipper-in and feeder	140
Earth-stopping	50
Saddlery	40
Farriery, shoeing, medicine, &c.	50
Young hounds purchased, and expenses at walks	60
Casualties	100
	L.1000
A second whipper-in, and two horses in addition	170
	L.1170

Expenses for three times a week:—

Twelve horses, groom, helpers, &c.	L.600
Food for forty couples of hounds	220
Firing	40
Taxes	100
Two whippers-in and feeder	210
Earth-stopping	65
Saddlery	80
Farriery, shoeing, &c.	80
Young hounds purchased, and expenses at walks	80
Casualties	150
	L.1625

Expenses for four times a week:—

Fourteen horses, &c.	L.700
Hounds' food for fifty couples	275
Firing	50
Taxes	120
Two whippers-in and feeder	210
Earth-stopping	80
Saddlery	100
Farriery, shoeing, &c	100
Expenses of greyhounds purchased, and at walks	100
Casualties	200
	L.1935

"If you do not attend to the kennel department yourself," adds the Colonel, "but keep a huntsman, the expense will be at least L.300 more."

The only remark we have to offer on the foregoing calculations is, that the author does not allow a sufficient number of hounds for the several days' hunting in the week. For example, we venture to say, that no country could be hunted four times a week with fifty couples of hounds; at all events, fifty couples of hounds equal to that work are very rarely to be found. We agree with the writer, that either four times a week, or even twice, are preferable to three, for keeping hounds in regular work, when sound But on the subject of expenses we have a word or two more to say. Knowing, as we do, that they generally, we believe we may add always, exceed the calculations made by Colonel Cook, and in some instances by double, we consider it rather inconceivable that, in the present depressed state of land property, either noblemen or private gentlemen should be expected or permitted to bear all the charge of hunting a country themselves, knowing, as we do, the great sacrifices of property and income that have already been made to a perseverance in keeping fox-hounds, unassisted by a subscription. But this cannot go on much longer; nor indeed is it, with some exceptions, fit that it should; and, in support of our assertions, we will quote the sentiments of a writer on this subject, admirably well expressed, in a late number of the New Sporting Magazine.[1]

After hinting at the probable decline of a sport, from this cause alone, which Mr Burke described as "one of the balances of the constitution," he thus proceeds:—"As to the total abolition of the sport, we anticipate no such event. It is the favourite sport of Englishmen; and that which a man likes best he will relinquish last. Still, with the exception of countries that boast their Clevelands, their Yarboroughs and Suttons, their Graftons, Beauforts, Rutlands, Fitzwilliams, Segraves, Middletons (his lordship is since dead), and Harewoods—their great and sporting noblemen, in fact—we feel assured that, unless something be speedily arranged, half the packs in England must either be curtailed of their fair proportion of sport, or abolished altogether. This is not as it should be. Men are as fond of hunting, at least of riding to hounds, as ever; but though we feel that we may be telling a disagreeable truth to many, the fact is, that most men want to hunt for nothing. The day for this, however, is fast drawing to a close. The breed of country gentlemen who keep hounds—the Ralph Lambtons, the Farquharsons, the Assheton Smiths, the Villebois and Osbaldestons—are fast disappearing, in all probability never to be renewed. True that it is a fine, a proud sight, to see an English country gentleman spending his income on his native soil, and affording happiness and amusement to his neighbours, receiving their respect and esteem in return; but we cannot help feeling, that unless a man has one of those overwhelming incomes that are more frequently read of than enjoyed, it is hardly fair that the expenses of a sport which affords health and recreation to hundreds should fall upon his individual shoulders. Heirs at law will not be hindered by the remoteness of relationship from impugning the conduct of their ancestors; nor will it be any consolation to a son, on coming into possession of an overburdened estate, to know that the difficulties which oppress him were incurred for the purpose of keeping a pack of fox-hounds, by which his father afforded amusement to the country." It may here be not unappropriately added, that at the time the above was written (February 1834), three of the best hunting countries in England were vacant, viz. the Quorndon in Leicestershire, the Pytchley in Northamptonshire, and the Oakley in Bedfordshire.

Fox-hunting is a sort of prescriptive right, which England has claimed from a very early period; and, more than this, it has long been considered that the common law allowed persons to enter the lands of another in pursuit of a fox, the destruction of which was presumed to be a public benefit. This opinion was founded on the celebrated case Grundy *v.* Feltham (1, *Term. Reports*, p. 334); but in that of Earl of Essex *v.* Capel, Summer Assizes, 1809, the legality of hunting foxes over the land of another is rendered very questionable. This being the case, it is a great compliment to the sport, as no doubt injury of land to a certain amount, though small, is occasioned by it, that it is permitted to the extent to which we see it, in every county in Great Britain; and that an action of trespass is an unusual occurrence, must be considered as still more creditable to the yeomanry and tenantry who live by the occupation of land. On the other hand, however, it must be remembered, that the produce of land is very considerably enhanced by the great demand, as well as extra prices given, for hay, corn, and straw, as likewise by the encouragement to breeding horses; and that, wherever there is a colony of fox-hunters, it is accompanied by a great influx of money, which is expended in the immediate neighbourhood.

There were formerly three established classes of hunting in Great Britain, each of which had advocates, as it may have been suitable to situation, fortune, time of life, &c.; and although the struggle for superiority has ended in favour of that of the fox, we have reason to believe, that since what are termed "*packs of hounds*" have been established, hunting the stag or buck claims precedence of the hare; the hare of the fox; the otter, perhaps, of all. We will then offer a few more remarks upon them, as we have ranked them here.

Since the stag has ceased to be drawn for, and found in his native majesty, and hunted as a wild animal, "stag hunting" has lost all its interest with the sportsman; and when we say that the chase of no other animal is, after all, from first to last, so full of interest as that of the stag, the sportsman has some cause for regret. But wild-stag hunting could not have remained one of the popular diversions of Great Britain, for two sufficient reasons. First, from the country being so generally cleared of wood, there would have been a great scarcity of game; and, secondly, from the circumstance of the stag being, by his nature, unfit to be hunted during some of the months that sportsmen like to be on the field. The act of harbouring the deer, however, must be considered as amongst the very highest branches of the sportsman's art, and one which none but a well-practised sportsman could perform. Neither was the hunting to death of the wild stag by any means so easy a task as might be supposed, from the bulk of the animal, which it must be proportionally difficult for him to conceal. On the contrary, like the harts of Meandros, flying from the terrible cry of Diana's hounds, the "wise hart," or *cerf sage* as he is termed in ancient hunting, knows how to foil hounds perhaps as well as, or better than, most other wild animals, and is allowed to consult the wind in his course more than any of them. It is also said of him, that he will, when pursued, rouse other deer from their lair, to induce the hounds to run counter, or change; and his device of taking soil, with nothing but the nose to be seen above the water; running down a stream, and seeking for a hard and dry road when pressed; are facts too well established to require comment. But, after all, the subtilty of man in harbouring a deer, and knowing beforehand its age, sex, and size, by the slot and other distinguishing marks which it leaves behind it as it traverses its native forests, is more conspicuously displayed than in any other department of the chase, and is a most satisfactory illustration of "the dominion given to man over every living thing that moveth upon the earth." We shall then dismiss this part of our subject with the remark, that although, properly speaking, the diversion of hunting the stag is totally extinct in Great Britain, we can vouch practically for the fact, that there is not a nobler sight in nature than that of a full-headed stag roused from his lair by hounds, and majestically trotting before them, snuffing the air as he goes, and appearing to care little for his pursuers, from confidence in his natural powers. That these powers are great, all modern stag-hunters are satisfied of; and those of endurance, when chased, are allegorized in the fable of the Mænalæan stag, the running down of which is said to have occupied Hercules for a year, and was in consequence counted amongst the labours of that hero. That deer are superiorly winded animals, is apparent by the immense height they can leap, just before they die from bodily exhaustion; and it may be accounted for by their being furnished with *two* spiracles, or breathing places, one at the corner of each eye. Oppian, the Greek poet, must have supposed, by the following line, that they had *four*.

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[1] No. xxxiv. vol. vi.

"Τετραδυμοί ῥινες, πισυρες πνοιησι διαυλοι,"

which was a mistake of the sporting bard; and some writers have made Aristotle say, that goats breathed at their ears, whereas he directly asserts the contrary. The classic writers, however, as well as our own poets, have taken some of their most beautiful similes from the chase of the deer; for example, Virgil's comparing the flight of Turnus to a stag trying to escape from the toils; and the death of the favourite hind by the hand of the young Iulus, a master-piece of pastoral poetry. But the death of the stag has been a favourite theme of our own poets; and both Shakspeare and Thomson have been equally happy in their description of the last moments of the antlered monarch of the forest, the latter particularly:

............................"He stands at bay,
And puts his last weak refuge in despair.
The big round tears run down his dappled face:
He groans in anguish; whilst the growling pack,
Blood-happy, hang at his fair jutting chest,
And mark his beauteous chequer'd sides with gore."

The following account of hunting the wild stag in Devonshire, but now nowhere to be seen in England, is from one of Nimrod's Tours, in 1824:—"The amusement of stag-hunting appears to be of ancient date in the county of Devon. For many years previous to 1775, the North Devon stag-hounds were kept in a style almost amounting to magnificent, by the then Sir Thomas Acland, Bart., when Colonel Basset took them and kept them to the year 1784. At that period the late Sir Thomas Acland became master of them, and kept them to the year 1793, when Colonel Basset took them again, at his own expense, and hunted them to the year 1801 inclusive; when ill health obliging him to part with them, he gave away all but six couples and a half to Lord Soudes. In 1802 Lord Fortescue revived them, by receiving from Colonel Basset the six couples and a half he had reserved, and kept them for that year. In 1803 they were first kept by subscription by Mr Worth, who continued at the head of them till 1810. In 1811 Lord Graves became master of them, also by subscription; but in the spring of 1812 Lord Fortescue determined upon keeping them at his own expense, which he did for seven years, when they were once more established by subscription; and since the year 1819 have been managed by Mr Lucas, who still continues at their head."

The next year after Nimrod visited them, they were given up; but we give the extracts from his account of two days' diversion with these hounds, on each of which they found a "warrantable" deer. Speaking of the first, he says, "When we arrived within half a mile of the covert in which a stag was harboured, the hounds, till then in couples, were put into a stable, when the celebrated Joe Faulknor, one of the whippers-in, was despatched with two couples of old hounds, for the purpose of rousing the game. One of these, a hound called Leader, was shown to me as a sample of a perfect stag-hound; and they were both said to be so steady, and to know a rate so well, that they will stop if a wrong (not a warrantable) deer be found, and will draw again. It was some time after Joe had got his tufters into covert before we heard any thing but an accidental note from his melodious pipe, which is certainly pitched in the right key. During this interval of suspense, for, as the poet sings,

......................"The blood more stirs
To rouse a lion than to start a hare,"

a farmer rode up with a piece of a stick in his hand, which was cut to the size of a *slot* he had found in a neighbouring wood. On my measuring it by my hand, I found it to be four inches in length, which, exceeding the usual length, showed it to be the slot of an old and very large stag." He then proceeds to relate that the harboured stag was roused, but afforded very little sport, on account of the extreme badness of the weather, and total want of scent. Of the find on the second day he thus speaks:—"The stag lay 'close couched,' or he must have been found before. We stood on an eminence which overhung the covert, and therefore could command a view of it. A long silence had prevailed, and we began to wonder what had become of Joe and his tufters, when all on a sudden a holloa was heard, and a hound threw his tongue:

"The deep-mouthed blood-hound's heavy bay
Resounded up the rocky way;
And faint, from further distance borne,
Were heard the clanging hoof and horn."

The rouse, it seems, had taken place in a small covert, a short distance below us, and we could see a stag of noble size, with branching antlers, trotting majestically along in a small opening between two woods, apparently paying little attention to the old hounds behind him. Indeed, at one time, so far from verifying the words of a poet, that *pedibus timor addidit alas*, he very coolly broke into a walk, as much as to say, 'I value you not;' but the staunch old tufters getting nearer to his haunches, obliged him to quicken his pace; and, to the great joy of all present, he put his head straight for a moor twelve miles across." But this is a subject for poetry; and it is impossible to read even the foregoing short account of rousing the deer with hounds, without calling to our recollection the beautiful lines of the Scottish bard in the *Lady of the Lake*, so strictly true to nature:—

"The antlered monarch of the waste
Sprang from his heathery couch in haste;
But ere his fleet career he took,
The dew-drops from his flanks he shook;

Like crested leader proud and high,
Tossed his beamed frontlet to the sky;
A moment gazed adown the dale,
A moment snuffed the tainted gale;
A moment listen'd to the cry,
That thicken'd as the chase drew nigh;
Then, as the headmost foes appear'd,
With one brave bound the copse he clear'd,
And stretching forward free and far,
Sought the wild heaths of Uam-Var."

Nimrod relates a few incidents connected with this day's sport, peculiar to hunting the deer. "I had," says he, "in this run, an opportunity of witnessing a circumstance peculiar to stag-hunting, and that is, *hunting in water*. Our deer beat down a river for about half a mile, the hounds following him by scent, which we might wonder how they could avail themselves of in so chilling an element as a rapidly-flowing stream. This, I think, may be called one of the master-pieces of natural instinct." Again, "Our stag once sank in Bremridge Wood, when he was fresh found; and the crash of those deep-tongued hounds at the time was very fine indeed. I was in hopes we should have viewed him in Castle Hill Park, but we were just too late. When he broke out of the park, he took a ring through some of the neighbouring coverts; when skirting it again, he returned to the place where he was found, and was killed at Bragford, a short distance beyond. He was once what is called 'set up' in the water, where he sank; but breaking out again, he was pulled down by the pack; and when one of the field went up to him to cut his throat, his eye was glazed. He was as fine a stag as ever was seen. He had brow, bay, tray, three on top on one horn, and two on the other; *and the weight of his haunch was thirty-nine pounds*." Nimrod laments the want of the French horns that formed part of this establishment, but which, some time before his visiting it, were done away with. The *recheat* and the *mort* were wanting to make the thing complete.

A kind of technological dictionary is required to almost all sports of flood and field. Of the technical terms in deer-hunting Nimrod thus speaks:—"What we fox-hunters call the ball or pad of a fox on foot, they term the 'slot.' We drag up to a fox; they draw on the slot, or walk up a deer. We find or unkennel a fox; they rouse or unharbour a deer. A fox runs up and down a cover; a dear beats up or down a covert, or a stream. With us, a fox is headed (turned back, or driven from his point); with them, a deer is blanched. We say, a fox stops or hangs in a cover, in a run; they say, their game sinks. We recover our fox; they fresh find their deer. We run into (kill) our fox; they set up the deer. The fox is worried; the deer is broken up. The fox goes a clicketting; the deer goes to rut. The fox barks; the stag bellows. The billiting (excrement) of the one is termed the feument or feumishing of the other. The brush of the fox is the single of the deer. The mask of the fox is the snout or nose of the deer. The view, the foil, the tally-ho, and who-whoop, are common, I believe, to all; but currant jelly and sweet sauce are not in the fox-hunter's vocabulary." "There are some expressions here," continues Nimrod, "which require farther explanation than I am able to afford them; and it is almost presumptuous in me, without any assistance at hand, to attempt giving an opinion on the subject. The word 'harbour,' however, is one of common acceptation, and implies a place of refuge. To unharbour a deer has long since been settled by Pliny: '*Excutere feram cubili.*' The expression is clear, and falls smoothly on the ear. Not so with 'taking soil:' it savours of filth, and is only applicable, in this sense, to a hog delighting, in the summer months, to wallow in mud or dirty water, previously to going to his bed. To 'beat up and down' is only another way of expressing to run to and fro, and is found in Terence, in the word *cursito*. The deer being 'set up,' can only be in allusion to his having his throat cut; for Cicero speaks of a man being 'set up' to have that pleasant operation performed:—'In cervicibus *imponere* dominum.' The stag roused from his lair has certainly a great superiority over unkennelling the fox. The latter is tame and puny, whereas the former is bold and classical, and quite in association with the wildness of the forest, of which this animal is the monarch. The lair is but another word for the den; as we read in Virgil's celebrated contrast of a town and country life, in which he so beautifully describes the manly pursuits of the latter; and likewise in the hunting scene with Dido and Æneas. The word feument I never heard before, but conclude it is derived from the Greek word φυρμα, *recrementum*."

The following is Nimrod's description of a full-headed deer. "A perfect head, I find, consists of brow, bay, tray, and three on top of each horn; but some have brow, bay, tray, and five on each horn, though these are rare."

Of the powers of endurance of a deer before hounds, as also of his subtilty in foiling them, the same writer thus speaks: "When we reflect on the powers of a stag, and look at his qualities for speed, we cannot be surprised that, when not overladen with flesh, or a 'heavy deer,' as he is then called in Devonshire, he should afford some extraordinary chases. The following well-authenticated facts will speak to their powers of locomotion: 'When Sir Thomas Acland kept the hounds, a farmer in the neighbourhood of Holnicote House saw a stag one evening in his fields, with a particular spot on his side. The next morning he met this same stag running in great distress, with the hounds close at his haunches, and he soon afterwards sank before them. On his asking Sir Thomas where he had found him, he learnt that it was twenty-five miles, as the crow flies, from the place where he was killed. He must therefore have travelled that distance in the course of the previous night.'" Again, on the power of leaping, which we have already noticed, and particularly in allusion to their wind, when otherwise much distressed, we find the following remark: "On my return from hunting on the preceding Tuesday's hunting," says Nimrod, "I was shown a leap, in Lord Fortescue's park, which a hind had taken last season before this pack, after a long run, and not ten minutes before she sank before them. What makes it more extraordinary is, that, on being paunched, a calf was taken from her almost able to stand. The fence was a stone wall, with a rail on the top of it, not to be broken; and your readers may judge of its height from the following statement, having had no other means of measuring it: My own height is five feet nine inches; the horse I rode is fifteen hands two inches high; the top of the fence was upwards of two feet above the crown of my hat; and it was up a steep bank that she approached it. The stag we ran went up to this fence, but did not attempt to leap it."

The natural history of the stag will be given in due course; and we now dismiss the subject of stag-hunting with the remark that, although, from the adverse circumstances attending it in a country like Great Britain, so generally free from large tracts of woodlands, which the red deer delights in, and also so much intersected with streams, real stag-hunting can never be again reckoned amongst the popular diversions in England, a good substitute for it is found in the turning out deer before fox-hounds in the neighbourhood of the metropolis, which has the advantage of affording a certainty of something in the shape of a run, and frequently very long ones, to persons whose time is precious, as well as the opportunity of, in a great measure, selecting the country best suited to the habits and propensities of the game. There are a number of stag-hunting establishments in England, and there has been a royal establishment of this nature throughout several successive reigns. In that of George III. stag-hunting was in high repute amongst the nobility and gentry forming the court, as well as of others residing in its neighbourhood. Mr Beckford said little about it, because he knew little: the reason he himself gives; but the following expression in his book relating to it made a deep impression on fox-hunters, who reluctantly acknowledge its truth. "Could a fox-hound," says Mr Beckford, "distinguish a hunted fox, as the deer-hound does the deer that is blown, fox-hunting would be complete."

The roe-buck has partaken of the same respite from the chase as the wild red deer, although by the old laws of the forest he was not considered as venison until hunted; and, according to Cæsar, the Britons did not eat this animal at all. The fact is, the roe-buck runs so short, after the first ring, that he is said to hunt the hounds, instead of the hounds hunting him; an artifice by which he hopes to elude his pursuers, as, of course, it must produce a confusion of scents. Neither does his cunning end here. When closely pursued in a thick wood, he will bound to one side of a path by a sudden spring, and, lying close down upon his belly, permit the hounds to pass by him without offering to stir. But the beauty of form and elegance of motion of the "favourite roe," which Solomon has made an emblem of connubial attachment, ought to protect it from the chase, although they do not appear to have done so in the country in which Solomon wrote, as he recommends to the man who has engaged to be surety for his neighbour, to deliver himself "as a roe from the hand of the hunter, and as a bird from the hand of the fowler." There has been only one pack of roe-buck hounds kept in Great Britain, and that was by a gentleman of the name of Pleydell, of Whatcombe House, near Blandford, Dorsetshire, lately deceased, in whose covers these animals abounded, as they also do in various parts of Scotland.

Hunting the *otter* was a sport much thought of in England, and is of very early date, chiefly perhaps for the great value formerly set on fresh-water fish, previously to that of the sea being so generally available throughout the country as it has been within the last hundred years, and continues to be still more so. The system of hunting the otter is this: The sportsmen go on each side of the river, beating the banks and sedges with the hounds. If there be an otter near, his "seal" (foot) is soon traced on the shore; and, when found, he is attacked by the sportsmen with spears, when he "vents," that is, comes to the surface of the water to breathe. If he be not soon found by the river side, it is conjectured he is gone to "couch" inland, for he will occasionally go some distance from his river to feed. He is traced by the foot, as the deer is; and when found, and wounded in the water, he makes directly for the shore, where he maintains an obstinate defence. He bites most severely, and does not readily quit his hold; on the contrary, if he seizes a dog in the water, he will dive with him to the bottom of the river, and will never yield to him whilst he has life. This sport is still pursued in the few fenny and watery districts that now remain in England, and has for a long time been confined principally to those parts where, from local circumstances, the other more noble and exhilarating distinctions of the chase cannot be conveniently enjoyed. An attempt, however, has been recently made to revive it, by a celebrated Oxfordshire sportsman, Mr Peyton, only son of Sir Henry Peyton, Bart., of which attempt we subjoin an account, extracted from the *Oxford Journal.* By this, two facts are established; the one, that otter-hunting spiritedly pursued is not a tame diversion; and the other, that the charge against this animal of destroying young lambs and poultry, is not altogether unfounded.

"We have great pleasure in informing our readers, that a novelty in the sporting world, as far as relates to this county, has recently been introduced by that ardent and indefatigable sportsman, Mr Henry Peyton, namely, a pack of those rare animals, otter-hounds, with which he hunts the country in the neighbourhood of Bicester; so that these midnight marauders and inveterate enemies of the finny tribe, which are numerous in the Cherwell, and streams near Rousham and North Aston, will not repose as heretofore in uninterrupted security. Mr Peyton hunts the pack himself, assisted by a very powerful auxiliary in the person of Viscount Chetwynd. These gentlemen start with their otter spears ere the day breaks, and at half-past five in the morning they may be seen two or three times a week wending their way on foot along the banks of the river, in pursuit of the 'furry varmint.' The pack has had some very excellent runs, one of which continued a distance of twenty-five miles, having been found in the river Cherwell, near to Flights Mill, and hunted through all the turnings of that serpentine stream to his lodgings at Watereaton, where he took refuge amongst the old willows, and succeeded in baffling his pursuers; subsequently to which a capital day's sport was afforded at North Aston. The hounds found near the mill, and went away in the direction of Nell Bridge; but twisting into the Adderbury Brook, after a chase of about eight miles, he was come up with, when some hard fighting occurred, in which a small terrier, bred by Mr Peyton, greatly signalized himself, being much punished, as indeed were all the hounds, from the determined ferocity of the otter, which was ultimately speared by Mr Peyton. It turned out to be a fine bitch otter, weighing upwards of twenty pounds, and, from the appearance of the dugs, it was conjectured that some of her family were in the vicinity, and consequently the hounds were again laid on, and finally succeeded in killing four fine cubs, weighing on the average eleven pounds each. The farmers of the neighbourhood who were up at the death were quite overjoyed, and nothing would satisfy them but the immediate cutting up of one of the cubs 'à la reynard,' and a distribution of the pads, head, and body, amongst them. It is said that these amphibious fish-merchants, when suffering hunger by reason of a scarcity of fish, will boldly in the season carry away young lambs; so that the farmers, independently of their stream being pilfered of fish, often sustain a more substantial injury, and therefore are much gratified at the opportunity now afforded of in some degree thinning the numbers of these voracious gluttons."

The otter-hound is not a distinct kind of hound, the strong rough-haired harrier answering the purpose best, provided he will hunt a low scent, as the game shows no small sagacity, as well as circumspection, in guarding against assault from man or dog. In 1796, on the river Worse, near Bridgenorth, Shropshire, four otters were killed, one of which stood three, another four hours before the hounds; and in 1804 the otter-hounds of Mr Coleman of Leominster, Herefordshire, killed an otter in a mill pond, which is said to have weighed thirty-four pounds and a half; supposed to have been eight years old, and to have consumed a ton of fish or flesh annually, for the last five years. It will be observed, in the list of hounds, there are three more packs kept in England for the purpose of hunting the otter.

Hare-hunting claims precedence of fox-hunting in the sporting chronology of Great Britain, and we believe of all other countries, inasmuch as a hare has always been esteemed excellent eating, and a fox the rankest of carrion. We gather from Xenophon that it was practised before his day, and he wrote fully upon it above three centuries before Christ, both hounds and nets being then used in the pursuit. Neither can we marvel at hare-hunting being the favourite diversion in all nations given to sporting where the use of the horse in the field had not become common. But we will go a point farther than this, and assert, that how inferior soever may be the estimation in which hunting the hare is held in comparison with hunting the fox, no animal of the chase affords so much true hunting as she does, which was the opinion of the renowned Mr Beckford.

In our description of the modern harrier (see article HOUND), we have termed him the fox-hound in miniature; and we may apply the simile to hare-hunting, which now, as long as the chase lasts, greatly resembles fox-hunting, only on a minor scale. In the modern system, there is no tracking to the seat with the one, any more than dragging up to the kennel with the other; but both animals are now chiefly stumbled upon by accident, and instantly fly for their lives. With the system of hunting also has the kind of hound been altered; there being now no longer occasion for that nice distinction of scent which was wanting to be a match for the windings and doublings a hare was able to make in her course when hunted by the slow and fastidious southern hound, and which was essential to the finding her at all, in countries where hares were scarce, by the perplexing means of a very cold trail. In fact, we do not think we can better elucidate the gradual but great change that has taken place in this highly popular and ancient British diversion, than by the following extracts from a very old work upon sporting called the *Gentleman's Recreation*, published nearly two centuries back.

"Your large, tall, and big hounds," says the author, "called and known by the name of the deep-mouthed or southern-mouthed hounds, are heavy and slow, and fit for woodlands and hilly countreys; they are of deep mouths, and swift spenders; they are generally higher behind than before, with thick and short legs, and are generally great of body and head, and are most proper for such as delight to follow them on foot, as *stop-hunting*, as some call it; but by most it is termed 'hunting under the pole;' that is, they are brought to that exactness of command, that, in their hottest scent and fullest chase, if one but step before them, or hollow, or but hold up or throw before them the hunting pole, they will stop at an instant, and hunt in full cry after you at your own pace, until you give them encouragement by the word of command; which much adds to the length of the sport and pleasure of the hunters, so that a course oft-times lasts five or six hours.

"Opposite to the deep-mouthed or southern hound are the long and slender hounds called the fleet or northern hound, which are very swift, as not being of so heavy a body, nor hath such large ears: these will exercise your horses, and try their strength; they are proper for open, level, and champain countreys, where they may run in view and full speed; for they hunt more by the eye than the nose, and will run down the game in an hour, and sometimes in less; that is, *a hare;* but the fox will exercise them better and longer.

"Between these two extremes there are a middle sort of dogs, which partake of both their qualities, as to strength and swiftness, in a reasonable proportion; they are generally bred by crossing the strains, and are excellent in such countreys as are mixt, viz. some mountains, some enclosures, some plains, and some wood-lands; for they will run through thick and thin, neither need you help them over hedges, as you are often forced to do by others.

"A true right-shaped deep-mouthed hound should have a round thick head, wide nostrils, open and rising upwards, his ears large and thin, hanging lower than his chaps; the flews of his upper lips should be longer than those of his nether chaps; the chine of his back great and thick, strait and strong, and rather bending out than inclining in; his thighs well trussed; his haunches large; his fillets round and large; his tail or stern strong set on, waxing taperwise towards the top; his hair under his belly rough and long; his legs large and lean; his feet dry and hard, with strong claws and high knuckles. In the whole, he ought to be of so just a symmetry, that when he stands level you may not discern which is highest, his fore or hinder parts.

"For the northern or fleet hound, his head and nose ought to be slenderer and longer, his back broad, his belly gaunt, his joynts long, and his ears thicker and shorter; in a word, he is in all parts slighter made, and framed after the mould of a greyhound.

"By crossing these breeds as aforesaid, you may bring your kenel to such a composure as you think fit, every man's fancy being to be preferred; and you know the old saying,

> 'So many men, so many minds,
> So many hounds, so many kinds.'"

In proof of our assertion, that there is more of true hunting with harriers than with any other description of hounds, we shall point out a few of the difficulties which they have to overcome. In the first place, a hare, when found, generally describes a circle in her course, which is in itself not only more difficult to follow, but it naturally brings her upon her foil, which is the greatest trial for hounds. Secondly, the scent of the hare is weaker than that of any other animal we hunt; and, unlike some, it is always the worse the nearer she is to her end; which accounts for its being better, and lasting longer, when going to her seat, than when running. There is scarcely any scent from a hare until she is in motion; therefore hounds constantly draw over her; and, of course, according to the length of time she has been gone to her seat after feeding, will be the difficulty of hunting her by the trail. In fact, at the most distant part of her previous night or morning's walk, the most tender-nosed hound in a pack will be scarcely able to own the scent at all. But the grand puzzler of all is, when hounds get upon the counter trail, about the middle of a hare's work, and the scent lies so equal that it is most difficult to distinguish heel from chase. No such difficulty as this can occur in any other description of hunting, and can only be obviated by the skill and experience of the huntsman in his notice of the working of his hounds. But although this difficulty is alluded to by almost all writers on the chase, we know not where to look for directions to the huntsman at the critical moment. It is true, Mr Daniel, in his *Rural Sports*, says, "To find out this, see if your hounds challenge counter; if they double, and carry it on counter, they will soon signify their error by opening singly." We conceive there is some reason in this remark, but it will not always avail. Hounds, harriers in particular, are fond of a scent; and if they cannot carry it forward, they will turn and hunt it heel; and here it is that the judgment of a huntsman turns to account. One with a keen eye, and *a perfect knowledge of his hounds*, may be able to unravel this mystery perhaps six times out of ten; but it is in no man's power to be sure of doing it. His chief guide is in the cry of his pack at this time, which will slacken instead of getting fuller if the scent be heel, as the experience of old hounds adds to their natural instinct the faculty of judging whether it is leading them to their prey or from it.

The great perfection of modern harriers is the head they carry over a country, the result of the pains now taken in breeding them of the same size and character; whereas, upon the old system, which was all for *the pot*, the chief dependence was upon a few couples out of the whole pack, the rest being wheresoever they liked or were able to be in the chase. On the other hand, it may be said modern harriers have not the nose and patience of the old sort, which perhaps they have not; but what they may lose in those respects, they more than gain in another, viz. by being nearer to their game in chase, and, by pressing her, not allowing her to make more than half the work she was able to do when pursued by slow hounds. In fact, the want of speed, and tedious exactness, of the southern hound, rendered the warmest scent, after a short time, cold; which may be proved from the fact of an hour being the average time of killing a hare, in former days, with a good scent, and from three to four with what is called a "fair," a "holding," or a "half scent." For our own part, speaking as fox-hunters, yet abandoning all prejudices against a sport it is too much the fashion to hold cheap, we consider that, to any man who is a real lover of *hunting*, that is, of seeing hounds do their work, and do that work well, a twenty minutes burst over a good country, with a well-bred pack of harriers of the *present* stamp and fashion, affords a high treat. To see them to advantage, however, it should be over a country in which the fields are large, and the fences stone walls, like those of Oxfordshire or Gloucestershire; for harriers, being for the most part obliged to meuse, strong hedges prevent their carrying a head in chase, which is the chief beauty in all hunting.

Somerville has these appropriate lines on the adaptation of hounds to their game:—

> "A different hound for every chase
> Select with judgment; nor the timorous hare
> O'er matched, destroy; but leave that vile offence
> To the mean, murderous, coursing crew, intent on blood and spoil."

Harriers should not be too large, certainly not more than eighteen inches high, or, by their speed, and, if good withal, they will much overmatch their game; but in a good and open country there should never be less than from eighteen to twenty couples in the field. A strong pack not only adds to the respectability of the thing (at all events, a small one greatly detracts from it), but, in our opinion, more hounds are wanting to pursue an animal that runs short, than one which, like the fox, generally makes for a distant point. The opinion of Mr Beckford is in opposition to us here. He says, "the fewer hounds you have, the less you foil the ground, which you will find a great hindrance to your hunting;" but it must here be remarked, that in the preceding sentence, this eminent sportsman speaks of the difficulty of getting a strong pack of harriers to run well together; a difficulty which no doubt existed in his day, but is totally overcome in the best hare-hunting establishments of ours. Indeed, we once heard a sportsman declare, and he was a sportsman who had hunted in all the best countries in England, that he had never seen a chase quite complete from end to end, not a single hound being out of place, until he saw it with a pack of harriers over the Cotswold Hills.

The following passage from Beckford is worthy of his pen, and should be strictly observed by all masters of harriers:—"Harriers, to be good, must be kept to their own game. If you run fox with them, you spoil them. Hounds cannot be perfect unless used to one scent and to one style of hunting. Harriers run fox in so different a style from hare, that it is of great disservice to them when they return to hare again. It makes them wild, and teaches them to skirt. The high scent which a fox leaves, the straightness of his running, the eagerness of the pursuit, and the noise that generally accompanies it, all contribute to spoil a harrier." We conclude that the writer here alludes to hunting wild foxes, which is now very rarely done with a pack of harriers, at least in a country near to which fox-hounds are kept. No master of harriers would do it, who wishes his pack to be perfect; and there are other reasons for his not doing it, which it is unnecessary to mention. But the very best understanding now generally exists between masters of fox-hounds and masters of harriers; and it is a common practice of such of the latter as reside in a fox-hunting district, to await the publishing of the fox-hunting fixtures before they make their own.

The following hints may be useful in hunting the hare. First, respecting the hare herself; hares breed from February to the end of harvest, and are said to live seven years. The buck affords the best sport, particularly *in the spring*, when, after one or two rings, he often goes straight on end for several miles. Hence the proverb, "as wild as a March hare." Some persons pretend to distinguish the sex upon the seat; at all events, the head of the buck is shorter, the shoulders redder, and the ears redder, than those of a doe; he is also larger, and his hind parts are of a lighter colour. If the claws are smooth and sharp, and the ears tear easily, the hare is young.

The difficulty of finding a hare by the eye is well known. It is an art greatly facilitated by experience, although not one person in ten who attempts it succeeds in it. But here we recognize the Hand that furnished her with such means for her security; as, from the delicacy of her flesh, she is the prey of every carnivorous animal, and her means of defence are confined only to her flight. In going to her form, she consults the weather, especially the wind, lying always, when she can, with her head to face it. After harvest, hares are found in all situations; in stubble fields, hedgerows, woods, and brakes; but when the leaves fall, they prefer lying upon open ground, and particularly on a stale fallow, that is, one which has been some time ploughed; as likewise after frost, and towards the spring of the year. In furze, or gorse, they lie so close as to allow themselves nearly to be trodden upon, rather than quit their form. The down or upland-bred hare shows best sport; that bred in a wet, marshy district, the worst, although the scent from the latter may be the stronger. If a hare, when not viewed away, runs slowly at first, it is generally a sign that she is an old one, and likely to afford sport; but hares never run so well as when they do not know where they are. Thus, trapped hares, turned out before hounds, almost invariably run straight on end, and generally till they can run no longer; and they generally go straight in a fog.

The chase of the hare has been altered, and rendered less difficult in some degree, by the improvement of the hound used in it. In the first place, she is now so pressed by the pace at which she is hunted, that she has not time, when first started, to visit the works of the preceding night; nor is she, from the same cause, so likely to run her foil. But when making out her foil, hounds are now not let to puzzle over it as formerly, but, if it be not quickly done, are rated forward by a whipper-in, to make good the head; and if that do not succeed, to make it good round the fences. Formerly, when hounds were at fault, the cast was made in a small circle to begin with, and then their huntsman tried wide; whereas they now generally, and especially if the game is supposed to be not far before them, make a wide cast at first, and then contract the circle if the wide cast fails. There is reason in this; for if the hare is on, the wide cast will cross her; and if she is not, she has most likely squatted. The old system was, "avoid a view, if possible." The modern one rather encourages a view, but no holloaing; for as hares regulate their speed in great measure by the cry of hounds, they are less apt to have recourse to shifts when the cry bursts upon them at once. In fact, to suit the taste of the day, which is to have every thing that moves, fast, it was necessary that the greater part of the system of hunting the hare should be changed. It used to be insisted upon, that harriers should never be lifted as long as they can possibly carry a scent; and Beckford says, "a hare is not fairly hunted unless the pack be left almost entirely to themselves; that they should follow her every step she takes, as well over greasy fallows as through large flocks of sheep; nor should they be cast, but when nothing can be done without it." This may have been all very well when gentlemen followed hounds on foot, or were content to be some hours killing one hare; or for Mr Beckford himself, who (although he admits having bred an infinity of harriers before he could get a pack to please him) thought hare-hunting should be taken as a ride after breakfast, to get an appetite to dinner.

But we have reason to believe, if a master of harriers of the present day wished to show his pack to advantage, and could have a choice of a run to display them, he would say, "Give me twenty-five minutes *in all;* the first fifteen a severe burst; then a fault, well hit off; and the remaining ten without a turn." But, it may be asked, wherefore the fault? We reply, because, although the speed of well-bred harriers, for a certain time, if not quite equal to that of fox-hounds, is too much for most hares, as well as for most horses that follow them, yet, after that certain time, say fifteen minutes, wind and power begin to fail, and a short check is useful. Besides, the ability of a pack, in quickly recovering a fault, is more than a counterbalance to their coming to a fault at all, which, with a short-running animal, as the hare is, it is often difficult to avoid, nay, rather to be looked for indeed in every field.

The difference in the terms used in hare-hunting and fox-hunting is comprised in a few words:—Harriers are cast off, in the morning; fox-hounds throw off. The hare is found by the quest or trail; the fox by the drag. The hare is on her form or seat; the fox in his kennel. The young hare is a leveret; a fox a year old is a cub. The view holloa of the hare is, "Gone away;" of a fox, "Tallyho." The hare doubles in chase; the fox heads back, or is headed. The harrier is at fault; the fox-hound at check. The hare is pricked by the foot; the fox is balled or padded. The hare squats; the fox lies down, stops, or hangs in cover; the "who-whoop" signifies the death of each.

Our ideas of a complete pack of fox-hounds are very soon expressed. For four days' hunting in the week there should be not much less than sixty couples of working hounds; nor do we think more are necessary, as hounds, like horses, are always better and sounder when in regular work. For three days in the week, forty couples are enough. They should have at their head not only a huntsman, but also a master, each of whom knows his business, and one *clever* whipper-in, and another as clever as you can get him. It is not necessary, because it is not feasible, that they should all be good drawers of covers; but it is absolutely necessary to perfection that they should all get to work as soon as a fox is found, and prove themselves true on the line their game has gone. As to their being quite free from riot on all days, and on all occasions, the man is not yet born *who can say with truth,* "my hounds *never* run riot." Nature is seldom extinguished; and as Æsop's damsel, turned to a woman from a cat, behaved herself very well till the mouse appeared, so will hounds occasionally break away upon riot, particularly when out of sight of the servants, in large covers, or when disappointed by a long blank draw. We conceive a pack of fox-hounds entitled to be called "steady from riot," if they will bear being put to the following test:—If, when at fault for their fox, in the middle of a large field, a hare gets up in view, and not a hound stirs, nor attempts to break away after her; and this without a word being said to caution them. But it is in chase, with only a holding scent, that a pack of fox-hounds display their excellence. In such a case as this there must be checks; and it being ten to one against their fox running straight, because they cannot press him, now is the time to see them work. Do they carry a good head when the scent is a-head and serves them well? Are they cautious when it does not? And do they turn short when the game has turned right or left, or is gone back? Are they careful not to overrun the scent, and will they stand pressing to a certain degree by the horsemen? But having overrun it, do they stop directly, and make their own cast? Should that fail, do they come quickly to horn or holloa—to their huntsman's cast? Do they fling for a scent when their huntsman lifts them to points, and not attempt to *flash,* or break away, without a scent? When the scent serves well, do they not only carry a good head over a country, but, as their game is sinking, does the head become better? If they do all this, and have speed and stoutness withal, they are equal to any fox in any country, and are worth a thousand sovereigns to a sportsman.

The number of fox-hounds taken into the field depends chiefly upon country; more being required in that which is woodland, than for an open champaign, or for our enclosed grass districts, such as Leicestershire. Eighteen couples are generally considered as sufficient for the latter; and the strongest woodlands do not require more than from twenty-two to twenty-five couples; and we consider the latter the more common number, in the field, of any pack in any country.

The average speed of fox-hounds is estimated at ten miles, point blank, over a country, with a good scent, in one hour; that is to say, making allowance for deviations from the straight line, hounds seldom go more than ten miles, from point to point, in that space of time. Mr Beckford has a very judicious remark on this part of his subject. "That pack," he writes, "may be said to go the fastest that can run ten miles the soonest, notwithstanding the hounds separately may not run so fast as many others. A pack of hounds, considered in a collective body, go fast in proportion to the excellence of their noses and the head they carry; as that traveller gets soonest to his journey's end who stops least upon the road. Some hounds that I have hunted with would creep all through the same hole, though they might have leaped the hedge; and would follow one another in a string, as true as a team of cart-horses. I had rather see them, like the horses of the sun, *all abreast.*"

There is nothing in the history of our domestic sports and pastimes to inform us correctly as to the date of the first regularly-established pack of fox-hounds kept in England. Neither the holy prioress of St Alban's, Dame Juliana Bannes, Markham, nor any of the very old writers on such subjects, are able to satisfy us on this point; but, on the authority of the Rev. William Chafin, in his *Anecdotes respecting Cranbourn Chase,* the first real steady pack of fox-hounds established in the western part of England was by Thomas Fownes, Esq. of Stepleton, in Dorsetshire, about the year 1730. "They were," says the author, who wrote in 1818, "as handsome, and fully as complete in every respect, as the most celebrated packs of the present day. The owner, meeting with some worldly disappointments, was obliged to dispose of them; and they were sold to Mr Bowes, in Yorkshire, the father of the late Lady Strathmore, at an immense price for those days. They were taken into Yorkshire by their own attendants, and, after having been viewed and much admired in their kennel, a day was fixed for making trial of them in the field, to meet at a famous hare-cover near. When the huntsman came with his hounds in the morning, he discovered a great number of sportsmen, who were riding in the cover, and whipping the furzes as for a hare; he therefore halted, and informed Mr Bowes that he was unwilling to throw off his hounds until the gentlemen had retired, and ceased the slapping of whips, to which his hounds were not accustomed, and he would engage to find a fox in a few minutes, if there was one there. The gentlemen sportsmen having obeyed the orders given by Mr Bowes, the huntsman, taking the wind of the cover, threw off his hounds, which immediately began to feather, and soon got upon a drag into the cover, and up to the fox's kennel, which went off close before them, and, after a severe burst over a fine country, was killed, to the great satisfaction of the whole party. They then returned to the same cover, not one half of it having been drawn, and very soon found a second fox, exactly in the same manner as before, which broke cover immediately over the same fine country; but the chase was much longer; and, in course of it, the fox made its way into a nobleman's park, I believe Lord Darlington's, which was full of all sorts of riot, and it had been customary to stop the hounds before they could enter it, which the best-mounted sportsmen attempted to do, but in vain; the hounds topped the highest fences, ran through herds of deer and a number of hares, without taking the least notice of them; ran in to their fox, and killed him some miles beyond the park; and it was the unanimous opinion of the whole hunt that it was the finest run ever known in that country. An ample collection of field-money was made for the huntsman, much beyond his expectation; and he returned to Stepleton in better spirits than he left it, and told his story as above related, in which we must allow for some little exaggeration, very natural on such an occasion. This pack was probably the progenitors of the very fine ones now in the north. Before this pack was raised in Dorsetshire, the hounds which hunted in the chase hunted all the animals promiscuously, except the deer, from which they were necessarily made steady, otherwise they would not have been suffered to hunt at all in it." We have good reason to believe Lord Yarborough's fox-hounds, at Brocklesby Hall, Lincolnshire, were established as far back as the year 1700. The present huntsman and his late father hunted them more than fifty years.

The Fox.

The fox makes a conspicuous figure in the natural history of animals; still, in some respects, his character has been over-rated and exaggerated. He is a native of all temperate regions; and although we read of the cur, the greyhound, and the mastiff fox, we consider a fox as a fox, the difference in size, colour, &c. being dependent on either climate or food. It is true, they are larger in some particular parts of England than in others; and it is generally believed, that such as are what sportsmen call "stub-bred foxes," that is, bred above, and not below ground, are the largest. It is in this sole instance that the habits of the fox differ from those of the wolf, to whose genus he belongs; the she wolf never bringing forth her young, as the fox does, under ground. But although the general conformation of the fox is the same as that of the wolf, his external form has a greater resemblance to the dog, with whose character also he closely assimilates, when domesticated, in expressions of affection, of anger, or of fear. When minutely examined, and particularly in relation to his predatory life, and, consequently, the dangers to which he is exposed, he will be found to be abundantly endowed by nature with the instinctive faculties requisite for such a life, in addition to the most elegant form an animal of his size is capable of. Foxes copulate in the winter months, and of course bring forth in the spring, on an average perhaps half a dozen cubs at a litter, born blind like the dog; but the period of each depends on the mildness or severity of the winter. Excepting during the season of sexual desire, the fox is a solitary, not a gregarious animal, for the most part passing the day in sleep, and the night in prowling after food.

The food of the fox is extremely variable; indeed, very few things that have or have had life come amiss to him: but we have reason to believe that rabbits, hares, poultry, partridges, and pheasants, with their eggs, are his favourite repasts; and when these are not to be had, he contents himself with field-mice, black-beetles, snails, and frogs. That he can even exist solely on the latter, was proved a few years ago, by the circumstance of a fox-hound and a fox having been found at the bottom of a dry well, into which they had fallen; the hound had perished from hunger, but the fox had supported his life on frogs. Of those animals and birds which we call game they are without doubt destroyers—of pheasants, it is asserted, twenty-five per cent.; but how it happens that they have been charged with feeding on grapes, we are, as far as our own experience directs us, quite at a loss to determine. The fact, however, is stated by several accredited writers, and has given birth to the fable of the fox and the grapes, the moral of which is a severe rebuke to an envious person who "hates the excellence he cannot reach." Aristophanes, in his *Equites*, compares soldiers devastating a country to foxes destroying a vineyard; and Galen (*De Aliment.* lib. iii. c. 2) tells us, that hunters ate the flesh of foxes in autumn, because they were grown fat with feeding on grapes. There are also two lines in Theocritus (*Idyl.* E. v. 112) which admit of the following version:—

> I hate those brush-tailed foxes, that each night
> Spoil Micon's vineyards with their deadly bite.

He is likewise accused of eating human flesh, and, we have reason to believe, accused justly. In addition to the sentence pronounced by David, in the sixty-third psalm, that the enemies of God and himself should be "a portion for foxes," we have the following interesting historical anecdote. When the famous Messenian general Aristomenes was thrown into the Ceadas (a deep chasm into which criminals were hurled) by the Lacedæmonians, his life is said to have been preserved by following a fox that was feeding on a dead body, to the aperture at which he had entered, and through which, after enlarging it with his hands, he himself escaped.

But although the subtilty of the fox has been proverbial from the earliest times; so much so, that our Saviour himself called the tetrarch Herod "a fox," by way of signifying the refinement of his policy; we do not perceive that, with the exception of a timid prudence on breaking cover, he shows more sagacity in his endeavours to baffle his pursuers than the hare is known to do, if indeed so much. To "catch a weasel asleep," is a typical designation of an impossibility; but foxes are frequently surprised in their naps by hounds drawing upon them, up wind, particularly when gorged with food. In the faculty of natural instinct, however, they are vastly superior to hares, and equal in this respect to the dog; there being well-attested instances of their being sent, *marked*, upwards of fifty miles in a bag, and, having escaped being killed by hounds before which they were turned out, being retaken in their native woods. But it is in his last moments, when seized by hounds, that the superiority of character in the fox over the hare exhibits itself. He dies in silence; but he sells his life dearly; for, revengefully seizing upon the first hound that approaches him, he only relinquishes his hold with the last gasp.

When first the fox was hunted in Great Britain, he was considered merely as a beast of prey, and killed in any way in which he could be got at, generally by being caught in nets and pitfalls, or killed at earth by terriers; his scent not being considered favourable to hounds by our forefathers. Although they admitted it to be hotter at hand than that of the hare, their favourite object of pursuit, they believed it to be sooner dissipated; but perhaps the real cause of their objection was, in the general inequality of speed and endurance in the hounds of their days and a really wild fox; and foxes then were undoubtedly stouter, and able to run much greater distances from point to point, than they now do, when they have comparatively so short a distance to travel for their food, as well as being often over-fed. These animals, then, being always destroyed when an opportunity offered, were of course generally scarce; which, added to the great extent of woods and other fastnesses with which England then abounded, accounts for the fact of hunting the fox, unless as a beast of prey, not being in vogue until these objections were removed. But the fox was ever considered as a mischievous animal, and, in one signal instance, is said to have been made an engine of mischief to a vast extent, in carrying fire and flame into the standing corn of the rebellious Philistines. A solution of this account, however, on natural principles, being difficult, it is pretty generally admitted that a mistake in the translation has given rise to it.

As the preservation of the fox is now more an object in Great Britain than his destruction, it may not be amiss to observe, that a few links of an iron chain, such as an old plough-trace, or a small piece of red cloth, suspended near to the spot on which a hen-pheasant sits, is a certain protection from foxes, of herself, her eggs, or her brood.

It is asserted by sportsmen of experience, that the scent of foxes varies with the animal; and that a vixen fox which has laid up (brought forth) her cubs is nearly devoid of scent.

Huntsman.

In the lower ranks of life there are callings which require the exercise of skill and judgment to the very utmost of their extent; and we know of none that comes more directly within this class than that of a huntsman does, of whom it may be said, that in all his operations he has not only to exercise his mental faculties at every step he goes, when unravelling the intricacies of the chase, but actually to tread a path nearly unknown to human reason. *Fimus oratores, nascimur poetæ*, is a good definition of the constitutional qualifications of a first-rate poet, at all events of the difficulty of becoming one; and really when those of a huntsman are all summed up, if the life of man be not too short, years of toilsome labour appear to be scarcely sufficient to evince, even to a man of talent, a perfect knowledge of his art. Let us first hear what Beckford says of him, and then we will offer our own sentiments on the subject, which vary little from those entertained by this great authority on all matters of the chase. "A good huntsman," says he, "should be young, strong, and active, bold and enterprising; fond of the diversion, and indefatigable in the pursuit of it; he should be sensible and good tempered; he ought also to be sober; he should be exact, civil, and cleanly; he should be a good horseman, and a good groom; his voice should be strong and clear; and he should have an eye so quick as to perceive which of his hounds carries the scent, when all are running; and should have so excellent an ear, as always to distinguish the foremost hounds when he does not see them. He should be quiet, patient, and without conceit. He should let his hounds alone *when they can hunt*, and he should have genius to assist them *when they cannot*." It is scarcely necessary to observe, that Mr Beckford is here speaking of a huntsman to fox-hounds, his demands on the hare-hunter being somewhat more moderate; and yet the difficulties he has to combat with are more than obscurely acknowledged. Aware that practice is the key to excellence in every art, and that experience is the great mistress of all human knowledge, he requires age, with its experience, to fit the hare-huntsman for his office, and to be a match for the wiles of the hare; very ludicrously adding, that, "for patience, he should be a very Grizzle."

We do not think we exaggerate when we say, that the picture here drawn of a clever huntsman may, in one degree (of bodily endowments at least), be termed a near approach to human perfection; nor do we hesitate in adding our conviction, that if to the attributes here given him are joined a comprehensive mind and a humane heart, nothing is wanting to make it complete. As the chase is said to be the image of war, "but without its guilt," let us suppose Mr Beckford had been drawing the character of a soldier, and not a huntsman. Could he have given him higher qualifications than a clear head, nice observation, a good constitution, undaunted courage, a powerful voice, an accurate ear, and a lynx's eye, together with a quick perception, endowed with quick impulses for acting, so necessary to each? That he should be "fond of his profession," and "indefatigable in the pursuit of it;" "sober and exact," "sensible," and "good tempered?" It is not necessary that either a huntsman or a soldier should be a man of letters; some of the best among the former have been scarcely able to read; and there have been but few Cæsars who could fight and write; but a good understanding is put to the test by both the one and the other; and although we do not mean to place the servile situation of a huntsman on a level with the honourable profession of the soldier, each requires, in a high degree, a good, sound understanding, and a manly exertion of talent.

But the office of huntsman to fox-hounds is not always intrusted to servile hands. It has long been the ambition of masters of packs to hunt their own hounds; and although the fashion has become more prevalent within the last thirty years than it was in the earlier days of fox-hunting, yet we could bring forward some instances of what are called gentlemen-huntsmen of pretty long standing. His Grace the Duke of Cleveland, and Sir Richard Puleston, Bart. each hunted his own hounds for nearly forty years; and the late William Leche, Esq. of Carden-Hall, Cheshire, was his own huntsman for an equally long period. Coming next to them in chronological order, stand Messrs Ralf Lambton, Musters, Thomas Assheton Smith, Lord Segrave, Sir Bellingham Graham, Bart., Mr Osbaldeston, Mr Nicoll, the Earl of Kintore, Mr Smith, late of the Craven, the Honourable Grantley Berkeley, and several more of a more recent date. There can be no doubt that no man enjoys hunting to perfection equally with him who hunts his own hounds; nor can there be any reason assigned why an educated gentleman should not excel, in any ardent and highly scientific pursuit, an uneducated servant; nevertheless, we do not think that, throughout the fox-hunting world in general, gentlemen-huntsmen have been so popular as might have been expected; and in some countries that are hunted by subscription, an exception is taken against the master of the pack being the huntsman. That it is a very laborious office when efficiently executed, both in the kennel and the field, is well known to those who have filled it; but, *labor ipse voluptas*, we have seen a pains-taking zeal displayed in the master which we have too often seen wanting in the servant; and we could name a nobleman who used frequently to tell his huntsman, when drawing for his second fox, that he was "thinking more of his dinner than of hunting."

In the earliest days of English hunting, gentlemen huntsmen were in high estimation; and a reference to *Domesday-book* will show that Waleran, huntsman to William the Conqueror, possessed no less than fifteen manors in Wiltshire, eight in Dorsetshire, together with several in Hampshire; and his name occurs on the list of tenants *in capite* in other counties. The same venerable record of antiquity describes the extensive possessions of other huntsmen, bearing the names of Croc, Godwin, Willielmus, gentlemen of consideration in those times, in which, according to Froissart, the ardour of the chase was carried to a pitch since unequalled by the Norman lords, some of them having kept sixteen hundred dogs, and a proportion-able number of horses, for the chase.[1] But we may go still farther back, to a very barbarous age, for the respect in which huntsmen have been held by kings and legislators. The temperate but brave Agesilaus, and even the luxury-destroying Lycurgus, provided for the bountiful entertainment of their huntsmen on their return from the chase; a pursuit which they believed to be so agreeable to the gods, that they offered the first fruits of their sports to Diana.

The Duties of a Huntsman.

The situation of huntsman to a pack of fox-hounds is one of great responsibility, and, if the breeding as well as hunting of them be left to him, a very arduous undertaking. Nor does it end here. There is great call for judgment in feeding hounds to answer every purpose, such as long draws, severe days, and at the same time to go the pace without showing distress, and to come home at night with their sterns up, and looking fresh. Here variety of constitution increases the difficulty; for, to please the eye, hounds should look level in their condition, as well as even in point of size. One hound will not bear to have his belly more than half filled; another will not fill his when he may; and still each must be made equal in strength and wind to the other, to stand hard work and go the pace without distress. A huntsman must have a very watchful eye over their condition, which will be effected by work and weather; and he must be pathologist enough to foresee and provide against the alterations which such circumstances produce. He has need also to be a physiologist, to enable him to exercise a sound judgment in breeding his hounds after a certain form and fashion, which are absolutely essential to their doing well, and at the same time pleasing the eye. Then look at him in the field, with a hundred eyes upon him, and a hundred tongues to canvass all his acts. Here he should be a philosopher.

In the Field.

A huntsman is expected to bring his hounds to the cover side in a high state of condition, at all seasons of the year. They should be seen quietly grouped about his horse's heels, when he is waiting for the hour of throwing off, without a whip stirring, or even an angry word said to them. This is a time when they are often subject to the inspection of strangers, and a first impression goes a great way. When the master gives the word to draw, they should approach the cover at a gentle trot, one whipper-in riding in their front; and when within about a stone's throw, they may dash into it with as much spirit as they like. Not a word need be said by way of caution, unless it appears to be especially called for, when "gently, there," by the first whipper-in, and one smack of his whip, will generally have the desired effect. But we like to see the huntsman alive at this moment, as well as his hounds. Homer compares hounds cheered by their huntsman, to troops encouraged by a skilful general; and doubtless there is a similarity in the effect. Putting hounds out of the question, there is something very cheering to the field in the "cheering holloa" of a huntsman, when encouraging his hounds to draw; and it also answers two good purposes. Should a hound get wide of the pack, or hang behind in the cover, or should any of the field be at a loss, which often happens in woodlands, the "pipe" of the huntsman is an unerring guide to all. How necessary is it, then, at all events how desirable, that, like Ajax, he should be βοὴν ἀγαθὸς, "renowned for the strength of his voice," and, we may add, for the melodiousness of it. He should likewise blow a horn well; and if he varies the blast, to make himself more intelligible to his hounds, he will find his advantage in it. We wonder this is not more practised than it is. Independently of the common *recheat*, why not have the "view horn" as well as the "view holloa?" But too much horn, like *vox et prœterea nihil,* is bad, making hounds apt to disregard it; yet a huntsman would be sadly at a loss without it, not only in getting hounds away from cover and in chase, but in drawing large covers, in which they will occasionally get wide. Here a twang of the horn saves a huntsman's voice in bringing them over to him. One short blast is sufficient.

> .... "He gave his bugle-horn a blast,
> That through the woodlands echoed far and wide."

The following observations on holloaing are from the pen of an old sportsman. They contain hints that it would often be advisable to profit by; and they apply not only to huntsmen, but to the field. "A general rule as to *hallooing* is, never to halloo unless you can give a good reason for so doing. A constant and indiscriminate use of the voice is blameable in a huntsman; his hounds, by constantly hearing his voice, will soon learn to pay no more attention to it than they do to the singing of the lark, and they will not come to him when they are called. Some huntsmen, in making a cast, try that part of the ground where they can most conveniently ride, instead of that where it is most likely the fox is gone. Others ride on hallooing, without regarding their hounds, while making their cast; their own noise then prevents them from hearing their hounds, who often take the scent without their being aware of it."

"No person should halloo that is not well forward. It signifies little what words you use, as a hound's knowledge of language is confined to a view halloo, a call, and a rate: it is the tone of the voice, and not the words, that they understand; and hounds will always draw to the voice, if it be not a rate. This shows the impropriety of hallooing behind hounds. In running with good scent, if you are up with the pack, a cheering halloo does no harm; the hounds will not attend to it, and it is expressive of the pleasure of the hallooer. Never cap hounds with loud halloos to a bad scent; capping makes them wild and eager, and should never be done but when the scent is high. Hounds should be brought up gently to a cold scent." Holloaing to hounds is often necessary, and highly useful when done with judgment; but the word "tallyho" loses many a good run; as, unless a fox is gone clear away from his cover, it occasions him to turn back often into the mouth of the hounds.

Dog Language.

It is true, no correspondence can subsist between beings whose natures are separated by a chasm so wide as that between rational and irrational animals; and it is with a view of adapting our meaning to the level of their understandings, that we generally address or converse with brutes in a silly unmeaning manner; which gave rise to the remark, that children, or men who act like children, have animals more immediately under their control than the philosopher who is replete with wisdom. But we may look farther into the subject than this. If the Almighty had not manifested some portion of his attributes by means which are on a level with the capacity of the human race, man must have remained for ever ignorant of his Maker. The power of language, however, between man and man, is prodigiously increased by the tone in which it is conveyed. The vagrant when he begs, the soldier when he gives the word of command, the senator when he delivers an oration, and the lover when he whispers a gentle tale to his mistress, all differ in the key in which they speak; and it is thus that huntsmen and whippers-in make themselves intelligible to hounds. They do not speak to them in an unmeaning manner, or after the manner of children; but in short and pithy sentences, every word of which is law. The method of doing this, however, admits of several degrees of excellence; but the huntsman who is endowed by nature with a clear, sonorous voice, in a well-pitched key, and knows when to use it with effect, contributes greatly to the enthusiasm of fox-hunting, and no doubt to the success of it.

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[1] See Froissart, tom. iv. c. 27.

Without entering again into the wide range of hunting, we cannot do more than add a few maxims which may be observed by a huntsman in the field. In drawing for your fox, don't be persuaded always to draw up wind. In the first place, you are in danger of chopping him; secondly, he is sure then to go down wind at starting; and, thirdly, you may drive him into a worse country, or from his point. When found, get after him as quickly as possible if you have a body of hounds with you; if not, you will have a better chance of sport if you can wait till the body come up. This is easily done by a twang of the horn, or a false holloa, if hounds are under good command, and the convenient opportunity be seized upon. Keep near to them in chase, with your eye on *the body* of the pack, as well as on such hounds as may be leading; the body are more certain to be right. Next to knowing where a fox is gone, is knowing where he is not gone; therefore, in your cast, always make good the head. This you will do for your satisfaction; but hounds are seldom at fault for the scent a-head, when the chase has been at all warm, that is, on a fair scenting day; for if the fox be gone forward, wherefore the fault? Good hounds will seldom or never leave a scent a-head, unless the ground be stained by sheep or cattle, or when the chase leads over dry ploughed land, hard and dry roads, &c. It is high odds that your fox has turned to the right or to the left; but although his point may be back, he cannot well run his foil, from the number of horsemen that are generally in the rear of fox-hounds. Recollect your first check is generally the most fatal to sport, and for these reasons: Your hounds are fresh, and perchance a little eager; they may have overrun the scent for some distance, owing to their being pressed by the horses, which are also at this time fresh; nor will they always get their heads down as soon as they should do, from the same exciting causes. Again, your check now generally arises from a short turn, the fox having been previously driven from his point, which he now resolves to make; and he will make it at all hazard at certain times. When your hounds first "throw up" (*i. e.* check), leave them alone if they can hunt; but, disregarding what the "old ones" say on this subject, as inapplicable to these fast times, don't be long before you take hold of them, and assist them, if they cannot. We would not go from scent to view; yet hounds in these days that will not bear lifting are not worth having. But do all this quietly as well as quickly. Turn your horse's head towards the line you think your fox is gone; and the first moment you see all their heads up, that is, if they do not hit him off, put your horn to your mouth for one blast or two, and trot away to still more likely points. If your pack will divide when casting, so much the better; but if they are good for any thing, they will be making their own cast whilst you are making yours, by not keeping at your horse's heels, but spreading as they go.

When you have hit upon his point, if a single hound goes off with a good scent, get the body to him as quickly as you can; but not so if the scent be not warm. In the latter case, your hounds will be in expectation of a fresh fox, and will be in a hurry; the hound that is forward will be lifted, and in all probability you will have to seek for the scent again. Go gently, and your hounds, if steady, will settle to it. Likewise, if, when at check, you are holloaed to a spot where a fox has been viewed, *stand still*, and say nothing at the moment the first two or three hounds throw their tongues. If you hurry the body on immediately, the scent will often be lost if the fox has been a few minutes gone. If it can be done, give your hounds the wind at a crisis like this. Again, when a fox has been viewed, and you go directly to holloa, do not take your hounds to the extreme distant point at which he was viewed, but a hundred yards behind it; and for this reason. If you take them to the extreme point, and they do not take up the scent at once, you have then to make your cast at a venture; whereas, if you lay them on at that distance behind it, you have somewhat of a guide to that extent, as to the line towards which you should draw them.

The following further hints may be serviceable, or at all events they relate to hounds at check. In trying back, hounds have this advantage. It is evident the fox has come the line, up to the point where the check occurred; and he must be gone either to the right or the left of it, or back. We make this observation, because so much has been said about the straight running of foxes, which is far from true; and the necessity of persevering in the cast a-head with the fox, and back, on the foil, with the hare. The more hounds spread, within reason, in this backward cast, the better will be the chance of making the check a short one. Again, if at check on a road, or foot-path (the latter not often run over by foxes), when you observe some of your best hounds failing to make it good, on one side of either, it is reasonable to suppose the fox is gone on the other. If your hounds check in a cover in the middle of a run, and the fox is viewed away from it, try and get your hounds together as much as you can in the short time that can be allowed for it, *before you cap them to the scent.* It generally ensures a good finish, from two obvious causes. First, hounds get fresh wind; and, secondly, they will have a better chance to carry a good head, which generally ends in blood, and in blood well earned; for the fox is more likely to stand longer, and go straighter, for not having been viewed by hounds when he broke. But the most difficult point for a huntsman to decide upon promptly is, when his pack divides, which division is on the hunted fox. If it happen in cover, his ear is his surest guide, as the cry is louder and stronger on a fresh-found fox, than on one which has been for some time on foot. If when out of cover your pack should split on two separate scents, you should get as near as you can to what you imagine to be the chase, giving view holloas every yard you go; also sending one of your whippers-in to stop the other hounds. Your choice will doubtless be directed by several circumstances. You will first look for your truest and best line-hunting hounds, and next, to the points your first fox would be likely to make for; and if your choice fall upon the lot that are going farthest up the wind, the other will be more likely to hear them running; and, should they come to a check, to join cry again perhaps before a whipper-in can get to stop them.

To the above we add a few general rules. Don't be dispirited at a succession of bad sport, for it is not within your control, good hounds and sport not being naturally co-existing circumstances. Be as zealous as you please in the field, but temper your zeal with judgment, and don't weary your hounds by long draws, on days which bid defiance to sport. It was once justly observed, that those who seek pleasure from the chase must ask permission of heaven; and the case still remains the same. Hounds without a scent resemble a man running in the dark; neither can make head against such fearful obstructions; and on stormy days, with a very high wind, if you have influence with your master, persuade him to let you go home after the first failure. It is not generally known what mischief even one such day does to some hounds. Don't set too high a value on blood, unless well earned; it is the result of want of reflection alone that has set any value whatever upon it, when otherwise obtained. Mob a bad fox in a cover if you like; but never dig out a good one, unless your hounds have almost viewed him into a spout, and you can bolt him before the excitement subsides. Never break ground in a country belonging to another pack of hounds, nor dig for a fox in a moin earth in your own. Many a bitch fox, heavy with young, has been killed by this means in the spring, instead of the one that was hunted and marked to ground; and be assured that sportsmen in general do not estimate the goodness of a pack of hounds by the noses nailed against the kennel door. Lastly, keep your field back from pressing on your hounds in chase, and still more so when in difficulties, as well as you can; but don't suffer your zeal to carry you too far on this point. Remember the apostolic precept, "BE COURTEOUS."

The modern annals of sporting contain the names and characters of several very eminent huntsmen, whose conduct and abilities would have done credit to any other situation of life to which it might have been their lot to have been called. Considering the responsibility of their office, the severity of their work, and the risks they run, they are not supposed to be too highly paid in wages, say on the average L.100 per annum, besides their board; but, from perquisites, such as annual presents from gentlemen who attend the hounds which they hunt, and drafted hounds sold to other packs, they may realize the like sum in addition.

The office of whipper-in is, in our opinion, thought more lightly of by the sporting world in general than it deserves to be; and, as we shall show, we have the great Beckford on our side. We never saw a steady pack of hounds without at least one good whipper-in, and we are quite sure we never shall; but we have seen many of these red-coated youths who might have been better employed at the plough-tail—who, like Cicero's lawyer, belonged rather to the profession than the science. "If he has genius," says Beckford, "he may show it in various ways; he may clap forward to any great earth that may by chance be open; he may sink the wind to holloo, or mob a fox when the scent fails; he may keep him off his foil; he may stop the tail hounds, and get them forward; and has it frequently in his power to assist the hounds without doing them any hurt, provided he has sense to distinguish where he is wanted most. Besides, the most essential part of fox-hunting, *the making and keeping the pack steady*, depends entirely upon him, as a huntsman should seldom rate, and never flog a hound. In short, I consider the first whipper-in as a second huntsman; and, to be perfect, he should be as capable of hunting the hounds as the huntsman himself. He should not be conceited, but contented to act an under part, except when circumstances may require that he should act otherwise; and the moment they cease, he must not fail to resume his former station."

To the above excellent remarks we have very little to add. We only recommend, when a huntsman is casting his hounds, that a whipper-in should turn them to him always as gently as he can, and with little noise; by which means they will *draw* towards him, trying for the scent as they go; whereas loud and repeated rates and cracks of the whip make hounds fly to their huntsman at this time with their heads up. When they are drawing properly towards him, not a word should be said; a whipper-in riding outside of them will be sufficient.

It is scarcely necessary to say, a whipper-in, to be perfect, should be an accomplished horseman, as nothing requires a much firmer and nicer hand than the act of following a hound over open ground to flog him. A whipper-in, however, should always hit a hound first, and rate him afterwards, and be able to hit hard when occasion requires it. A riotous fox-hound cannot be trifled with, if he is to be cured of his evil ways; and let the lash fall heavily when necessary, but at no other time. Above all, let the whipper-in have an eye to a skirter: skirting is the least pardonable fault a hound can possess, because he is then deviating from his nature, and has not the force of impulse to plead, which the hound that runs riot has. (B. B. B. B.)

HUNTINGDON, a market-town, the capital of the county of that name, sixty-four miles from London by Buckden, and fifty-nine by Royston. It stands on a level plain on the river Ouse, which is navigable for barges to Bedford, and by which a supply of coals and other heavy articles is conveyed. It contains two parish churches, and a good county-hall, where the assizes are held; and it has a good market, especially for corn, on Saturday. It is governed by a mayor, twelve aldermen, and a common council, and returns two members to parliament by about 380 voters. The inhabitants amounted in 1801 to 2035, in 1811 to 2397, in 1821 to 2806, and in 1831 to 3267.

HUNTINGDONSHIRE, an inland county of England, and, except Rutlandshire, the smallest of the whole. It is bounded on the north-east and east by Cambridgeshire, on the north-west and west by Northamptonshire, and on the south by Bedfordshire. Its greatest breadth is twenty-three miles, and its greatest length thirty miles, and its square contents are 350 miles.

The county has four hundreds, with six market-towns, and 104 parishes, the total population of which amounted in 1801 to 37,568, in 1811 to 42,208, in 1821 to 48,771, and in 1831 to 53,100. The occupiers of land employing labourers were 857, of land employing no labourers 397, of labourers employed in agriculture 5967, of persons employed in manufactures 290, of those employed in retail trade and handicraft 3488, of capitalists, bankers, &c. 401, of labourers not agricultural 971, of male servants 454, other males twenty years of age 649, and female servants 1941.

The principal towns, and their population, are,—

Huntingdon	3267
St Ives	3314
Ramsey	3006
St Neots	2617
Godmanchester	2146
Kimbolton	1584

The county returns two members to the House of Commons, the voters are about 3200, and the places for poling are Huntingdon and Stilton. The borough of Huntingdon also returns two members.

The appearance of the county is of three descriptions. In the south-east it is an extensive plain of rich meadow land, the middle varying in its surface with gentle undulations, and without many enclosures or many woods; the higher part was anciently a forest, and still contains a great extent of woodland, the foliage of which gives beauty to the scenery. On the north-eastern side a portion of the county is fine land, comprising a part of what is commonly called Bedford level, comprehending nearly one fifth of the whole county.

The two most considerable rivers are the Ouse and the Nen. The Ouse enters from Bedfordshire, and crossing the whole of the county, passes into Cambridgeshire in its way to the German Ocean. It is navigable in its whole extent through Huntingdonshire, and forms an important means of intercourse. The Nen enters from Northamp-

Huntingdonshire.

tonshire, and runs to the marshes; it is also navigable along the greater part of its course. Besides these, the Cam passes through a part of the county. There are three lakes, viz. Whittlesea-mere, Ramsey-mere, and Ugg-mere; the first of these is the largest, and covers an area of several miles in extent. It affords excellent fishing, and pleasant sailing, which induces many parties of pleasure to visit it in the summer season. Projects for draining this lake have been formed, as the water is not deep, and the soil excellent; but they have not yet been carried into execution.

The county of Huntingdon scarcely contains any manufactures, excepting some spinning, performed by the females; but the improvements of machinery in other districts have much diminished that mode of employment. The only trade is that of corn, cattle, and the wool of the few flocks of sheep.

Agriculture is the principal pursuit of the district. The marshes and meadows are highly productive, and many oxen are fattened on them, without any other food than their natural grass. Much of this land is under the plough, and produces most abundant crops of oats and cole-seed; the mills for making the latter into oil are numerous. The hay produced from these fens is very considerable, but on the banks of the rivers they are subject to great floods, which sometimes destroy the harvest of the year. Though these lands are very valuable, yet the expense of draining them causes a great deduction from their value.

The soils in the upland parts of the county are various, but consist principally of a tenacious clayey loam, or of a deep gravelly loam with some clay. Much of this is in open common fields, where each occupier is compelled to follow a rotation like that of his neighbours. On the best of these lands the usual course of cropping is a year's fallow, then wheat or barley, next beans, and then barley or wheat. On the land of a quality somewhat inferior, a three-course rotation of fallow, wheat, and peas or beans, is pursued. In those fields which are calculated for turnips, that root is succeeded by barley and wheat, or by wheat and barley. The average produce of the lands is stated at five quarters of barley, four of oats, and three and a half of wheat, to the acre. The excellent practice of sowing clover between two corn crops is followed to a very small extent. The farms are generally small; few rentals exceed L.200 per annum.

The sheep of Huntingdonshire are a mixed race, composed of crosses of the Lincolnshire and Leicestershire breeds with the native kinds. They are without horns, and of very imperfect shape, but are found profitable from the quantity of wool they produce, their fleeces usually weighing from seven to eight pounds each. The sheep of the original race of the county are much inferior to those produced by the crossing with the better kinds; many of these are still found in the open commons, and their fleeces seldom exceed four pounds in weight. The cows are bred with little attention, and are a compound of many races. Very little butter or cheese is made, the principal object being the suckling of calves to supply veal for the London markets. Many horses are bred in the lower part of the county, but without much attention to their races. From this practice of breeding, it has become very general to execute all the agricultural work with mares.

The remains of antiquity in this county are principally of Roman origin; amongst them are the vestiges of the three roads which were constructed by that people across the country. The remains of Ramsey Abbey and Castle, the seat of the family from which Oliver Cromwell, a native of this county, sprung, are of venerable date. The monks who formerly occupied it were highly celebrated for their knowledge of the Hebrew language. The churches of Bluntisham, St Ives, and St Neots, and the Castle of Kimbolton, exhibit marks of high antiquity.

Huntsp Hurd.

The most remarkable noblemen and gentlemen's seats are, Kimbolton, Duke of Manchester; Bucden Palace, Bishop of Lincoln; Connington Castle, J. Heathcote, Esq.; Elton, Earl of Carysfort; Hinchinbroke, Earl of Sandwich; Overton Longueville, Earl of Aboyne; Gains Hall, Sir James Duberly; Paxton Place, P. Stanley, Esq.; Ramsey, William Henry Fellowes, Esq.; Stirtloe, Launcelot Brown, Esq.; Stoughton, Earl Ludlow; and Upwood, Sir Richard Bickerton. (See Brayley's *Beauties of England and Wales*, Stone's *General View of Huntingdonshire*, and *Population Returns.*)

HUNTSPILL, a town of the county of Somerset, in the hundred of North Petherton, 155 miles from London. It stands on an estuary at the mouth of the river Parret, which there falls into the Bristol Channel. The inhabitants amounted in 1801 to 1012, in 1811 to 1119, in 1821 to 1337, and in 1831 to 1503.

HURD, Richard, an eminent and learned English prelate, was born at Congreve, in the parish of Penkrich, Staffordshire, on the 13th of January 1720. He was the second son of John and Hannah Hurd, whom he describes as "plain, honest, and good people, farmers, but of a turn of mind that might have honoured any rank and any condition;" and they appear to have been solicitous to give their son the best and most liberal education. Young Hurd received his elementary education at the grammar-school of Brerewood, and, in 1733, was admitted of Emmanuel College, Cambridge, though he did not go to reside there until a year or two afterwards. He took the degree of bachelor of arts in 1739, and that of master in 1742; the same year he was elected a fellow, and ordained deacon in St Paul's Cathedral, London; and in 1744 he was admitted into priest's orders at Cambridge. Dr Hurd's first literary production was Remarks on Weston's *Inquiry into the Rejection of the Christian Miracles by the Heathens*, published in 1746; and, in 1748, upon the conclusion of the peace of Aix-la-Chapelle, he contributed some verses to the university collection for 1749. In the same year he took the degree of bachelor of divinity, and published his Commentary on the *Ars Poetica* of Horace, in which he laboured to prove that the Roman poet has treated his subject with systematic order and the strictest method; an idea which has been strenuously combated by several eminent critics. In the preface to this Commentary he took occasion to compliment Warburton in a manner which won him the favour of that learned dogmatist, and procured for him a return in kind in the bishop's edition of Pope's works, where Hurd's Commentary is spoken of in terms of the highest approbation. This commerce of flattery gave rise to an intimacy between these persons, which continued unbroken during their lives, and is supposed to have exercised considerable influence on the opinions of Hurd, who was long considered as the first scholar in what has been termed the Warburtonian school. This Commentary was reprinted in 1757, with the addition of two Dissertations, one on the drama, the other on poetical imitation, and a letter to Mr Mason on the Marks of Imitation; in 1765, a fourth edition, corrected and enlarged, was published in three vols. 8vo, with a third Dissertation on the idea of universal poetry; and the whole was again reprinted in 1776. This work fully established the reputation of Hurd as an elegant and acute, if not always a sound and judicious critic. In May 1750, he was appointed by Sherlock, bishop of London, one of the Whitehall preachers. About this period the university of Cambridge was disturbed by internal divisions, occasioned by an exercise of discipline against some of its members who had been wanting in respect towards those invested with authority. The delinquents having refused to submit to the punishment awarded, and appealed from the vice-chancellor's jurisdiction to that of the senate, the right of the university, and those to whom its power was delegated, became thus a subject of discussion, and several pamphlets appeared on both sides of the question. Amongst those who signalized themselves on this occasion may be mentioned Hurd, who wrote The Opinion of an eminent Lawyer (the Earl of Hardwicke) concerning the Right of Appeal from the Vice-Chancellor of Cambridge to the Senate, supported by a short historical account of the Jurisdiction of the University; in answer to a pamphlet, entitled *An Inquiry into the Right of Appeal from the Vice Chancellor*, 1751, in 8vo; a production which passed through three editions, and was defended in a Letter to the Author of a Further Inquiry, 1752, in 8vo, by whom it had been attacked. In 1751, he published a Commentary on the Epistle to Augustus; in 1753, a new edition of both commentaries, with a dedication to Warburton; and the same year two occasional sermons, one preached at the Norwich assizes, and the other in behalf of the charity schools at Cambridge, but neither of which has been retained in his works. The friendship he had formed with Warburton continued to increase by mutual good offices; and, in 1755, Hurd eagerly embraced an opportunity which offered of evincing the warmth of his attachment. Dr Jortin having, in his Dissertations, spoken of Warburton with less deference and submission than the exactions of an overbearing and insolent superiority could easily tolerate, Hurd wrote a bitter satire, entitled the Delicacy of Friendship, a seventh Dissertation, addressed to the author of the sixth, 1755, in 8vo; a production in which he was betrayed into too close an imitation of Warburton's manner, and displayed a degree of warmth far beyond any thing that the supposed offence could either call for or justify. Hurd accordingly took pains to suppress the pamphlet; but, in 1788, it was republished in a volume entitled Tracts by Warburton and a Warburtonian. Hurd continued to reside at Cambridge, in learned retirement, if not learned ease, until 1756, when, on the death of Dr Arnold, he succeeded, as senior fellow of Emmanuel College, to the rectory of Thurcaston, to which he was instituted in 1757, and where, having entered into residence, he continued to prosecute his studies, which were principally confined to subjects of elegant literature. The Remarks on Hume's Essay on the Natural History of Religion appeared soon afterwards. But Warburton appears to have had the chief hand in the composition of that tract, which, accordingly, we find republished by Hurd in the quarto edition of that prelate's works, and enumerated in the list of them. It appears to have occasioned some uneasiness to Hume, who, in the account of his own life, notices it with a degree of acrimony quite unusual in his compositions. In 1759, Hurd published a volume of Dialogues on Sincerity, Retirement, the Golden Age of Elizabeth, and the Constitution of the English Government; and this was followed by his Letters on Chivalry and Romance, which, with his Dialogues on Foreign Travel, were republished in the year 1765, with the author's name, and a preface on dialogue writing. In the preceding year, he published another of those zealous tracts in vindication of Warburton, which have added little to his fame as a writer, and procured him the reputation of an illiberal and discourteous polemic. It was entitled a "Letter to the Reverend Dr Thomas Leland, in which his late *Dissertation on the Principles of Human Eloquence* is criticised, and the Bishop of Gloucester's idea of the nature and character of an inspired language, as delivered in his Lordship's *Doctrine of Grace*, is vindicated from all the objections of the learned author of the Dissertation." This, with Hurd's other controversial tracts, has been republished in the eighth volume of the authorized edition of his works, where we find prefixed to it, by way of advertisement, the following lines, written by the author not long before his death: "The controversial tracts which make up this volume were written and published by the author at different times, as opportunity invited, or occasion required. Some sharpness of style may be objected to them, in regard to which he apologises for himself in the words of the poet:

> .... Me quoque pectoris
> Tentavit in dulci juventa
> Fervor ....
> .... nunc ego mitibus
> Mutare quæro tristia."

In 1762, the sinecure rectory of Folkton was conferred on him by Lord Chancellor Northington; in 1765, he was chosen preacher of Lincoln's Inn; and in August 1767, he was collated to the archdeaconry of Gloucester by Bishop Warburton. In July 1768, he was admitted doctor of divinity at Cambridge; the same day he was appointed to open the lecture founded by Warburton for the illustration of the prophecies; and the Twelve Discourses which he preached there were published in 1772, under the title of an Introduction to the Study of the Prophecies concerning the Christian church, and in particular concerning the church of Papal Rome. This volume drew from Gibbon, under a fictitious name, a private letter to the author respecting the book of Daniel, which Dr Hurd answered; but it was not until the appearance of the historian's Miscellaneous Works, in which Dr Hurd's answer was printed, that the latter knew the name of his correspondent. In 1769, he published the Select Works of Abraham Cowley, with a preface and notes, in two vols. 8vo; an edition which has been condemned as interfering with the totality of Cowley's works, and which certainly is not the most judicious of Dr Hurd's undertakings. In 1775, he was, by the recommendation of Lord Mansfield, promoted to the bishopric of Lichfield and Coventry, consecrated early in that year, and, soon after entering on the episcopal office, he delivered a charge to the clergy of the diocese, as well as a Fast Sermon for "the American rebellion," which was preached before the House of Lords. In May 1781, Bishop Hurd received a gracious message from his majesty, conveying to him an offer of the see of Worcester, with the clerkship of the closet, both of which he accepted. Nor did his majesty's kindness stop here. For, on the death of Dr Cornwallis, in the year 1783, he was offered the archiepiscopal see of Canterbury, with many gracious expressions, and even pressed to accept it; but he humbly begged leave to decline it, "as a charge not suited to his temper and talents, and much too heavy for him to sustain in these times," alluding, we presume, to the distractions arising from the conflict of political parties. In 1788, Hurd published a complete edition of the works of Warburton, in seven vols. 4to; but the Life did not appear until 1795, when it came forth under the title of a Discourse by way of General Preface to the quarto edition of Bishop Warburton's works, containing some account of the Life, Writings, and Character of the Author. This work excited considerable attention, and the style is equally remarkable for its purity and elegance; but the stream of panegyric is too uniform not to subject the author to the suspicion of long-confirmed prejudices. Even the admirers of Warburton would have been content with less laborious efforts to magnify him at the expense of all his contemporaries; and, conscious that imperfection is the common lot of all men, they conceived that age and reflection should have abated, if not wholly extinguished, the unworthy animosities of times gone by. But in all this they were disappointed. Hurd was a true disciple of the great dogmatist; and hence it was with regret they observed the worst characteristics of Warburton, his inveterate dislikes, his fierce contempt, and his sneering rancour, still employed to perpetuate his personal antipathies, and employed too against such men as Secker and Lowth. If these were the feelings of the friends who venerated Warburton and esteemed Hurd, others, who never had much attachment to the Bishop of Gloucester or his school, found little difficulty in accumulating against his biographer charges of gross partiality and illiberal abuse. The remainder of Hurd's life appears to have been spent in the discharge of his episcopal duties, and in studious retirement. He died on the 28th of May 1808, being then in his eighty-ninth year. As a writer, his taste, learning, and talents have been universally acknowledged; and though, like his master, contemptuous and intolerant, he was nevertheless shrewd, ingenious, and original. In his private character he is said to have been in all respects amiable; nor were the relations of life in any degree embittered by the gall and wormwood which so frequently flowed from his pen. (A.)

HURDA, a town and small fort of Hindustan, in the Mahratta territories, in the province of Khandesh, situated in a country generally open and well cultivated. Long. 77. 18. E. Lat. 22. 24. N.

HURDLE is the name of a sledge used to draw traitors to the place of execution. The Romans had a kind of military execution for mutineers, called *putting to death under the hurdle.* The manner of it was this: The criminal was laid at his length in shallow water, under an hurdle, upon which were heaped stones, and so pressed down until he was drowned.

HURDLES, in *Fortification*, are made of twigs of willows or osiers interwoven together, and sustained by long stakes. They are made in the figure of an oblong square, the length being five or six feet, and the breadth three and a half. The closer they are wattled together the better. They serve either to render the batteries firm, or to consolidate the passage over muddy ditches, or to cover traverses and lodgments for the defence of the workmen against fireworks or stones thrown against them.

Hurdles, in *Husbandry*, certain frames made either of split timber, or of hazel-rods wattled together, to serve as gates in enclosures, or to make sheep-folds, &c.

HURDWAR, or Haredwara, a town of Hindustan, province of Delhi, a great mart of commerce, and a celebrated place of Hindu pilgrimage, situated on the west side of the Ganges, where it issues from the northern hills. The town is not large, having only one street about fifteen feet in breadth, and one furlong and a half in length. Pilgrims of both sexes resort annually thither from all parts of India to perform their ablutions in the sacred Ganges. The month of April is the time appointed for this concourse of pilgrims; and great numbers of merchants also attending, one of the largest fairs known in Hindustan is held here. It is calculated that in general about 300,000 persons are collected on this occasion; but once in twelve years, when particular ceremonies are observed, the number is increased to a million. In April 1809, it was computed that two millions of strangers were assembled. The chief articles brought thither for sale are horses, mules, camels, tobacco, antimony, assafœtida; dried fruits from Cabul, Candahar, Moultan, and the Punjab; shawls, cloaks, &c. from Cashmere and Amritsir; spotted turbans, looking glasses, toys, with various manufactures in brass and ivory, from Jeypoor; shields from Rohilcund, Lucknow, and Silhet; bows and arrows from Moultan and the Doab; rock-salt from Lahore; baftas and piece-goods from Rahn, a large city in the Punjab; many camels, and a species of flannel, from the Marwar country; and from the Company's provinces Kharwa muslins, sarsnet, cocoa nuts, and woollen cloths of a coarse quality. The merchants who frequent this fair travel in large caravans, and are frequently infested on the roads by freebooters, who watch their opportunity and cut off stragglers. During the Mahratta dominion, a poll tax and heavy duties were imposed on all the cattle. But these have all been repealed by the British, and every encouragement is now held out to merchants. In such a vast concourse of people from all quarters, disputes were formerly very frequent. But, owing to the strict police maintained by the British, these fairs have lately ended without bloodshed, to the surprise and satisfaction of the vast multitude, who were accustomed to see bloody quarrels at the Hurdwar fair. The stream divides itself into three channels at Hurdwar, the principal of which is on the western side, running along a bank named Chandnee Ghaut. At the foot of the pass into the mountains is a Goorkah fort, belonging to Nepaul, to which many hundreds of slaves are annually brought down from the hills and exposed to sale. The travelling distance from Calcutta by Moorshedabad is 1080 miles, by Birbhoom 975 miles, from Delhi 117 miles, and from Lucknow 311 miles. Long. 78. 2. E. Lat. 29. 57. N.

HURLY-Burly, in vulgar language, denotes confusion or tumult, and is said to owe its origin to two neighbouring families, Hurleigh and Burleigh, which filled their part of the kingdom with contest and violence.

HURON, a vast lake of North America, situated between the 80th and 84th degrees of west longitude, and between the 43d and 46th degrees of north latitude; from which the country contiguous to it is called the country of the Hurons, a people whose language is spoken over a great extent of America.

HURREEPORE, in Hindustan, the capital of a district of the same name belonging to the Sikhs, which is situated between the 32d and 33d degrees of north latitude, and is intersected by the Beyah river. The town is situated in the province of Lahore, 100 miles east-north-east from the city of Lahore. Long. 75. 31. E. Lat. 24. 19. N.

HURRIAL, a town of Bengal, district of Rajesky, where the East India Company have a commercial residency for the purchase of cloths. The adjoining country is under water during the rainy season, and the town can only at that time be approached in boats. Long. 89. 17. E. Lat. 24. 19. N.

HURRICANE, a general name for any violent storm of wind, but commonly applied to those storms which happen in the warmer climates, and greatly exceed the most violent storms known in Europe.

HURST, Hyrst, or Herst, are derived from the Saxon *hyrst*, meaning *a wood*, or *grove of trees*. There are many places in Kent, Sussex, and Hampshire, which begin and end with this syllable; and the reason may be, because the great wood called *Andreswald* extended through these counties.

HUSBANDRY, as defined by some, includes not only agriculture, but several other branches connected with it, such as the rearing of cattle, the management of the dairy, making butter and cheese, raising flax, timber, and so forth. See Agriculture.

HUSKISSON, Right Honourable William, a distinguished statesman, was born at Birch Moreton, in Worcestershire, on the 11th of March 1770. After receiving a liberal education, he was sent to Paris for instruction in physic, the profession to which he was originally destined. Whilst in the French capital, however, circumstances occurred which induced him entirely to alter his course of life. On the breaking out of the French revolution, he espoused the popular side, and became an active member of the London Corresponding Society, but not, as has been sometimes asserted, of the Jacobin Club of Paris. Through the influence of a friend he was introduced to Lord Gower, then British ambassador at Paris, and was afterwards appointed his private secretary. On his return to England, the talents of Mr Huskisson attracted the attention of Mr Pitt and Mr Dundas, and in 1795 he was appointed chief clerk in the office of the latter, at that time secretary of state for the war department. In the following year he succeeded to the office of under secretary; and being found a valuable man of business, he was brought into parliament for the borough of Morpeth. In his subordinate connection with the ministry, Mr Huskisson shared the varying fortunes of those in power, retiring from office and returning to it with his superiors. During the early part of his parliamentary career he did not speak much, but he was exceedingly useful to the ministry in matters of business, particularly of a financial nature. On the return of Mr Pitt to power in 1804, he was appointed one of the joint secretaries to the treasury. During Mr Fox's short administration he was in opposition, but he returned with Mr Percival, and resumed his secretaryship. As a politician Mr Huskisson belonged to that party of which Mr Canning was the head, and which first assumed a distinct character in 1809, when the latter statesman proclaimed his difference from Lord Castlereagh, and left the ministry. Mr Huskisson retired along with him, and continued to follow in that middle course which Mr Canning pursued, voting with ministers upon questions of general policy both foreign and domestic, but contending, with the opposition, for the necessity of retrenchment in the public expenditure. Being placed on the celebrated Bullion Committee, Mr Huskisson published an able pamphlet on the subject, entitled *The Question concerning the Depreciation of our Currency stated and examined.* In this tract Mr Huskisson defended the principles embodied in the report of the committee, and showed the necessity of the bank resuming cash payments. He afterwards took a prominent part in various debates on finance, in all of which he was listened to by the house with the greatest attention. In 1812 he obtained the lucrative situation of colonial agent for Ceylon; and in 1814 he was sworn a privy councillor, and appointed the first commissioner of woods and forests. His subsequent efforts in parliament were characterized by that middle course of policy which he had hitherto followed. On Mr Canning's appointment as secretary of state in 1822, and his declining to be re-elected for Liverpool, Mr Huskisson was chosen as his successor. In the following year he was appointed treasurer of the navy, and afterwards president of the board of trade. The part which Mr Huskisson took in the great questions brought before parliament from the year 1820 till the close of his life, will be found fully detailed in the article Britain. In the ministry of Lord Goderich he became secretary for the colonies, which post he retained under that of the Duke of Wellington; but having voted against government on a question of importance, he placed his office at the duke's disposal, and his resignation was accepted. His death took place on the 15th of September 1830. Being present at the opening of the Liverpool and Manchester railway, he came inadvertently in the line of one of the carriages, moving at a rapid rate, and the vehicle having passed over one of his legs, lacerated it in such a dreadful manner that he died soon after. The speeches of Mr Huskisson are characterized by little of that which in ordinary language is called eloquence. They are distinguished for clear, distinct statement, lucid arrangement, close adherence to the matter in hand, continuous reasoning, and a thorough knowledge of the subject discussed, in all its bearings and details. The strength of his oratory lay in the soundness and comprehensiveness of his views, particularly in all questions of political economy and commercial legislation. On such subjects he rose far above the majority of his parliamentary contemporaries, both in the extent of his information, and in the scientific character of his reasoning. He was, indeed, one of the few practical statesmen who could deal alike with matters of detail and the principles of the science by which they are illustrated. No debater ever came better prepared with facts and details bearing directly upon his subject, of which he always made himself completely master. His speeches are therefore exceedingly instructive, as well for their facts as for their reasonings. A collection of them was published in 1831, in three vols. 8vo. (R. R. R.)

HUSSARS, a term which originally signified the national cavalry of Hungary and Croatia, a species of light horse, which acted as irregular troops, and in that capacity were found highly serviceable. Hussars were first introduced into the French service in 1692, when they were formed on the model of the Hungarian cavalry, which had been subsidised by France before the reign of Louis XIII. In all the European armies of the present day, hussars are light horse, and differ from light dragoons only in some peculiarities of dress and equipment.

HUSSEINPOOR, a town of Hindustan, in the province of Delhi and district of Bareily, sixty-five miles east from Delhi. Long. 78. 13. E. Lat. 28. 44. N.

HUSSENABAD, a town of Hindustan, in the province of Khandesh, and belonging to the Mahrattas. It is situated on the south side of the Nerbuddah, sixty miles south from Bilsah. Long. 77. 53. E. Lat. 23. 40. N.

HUSSITES, in *Ecclesiastical History*, a party of reformers, the followers of John Huss. The person from whom the Hussites take their name was born in a little village in Bohemia, called Huss, and lived at Prague in the highest reputation, both on account of the sanctity of his manners and the purity of his doctrine. He was distinguished by his uncommon erudition and eloquence, and discharged at the same time the functions of professor of divinity in the university, and of ordinary pastor in the church of that city. He adopted the sentiments of Wickliffe, and the Waldenses; and in the year 1407 began openly to oppose and preach against various errors in doctrine, as well as corruptions in point of discipline, which then prevailed in the church. Huss likewise endeavoured to the utmost of his power to withdraw the university of Prague from the jurisdiction of Gregory XII., whom the kingdom of Bohemia had hitherto acknowledged as the true and lawful head of the church. This occasioned a violent quarrel between the incensed Archbishop of Prague and the zealous reformer, which the latter inflamed and augmented from day to day by his pathetic exclamations against the court of Rome, and the corruptions that prevailed amongst the sacerdotal order.

But there were other circumstances which contributed to inflame the resentment of the clergy against him. He adopted the philosophical opinions of the realists, and vehemently opposed and even persecuted the nominalists, whose number and influence were considerable in the university of Prague. In the year 1408 he also increased the bitterness of his enemies, by procuring a sentence in favour of the Bohemians, who had disputed with the Germans concerning the number of suffrages which their respective nations were entitled to in all matters that were carried by election in this university. In consequence of a decree obtained in favour of the former, which restored them to their constitutional right of three suffrages, usurped by the latter, the Germans withdrew from Prague, and, in the year 1409, founded a new academy at Leipsic. This event had no sooner happened than Huss began to inveigh with greater freedom than he had before done against the vices and corruptions of the clergy, and to recommend, in a public manner, the writings and opinions of Wickliffe, as far as these related to the papal hierarchy, the despotism of the court of Rome, and the corruption of the clergy. Hence, in the year 1410, an accusation was brought against him before the tribunal of John XXIII. by whom he was solemnly expelled from the communion of the church. Notwithstanding this sentence of excommunication, he proceeded to expose the errors and vices of the Roman Catholic church, with a fortitude and zeal that were almost universally applauded.

This eminent man, whose piety was equally sincere and fervent, though his zeal was perhaps too violent, and his prudence not always circumspect, was summoned to appear before the council of Constance. Secured, as he apprehended, from the rage of his enemies by the safe-conduct granted him by the Emperor Sigismund for his journey to Constance, his residence in that place, and his return to his own country, John Huss obeyed the order of the council, and appeared before it to demonstrate his innocence, and to prove that the charge of his having deserted the church of Rome was entirely groundless. However, his enemies so far prevailed, that by a scandalous breach of public faith he was cast into prison, declared a heretic because he refused to plead guilty, in obedience to the orders of the council, and burned alive in 1415; a punishment which he endured with unparalleled magnanimity and resignation.

The same unhappy fate was reserved for another reformer, Jerome of Prague, his intimate companion, who attended the council in order to support his persecuted friend. Jerome, indeed, was terrified into temporary submission; but he afterwards recovered his fortitude, and maintained the opinions, which he had for a while deserted through fear, amidst the flames, in which he expired in 1416.

The disciples of Huss adhered to their master's doctrine after his death with a zeal which broke out into an open war, that was carried on with the most unparalleled barbarity. John Ziska, a Bohemian knight, in 1420 put himself at the head of the Hussites, who had now become a considerable party, and threw off the yoke of Sigismund, who had treated their brethren in the most cruel and barbarous manner. In the year 1424, Ziska was succeeded by Procopius. The acts of barbarity committed on both sides were shocking and horrible; for notwithstanding the irreconcilable opposition between the religious sentiments of the contending parties, they both agreed in this one detestable principle, that it was innocent and lawful to extirpate by fire and sword the enemies of the true religion; and as such they reciprocally considered each other. But, by the interference of the council of Basil, in the year 1433, these commotions in a great measure subsided, and peace was at length restored. The Hussites, who were divided into two parties, viz. the Calixtines and Taborites, spread over all Bohemia and Hungary, and even Silesia and Poland; and some remains of them still subsist in those parts.

HUSTINGS (from the Saxon word *hustinge*, meaning *concilium* or *curia*), a court held in Guildhall before the lord mayor and aldermen of London. This court is very ancient, as appears by the laws of Edward the Confessor. Some other cities have likewise had a court bearing the same name, as Winchester and York. But this term is now applied to those temporary structures where the business of elections is conducted.

HUSTNAPORE, or HUSTINAGARA, formerly one of the most ancient and famous cities of Hindustan, in the province of Delhi, and for ages the capital of a powerful Hindu dynasty, of which the remote history is involved in obscurity. It was founded by Rajah Hasti, and is much celebrated in the Hindu mythological poems. This city has long been in ruins, and is now covered with large ant-hills. It is about twenty miles south-west from Daranagur, on a branch of the Ganges, formerly the bed of that river. Long. 77. 56. E. Lat. 29. 7. N.

HUSUM, a city of Denmark, in the province of Sleswick, the capital of a bailiwick of its own name, at the mouth of the river Hever. It contains several public buildings, 800 houses, and 3700 inhabitants, and was, during one period of the revolutionary war, from being neutral, converted into a place of great trade in colonial produce, which was conveyed from the stores in Heligoland, and distributed over the continent by smugglers. Long. 9. 6. E. Lat. 54. 32. N.

HUSZK, a market-town of the circle of Marmaros, in the province of Hither Theiss, in Hungary, composed of two parts, Koszeg and Boryana, containing a Catholic, a Unitarian, and a Reformed church, and 4200 inhabitants. Long. 23. 42. 42. E. Lat. 43. 9. 11. N.

HUTCHESON, DR FRANCIS, an eminent philosopher, was the son of a dissenting minister in the north of Ireland, and was born on the 8th of August 1694. He early discovered a superior capacity; and having gone through a school education, began his course of philosophy at an academy, whence he removed to the university of Glasgow, where he applied himself to the study of literature, in which his progress was commensurate with his uncommon abilities.

He then returned to Ireland, and having entered into the ministry, was just about to be settled in a small congregation of dissenters in the north of Ireland, when some gentlemen near Dublin, who knew his great abilities and virtues, invited him to open a private academy in that city. He complied with this invitation, and met with entire success. He had been established but a short time in Dublin, when his singular merits and accomplishments made him generally known; and his acquaintance was sought by men of all ranks who had any taste for literature, or any respect for learned men. Lord Viscount Molesworth is said to have taken great pleasure in his conversation, and to have assisted him with his criticisms and observations upon his Inquiry into the Ideas of Beauty and Virtue, before it was published. He received the same favour from Dr Synge, bishop of Elphin, with whom he also lived in close friendship. The first edition of this work appeared without the author's name, but the merit of the performance was such that he could not long remain concealed. So great was the reputation of the work, and the ideas it had raised of the author, that Lord Granville, who was then lord lieutenant of Ireland, sent his private secretary to inquire at the bookseller's for the author, and when he could not learn his name, he left a letter to be conveyed to him; in consequence of which Hutcheson soon became acquainted with his excellency, and was treated by him, all the time he continued in the government, with distinguished marks of favour and esteem.

From this time his acquaintance began to be still more courted by men of distinction, whether for station or for literature, in Ireland. Archbishop King, the author of the well-known book *De Origine Mali*, held him in high esteem; and the friendship of that prelate was of great use to him in screening him from two different attempts made to prosecute him for daring to take upon him the education of youth, without having qualified himself by subscribing the ecclesiastical canons, and obtaining a license from the bishops. He also enjoyed a large share in the esteem of the primate Boulter, who through his influence made a donation to the university of Glasgow, of a yearly fund for an exhibitioner, to be bred to any of the learned professions. A few years after the publication of his Inquiry into the Ideas of Beauty and Virtue, his Treatise on the Passions was published. Both these works have often been reprinted, and always admired for the sentiment and language, even by those who have not assented to the philosophy they teach, nor allowed it to have any foundation in nature. About this time he wrote some philosophical papers accounting for laughter, in a way different from that suggested by Hobbes, and more honourable to human nature; which papers were published in the collection called *Letters of Hibernicus.*

After he had taught in a private academy at Dublin for seven or eight years with great reputation and success, he was in the year 1729 called to Scotland to become professor of ethical philosophy in the university of Glasgow. Several young gentlemen came along with him from the academy, and his high reputation drew many more thither both from England and Ireland. Here he spent the remainder of his life, in a manner highly honourable to himself, and ornamental to the university of which he was a member. His time was divided between his studies and the duties of his office, except what he allotted to friendship and society. A firm constitution, and a pretty uniform state of good health, except some few slight attacks of the gout, seemed to promise a long life; yet he did not survive the fifty-third year of his age. He was married, soon after his settlement in Dublin, to Mrs Mary Wilson, a gentleman's daughter in the county of Longford, by whom he left one son, Francis Hutcheson, doctor of medicine, who published, from the original manuscript of his father, A System of Moral Philosophy, in three books, by Francis Hutcheson, LL. D. Glasgow, 1755, in two volumes 4to. See the Dissertations prefixed to this Work by Mr Dugald Stewart and Sir James Mackintosh.

HUTCHINSON, John, a philosophical writer, whose notions have made no inconsiderable noise in the world, was born in 1674. He served the Duke of Somerset in the capacity of steward, and in the course of his travels from place to place employed himself in collecting fossils. We are even told that the large and noble collection bequeathed by Dr Woodward to the university of Cambridge was actually made by him, and even unfairly obtained from him. When he left the duke's service to indulge his studies with more freedom, the duke, then master of the horse to George I. made him his riding surveyor, a kind of sinecure place of L.200 a year, with a good house in the Meuse. In 1724 he published the first part of Moses's *Principia*, in which he ridiculed Dr Woodward's Natural History of the Earth, and attacked the doctrine of gravitation established in Newton's *Principia*. In 1727 he published a second part of Moses's *Principia*, containing the principles of the Scriptural Philosophy. From this time till his death he published a volume every year or two, which, with the manuscripts he left behind him, were published in 1748, in twelve vols. 8vo. On the Monday before his death, Dr Mead urged him to be bled, saying pleasantly, "I will soon send you to Moses," meaning to his studies; but Mr Hutchinson taking it in the literal sense, answered in a muttering tone, "I believe, doctor, you will," and was so displeased that he dismissed him for another physician, but he died in a few days afterwards, on the 28th of August 1737. Singular as his notions appear, they are not without some defenders, who have obtained the appellation of *Hutchinsonians*. The reader may find a distinct and comprehensive account of the Hutchinsonian system in a book entitled *Thoughts concerning Religion*, printed at Edinburgh in 1743; and in a letter to a bishop, annexed to it, first printed in 1732.

HUTTANY, a town of Hindustan, in the Mahratta territories, and province of Bejapoor. It is large and populous, and has an extensive commerce with Bombay, Surat, Rachore, &c. It possesses a small stone citadel, and is enclosed with a rampart and a ditch. It has also a large and excellent place of accommodation for travellers, built of free stone, which is capable of lodging 500 travellers. It formerly belonged to the Mahommedan king of Bejapoor, but was taken by the Mahrattas about the middle of the seventeenth century. It was retaken by the Mahommedans in 1679, when many of the inhabitants were carried into captivity and sold as slaves. After the death of Aurungzebe it again fell into the hands of the Mahrattas. Long. 75. 20. E. Lat. 16. 59. N.

HUTTON, Dr James, physician and naturalist, was the son of Mr William Hutton, a respectable merchant in Edinburgh. He was born on the 3d of June 1726, and having lost his father while he was very young, the charge of his education devolved on his mother, who determined that it should be very liberal. Having finished his grammar-school education at the high school of Edinburgh, he entered the university at the age of fourteen, in the year 1740. He always considered himself as greatly indebted to Professor Stevenson's lectures on logic, not because they made him a logician, but because they accidentally gave him a predilection for chemistry, which he retained and cherished to the close of life. As an illustration of some particular doctrine, the professor observed, that whilst the acids can singly dissolve the baser metals, they must unite their strength before they can have any influence upon gold; that metal is only to be dissolved by nitro-muriatic acid, formerly denominated *aqua regia*. From this remark he found his thirst for chemical knowledge daily increase, and sought for information from every quarter.

He always evinced talents sufficient to encourage the prosecution of his studies; but it was the wish of his friends that he should turn his attention to business, and with this he complied, though contrary to his own inclinations. In 1743 he was put as an apprentice to Mr George Chalmers, writer to the signet, where he soon discovered the ruling propensity of his mind; for when he should have been transcribing law papers, he was amusing his fellow apprentices with experiments in chemistry. Mr Chalmers perceiving this, generously freed him from his obligations to serve him, desiring him to turn his attention to some other employment more congenial to his views. He fixed his choice on the study of medicine, as nearly related to his favourite pursuits; and after spending about three years at Edinburgh, he studied two years at Paris; and returning home by the Low Countries, took his degree of doctor of medicine at Leyden, in September 1749. The subject of his thesis was, *De Sanguine et Circulatione in Microcosmo.*

When he arrived in London, about the end of 1749, he conceived the design of settling in the world. He justly conjectured that Edinburgh did not hold out for him any flattering prospects in the capacity of physician, as the principal practice was in the hands of a few eminent physicians who had been long established. He accordingly wrote to his friends in Edinburgh with much anxiety as to the subject of his future prospects in life. To Mr James Davie, a young man of nearly his own age, with whom he contracted a friendship which death only could extinguish, he also communicated the perplexed state of his mind. Their mutual knowledge of the nature of sal-ammoniac led them to establish this manufacture, which afterwards became a most lucrative concern to both. The sentiments of Mr Davie were communicated to Dr Hutton while yet in London, which probably was the chief reason why he resolved to abandon entirely the practice of physic.

On his return to Edinburgh, in the year 1750, he resolved to devote all his attention to agriculture, which might probably be occasioned by his having succeeded to a small property in Berwickshire on the death of his father. Professor Playfair of the university of Edinburgh has ascribed it, and we apprehend with great propriety, to the native simplicity of his character, and the moderation of his views, which were always free from ambition. His attachment to the life of a farmer was increased by his acquaintance with Sir John Hall of Dunglass, a gentleman who was very ingenious, a friend and lover of science, and one who well understood agriculture. Determined

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to make himself master of rural economy, Dr Hutton went into the county of Norfolk, where he continued for some time in the house of a farmer, who was at once his preceptor and his host. The farmer's name was John Dybold, whose practical knowledge of agriculture Dr Hutton always mentioned in terms of the highest respect.

During his residence in this county, which was to him a paradise, he made frequent excursions into different parts of England; and although information respecting rural economy was the great and primary object of his pursuit, yet it was here that he first commenced the study of mineralogy, to serve him as an amusement on the road. He acquainted his friend Sir John Hall that he had become remarkably fond of studying the surface of the earth, and was narrowly examining every pit, or ditch, or bed of a river that fell in his way. The agricultural knowledge he acquired in Norfolk increased his desire to pay a visit to Flanders, the only place in Europe where husbandry can boast of very great antiquity. He set out accordingly in the spring of 1754, and returned to England during the summer of the same year. Soon after his arrival in London he observed, in a letter to Sir John Hall, "had I doubted of it before I set out, I should have returned fully convinced that they are good husbandmen in Norfolk."

About this time he returned to his native country, and was for some time at a loss what place to fix upon for the purpose of carrying into effect his agricultural improvements. His own farm at length became his choice, and a ploughman whom he had brought with him from Norfolk gave the first specimen of excellent tillage ever exhibited in that part of Scotland. To Dr Hutton the country is indebted for the introduction of the new husbandry into a county where it may be said to have made more astonishing progress than in almost any other part of the British empire. In the year 1764 he made an excursion into the north of Scotland, in company with Commissioner, afterwards Sir George Clerk, a man of singular worth and abilities. They proceeded to Crieff, Dalwhinnie, Fort Augustus, and Inverness, and returned along the coast by Aberdeen to Edinburgh. To increase his knowledge of geology was Dr Hutton's chief aim in this tour, to which he had now determined to pay the most unremitting attention. About the year 1768 he devoted his whole time to scientific pursuits, and having met with a favourable opportunity of letting his farm to advantage, he took up his residence in Edinburgh. He now turned his attention very much to the study of chemistry, and we believe he was the first who discovered that mineral alkali is contained in zeolite. The same fact has since been confirmed by the experiments of that celebrated mineralogist M. Klaproth, as well as by those of Dr Kennedy, which have led to others of a similar nature.

Dr Hutton gave to the world his first publication in 1777, which was a small pamphlet of thirty-seven pages, entitled *Considerations on the nature, quality, and distinctions of Coal and Culm.* It was designed to answer a question which began to be much agitated, whether the small coal of Scotland is the same with the culm of England; and whether it ought to be carried coastwise free of all duty. This created a keen contest between the proprietors and revenue officers, the one insisting that it should, and the other that it should not pay any duty. It was discussed before the board of customs in Scotland, and even occupied the attention of the privy council. The small coal of Scotland was finally exempted from the payment of duty, to which the pamphlet of Dr Hutton greatly contributed.

During a period of thirty years the attention of the doctor was turned towards geological studies, to qualify him for writing on his favourite topic, a new theory of the earth. Long before that theory made its appearance in the world, he had completed the outline of it, which, however, was shown only to a few confidential friends. He was first induced to publish it by communicating an abridgment of it to the Royal Society of Edinburgh. Of the merits or defects of this celebrated theory this is not the place to speak. It found a very able advocate in Professor Playfair, whose Illustrations must ever be regarded as one of the finest specimens of philosophical writing that our language can boast of.

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A theory of rain from the same author appeared in the first volume of the Edinburgh Transactions. He had made meteorology his study for a considerable time; and his theory has been pronounced one of the few to be met with in that department of knowledge which is deserving of consideration. Soon after this publication, Dr Hutton gave the world, in three volumes quarto, An Investigation of the Principles of Knowledge, and of the Progress of Reason from Sense to Science and Philosophy. This work never attracted any notice. His elements of agriculture, the result of much study and long experience, was the last work which he seemed anxious to publish; but it was left in manuscript at his death, which took place in 1797.

To the name of philosopher Dr Hutton was most justly entitled, by reason of his natural talents, acquisitions, and temper. The direction of his studies was rather uncommon and irregular; but for that very reason it was peculiarly fitted to develope that quick penetration and originality of thought, by which his intellectual character was strikingly marked. The greatest acquisitions of wealth and fortune never excited more lively sensations of pleasure in the minds of men, than those which arose in the mind of Dr Hutton on hearing of a new invention, or on being made acquainted with a new truth. This pleasure, which appeared almost ridiculous to those who could not enter into his views, was not confined to any one branch of science; for, in the language of Professor Playfair, "he would rejoice over Watt's improvements on the steam-engine, or Cook's discoveries in the South Sea, with all the warmth of a man who was to share in the honour or the profit about to accrue from them." Dr Hutton was not exclusively attached to the company of men of letters, whose conversation was entirely directed to subjects of literature; for he could occasionally unbend himself, and enjoy the innocent hilarity of promiscuous company, when he freely indulged in the gratification of his native pleasantry. An admirable account of his life, written by Professor Playfair, was published in the Transactions of the Royal Society of Edinburgh.

HUY, a town of the Netherlands, in the province of Liege, the capital of a circle of the same name. It has a very strong fortress, commanding the passage over the river Meuse, to which the great road leads. It is surrounded with vineyards, and is the seat of some manufactures, and it contains 800 houses, with 5647 inhabitants. Long. 4. 12. E. Lat. 50. 31. N.

HUYGENS de Zuylichem, Christian, lord of Zeelhem, was the second son of Constantine Huygens, secretary and counsellor to the princes of Orange, and born at the Hague on the 14th of April 1629. He was one of those rare men who, from the most subtile theories, know how to deduce the most useful applications, and whom admirable inventions in the arts, as well as the sciences, place on the same level with the Archimedeses and the Newtons. His family, originally from Brabant, was rich and respected; and the important post which his father held under three successive princes of Orange had been filled by his grandfather, as it subsequently was by his elder brother Constantine, who in this capacity attended King William in the celebrated expedition to England, which issued in the Revolution of 1688. His father, a distinguished man of letters, whose poetical compositions had attained much celebrity, was not slow in remarking the happy qualities of his genius, and, full of paternal solicitude for his improvement, became his first instructor. He early taught his son music, arithmetic, and geography; and, about the age of thirteen, initiated him in the knowledge of mechanics, for which young Huygens showed a surprising aptitude. At fifteen he received the assistance of a master in the mathematics, a geometer of Amsterdam named Stampioen, of whom Descartes has left an unfavourable impression, but who in a short time enabled his pupil to make great progress. At the age of sixteen he was sent to Leyden to study law under the learned jurisconsult Vinnius, who dedicated to him his Commentary on the Institutions; but he did not permit jurisprudence to divert him from his mathematical studies, which he prosecuted at this place, as well as afterwards at Breda, where an university had been erected, and where, being placed under the direction of his father, he resided from 1646 to 1648. In these two cities he had as masters two very able geometers, Francis Schooten and John Pell; and his first essays were so successful that they attracted the notice of Descartes, to whom the author had communicated them. The genius of this great man divined instinctively that of Huygens. "It is some time," said he, in a letter written at this period, "since Professor Schooten sent me a writing by the second son of M. de Zuylichem touching a mathematical invention which he had attempted to make; and although he has not yet found his account in the pursuit (which is not wonderful, seeing he sought a thing which no one has ever been able to find), yet he has taken such a bias towards geometry, that I feel assured he will become excellent in that science, of which I scarcely see any one who knows any thing." On his part, the young geometer was filled with admiration of the great philosopher; and he wrote to Father Mersenne that, for ages, no one comparable to him had appeared. Nevertheless, Huygens had not the good fortune to see him. Descartes had quitted Holland, and when, in 1649, Huygens, having left the university, travelled with Henry Count de Nassau, he regretted much not having it in his power to pass from Denmark to Sweden, whither Descartes had repaired, out of complaisance to the imperious Christina. After this tour, he settled in his native country; and it was then that he commenced that series of inventions which have rendered his name so justly celebrated. In 1651 he published at Leyden his *Theoremata de quadratura Hyperboles, Ellipsis, et Circuli, ex dato portionum gravitatis centro*; a work which afforded a favourable specimen of his genius for mathematics, and gave promise of still greater excellence. In 1655 he travelled into France, and took the degree of doctor of laws at Angers. In 1658 he published at the Hague his *Horologium oscillatorium, sive de motu pendulorum*. In a preceding work, entitled *Brevis Institutio de usu Horologiorum ad inveniendas longitudines*, he had exhibited a model of a newly-invented pendulum; but as some persons, envious of his reputation, laboured to deprive him of the honour of the invention, he wrote his *Horologium oscillatorium* to explain the construction of his pendulum, and to show that it differed from the astronomical pendulum invented by Galileo. In 1659 he published his *Systema Saturninum, sive de causis mirandorum Saturni phænomenôn, et comite ejus planeta novo*. Galileo had endeavoured to explain some of the appearances exhibited by the planet Saturn; he had at first perceived two attendant stars, but some time afterwards was surprised to find that they had disappeared. Huygens, desirous to account for these changes, laboured with his brother Constantine to improve the construction of telescopes; and having at length made an instrument of this kind, possessing greater power than any which had yet been contrived, he proceeded to observe the phases of Saturn, and to record all the different aspects of that planet. The results were of equal interest and importance to the science of astronomy. He discovered a satellite of that planet, which had hitherto escaped the notice of astronomers; and, after a long course of observation, he showed that the planet is surrounded with a solid and permanent ring, which never changes its situation. In 1660, he took a second journey into France, and the year following he visited England, where he communicated the art of polishing glasses for telescopes, and was admitted as a member of the Royal Society. The air-pump, then recently invented, he materially improved; and about the same time he also discovered the laws of the collision of elastic bodies, as did afterwards our own countrymen, Wallis and Wren, who disputed with him the honour of the discovery. After a stay of some months in England, Huygens returned to France, where, in 1663, his merit became so conspicuous, that Colbert resolved to bestow on him such a pension as might induce him to establish himself at Paris. But this resolution was not carried into effect until 1665, when letters written in the king's name were forwarded to the Hague, where he then resided, inviting him to repair to Paris, and offering him a considerable pension, with other advantages. Huygens accepted the proposal of the French minister, and, from 1666 to 1681 resided at Paris, where he was admitted as a member of the Royal Academy of Sciences. During this period he was occupied with mathematical pursuits; he wrote and published several works, which were most favourably received; and he invented and perfected some useful instruments and machines. But, by continued application, his health began to be impaired; and although he had twice had recourse to his native air, and on both occasions derived benefit from the change, the improvement was only temporary, and he at length found it necessary to quit France and return to his own country. It is not improbable that his departure was accelerated by the revocation of the edict of Nantes; for although he had received an assurance that he would be permitted to enjoy the same liberty as before, without being molested on account of his opinions, he had but little encouragement to remain in a country where his religion was proscribed, and those who professed it subjected to the most cruel persecution. He accordingly left Paris in 1681; passed the remainder of his life in his own country, occupied with his usual pursuits; and died at the Hague on the 8th of June 1693, in the sixty-seventh year of his age, whilst his *Cosmotheoros*, a treatise on the plurality of worlds, was passing through the press. The *Opera Varia* of Huygens were published in 1700, 4to, and his *Opuscula Posthuma* appeared soon afterwards, Leyden, 1703, in 4to. The former collection, which is generally bound in four volumes, contains the greater number of the pieces which he published separately, and is divided into four parts; the first comprising the pieces relating to mechanics; the second, those relating to geometry; the third, those relating to astronomy; and the fourth, miscellaneous productions, which could not be arranged under any of the preceding heads. 'sGravesande had the care of this edition, in which he inserted various additions to the different pieces extracted from the manuscripts of Huygens. The same individual also superintended the publication of his *Opera Reliqua*, which appeared at Amsterdam in 1728, in two vols. 4to, and contain, 1. his Treatises on Light and Gravity; and, 2. his *Opuscula Posthuma*, originally printed in 1703. For a masterly account of the genius and labours of Huygens, the reader may consult the Dissertations by Professors Playfair and Sir John Leslie, prefixed to this work. This illustrious man gave his whole time to science; he loved a quiet studious life, and found sufficient enjoyment in pursuing curious and useful researches. He was modest, amiable, cheerful, and in all respects as estimable in private life as he was eminent in science. It is not a little singular, that the discovery of the real nature, or at least of the true figure, of the luminous belt or ring which encompasses the planet Saturn should have been made by the same individual who invented the pendulum clock and the micrometer. (A.)

HUYSUM, the name of several Dutch painters. The most celebrated of these was John, whose subjects were flowers, fruit, and landscapes. He was born at Amsterdam in 1682, and was a disciple of Justus van Huysum, his father. He set out in his profession with a most commendable principle, not so much to paint for the acquisition of money, as of fame; and therefore he did not aim at expedition, but at delicacy, and strove, if possible, to arrive at perfection in his art. Having studied the pictures of Mignon, and all other artists of distinction who had painted in his own style, he tried which manner would soonest lead him to imitate the beauties of each flower, fruit, or plant, and then fixed upon a manner peculiar to himself, and which seems almost inimitable. His pictures are finished with inconceivable truth; for he painted every thing after nature, and was so singularly exact as to watch even the hour of the day in which his model appeared in its greatest perfection. By some persons he was thought to paint with greater freedom than Mignon or Breughel; with more tenderness and nature than Mario da Fiori, Michel Angelo di Campidoglio, or Segers; with more mellowness than De Heem; and with greater force of colouring than Baptist. At length his reputation rose so high, that he fixed immoderate prices on his works; so that none but princes, or those possessed of princely fortunes, could pretend to become purchasers. The large sums which Van Huysum received for his works caused him to redouble his endeavours to excel; no person was admitted into his room whilst he was painting, not even his brothers; and his method of mixing the tints, and preserving the lustre of his colours, he kept an impenetrable secret. From the same principle, he would never take any disciples, excepting one lady, named Haverman; and he even grew envious of her merit. By several domestic disquiets his temper became changed, and he grew morose, fretful, and apt to withdraw himself from society. There were many who envied his fame, but he continued to work, and his reputation never diminished. It is universally agreed that he excelled all who painted fruit and flowers before him, by the superiority of his touch, the delicacy of his pencil, and an amazing skill in finishing; nor does it appear probable that any future artist will ever become his competitor. Besides his merit as a painter of flowers, he also painted landscapes with great applause. They are well composed; and although he had never seen Rome, he adorned his scenes with the noble remains of ancient magnificence preserved in that city. His pictures in this style are well coloured, and every tree is distinguished by a touch that is proper for the leafing. The grounds are well broken, and disposed with taste and judgment; the figures are designed in the manner of Lairesse, highly finished, and touched with a great deal of spirit; and through the whole composition the scene represents Italy, in the trees, the clouds, and the skies. He died in 1749, at the age of sixty-seven.

HYACINTHUS, a son of Amyclas and of Diomede (Apollodor. iii. 10, 3), or of Pierus and of Clio (i. 3, 3), beloved by Apollo and Zephyrus. He gave the preference to the former, and whilst they were amusing themselves at quoit, Zephyrus in revenge blew the quoit which Apollo had thrown, on the forehead of Hyacinthus, and he was killed by the blow. Apollo was so disconsolate at the loss of Hyacinthus that he changed his blood into a flower of the same name, and on the petals engraved the exclamation Αι, *alas*. (Paus. iii. 19, 1.)

HYADES, nymphs, daughters of Atlas and Æthra (Ovid), of Erechtheus, king of Athens (Eurip.), of Hyas and Bæotia (Hygin.) Their number and names are uncertain, but generally they are either seven or six, and they are called, Cisseis, Nysa, Erato, Eriphia, Bromie, Polyhymno; or, if they are seven, Ambrosia, Eudora, Phæsole, Coronis, Polyxo, Phæo, Thyone. At their death they were changed into stars, and placed on the head of Taurus, one of the twelve signs of the zodiac. They were supposed to preside over rain (hence the name, from ὕω, *to rain*), because the rising and setting of the Hyades was always attended with much rain. (Ovid. *Fast.* 5, 165; Cic. *de Nat. Deor.* 43.) The Latins called them *suculæ*, swine, because they were so ignorant of the Greek language that they imagined the Greek word to be derived from ὗς, *a sow*. (Gell. xiii. 9. Plin. ii. 39.; xviii. 26.)

HYBLA, in *Ancient Geography*, called also MEGARA, which last name it took from the Megareans, who led thither a colony. In Strabo's time Megara was extinct; but the name *Hybla* remained on account of the excellent honey which takes its name from this place. It was situated upon the east coast of Sicily, between Syracuse and the Leontines. The *Hyblæi colles*, small eminences at the springs of the Alabus, near this place, were famous for their variety of flowers, and especially thyme; the honey gathered from which was by the ancients reckoned the best in the world, excepting that of Hymettus in Attica.

HYBRIDA PLANTA, a monstrous production of two different species of plants, analogous to a mule amongst animals. The seeds of hybrid plants will not propagate.

HYBRISTICA (of ὕβρις, *injuria*), in *Antiquity*, a solemn feast held amongst the Greeks, with sacrifices and other ceremonies, at which the men attended in the apparel of women, and the women in that of men, to do honour to Venus in quality either of a god or a goddess, or both. But, according to the account given by others, the hybristica was a feast celebrated at Argos, in which the women, being dressed like men, insulted their husbands, and treated them with all marks of superiority, in memory of the Argive dames having anciently defended their country with singular courage against Cleomenes and Demaratus. Plutarch speaks of this feast in his treatise of the great actions of women. The name, he observes, signifies infamy, and is well accommodated to the occasion, in which the women strutted about in men's clothes, whilst the men were obliged to dangle in petticoats.

HYDE, EDWARD (afterwards Earl of Clarendon), was born at Dinton, in the county of Wilts, on the 18th of February 1609. He was the third son of Henry Hyde, the descendant of a family of that name, which had resided from a remote period at Norbury, in Cheshire. Edward, after receiving his first education under his father's roof, was sent, at the age of thirteen, to Magdalen Hall, at Oxford. He was originally intended for the church; but, in consequence of the death of his last surviving elder brother, his destination was changed, whilst he was at the university, from the profession of the church to that of law, and in 1625 he was entered at the Middle Temple. A severe ague with which he was attacked that year caused a suspension of his studies, and temporary removal from the Middle Temple, to which he returned in 1626. In 1628, when riding the Norfolk summer circuit with his uncle, Sir Nicholas Hyde, chief-justice of the King's Bench, who died in 1631, he caught the small-pox; and his legal studies were again for a long time interrupted. He married, in 1629, a daughter of Sir George Ayliffe, who died of the small-pox six months afterwards. He married a second time in 1632, in which year he lost his father. His second wife was a daughter of Sir Thomas Aylesbury, Bart. master of requests; and by her he had many children. Hyde now applied himself to the study of the law with a diligence which he had not shown before, and his success soon surpassed the expectations of his contemporaries. Meanwhile he lived little with lawyers; but he had many associates of political and literary celebrity, Lord Falkland, Selden, Chillingworth, Waller the poet, Ben Jonson, May the historian, Hales, Sheldon, Earles, and Morley. To these may be added a few men of high rank, as the Marquis of Hamilton, the Earls of Pembroke, Holland, and Manchester, and Lord Coventry. In 1635, through an accidental circumstance, he also obtained the notice of Archbishop Laud. In the course of an inquiry into the state of the customs instituted by the primate in his capacity of commissioner of the treasury, Hyde was mentioned to him as one who had been much consulted by some aggrieved merchants, and could afford the information desired. From this time Laud saw him frequently, employed him upon many occasions, and caused him to be noticed and employed by others. From 1635 till 1640 may be regarded as the most fortunate period of Hyde's life. He was successful in his profession, possessed a competent private fortune, and was happily married. In 1640 he was elected member of parliament for Wootton-Basset and for Shaftesbury, and took his seat for the former. The parliament met on the 13th of April, and was dissolved on the 5th of May. Hyde's first brief parliamentary career was characterized by activity and an honest zeal in the correction of abuses, from which not all the friendship of Laud and the favour of the court was able to divert him. In his first speech he denounced the earl marshal's court, which, in its protection of the privileges of the titled classes, had been intolerably vexatious and oppressive; and he showed himself a true and practical friend of rational freedom. During this very short session, he served in seven committees. He foresaw the evil consequences of the hasty dissolution, and endeavoured in vain to prevail on Laud to employ his influence with the king to prevent it. In the next parliament, which met in November 1640, Hyde sat for Saltash. He recommenced his proceedings against the earl marshal's court, of which he procured the suppression. He was also chairman of a committee of inquiry into the abuses of the council of York, and the court of the council of the marches; and he conducted the impeachment of three of the barons of the exchequer for illegal exactions at the bidding of the crown. But Hyde, though zealous for the redress of grievances, was opposed to the encroachments of parliamentary authority, which began to assume a formidable aspect. Strongly attached to episcopacy, he also disliked the attempts of the parliament to remodel the government of the church; and boasts that as chairman of the committee on that question, he interposed so many delays that the project was suspended. He vehemently protested against the Commons' remonstrance, his opposition to which was the occasion of his first introduction to Charles I. He had written an answer to it, which he showed in confidence to Lord Digby. Digby made it known to the king, who sent for Hyde, requested the paper, approved, and published it as the reply of the king with the advice of his council. Soon afterwards the king offered to Hyde the office of solicitor-general, which the latter declined, alleging that he could better serve his sovereign in an unofficial capacity. To this the king assented; and meanwhile committed to him, to Lord Falkland, and to Sir John Colepepper, the entire management of his affairs in the House of Commons, assuring them that he would take no step therein without their concurrence. Notwithstanding this assurance, Charles, without apprizing these chosen councillors, not long afterwards had recourse to the ill-timed measure of attempting to seize the five members in the House of Commons. Though the consequences of this rash act were irretrievable, and the royal cause was almost hopeless, Hyde continued courageously to support it. During many months he was secretly employed in writing answers for the king to the declarations of the parliament, and had frequent interviews with him by stealth; but he was at length suspected, and narrowly escaped committal to the Tower by flying to the king at York. Though Hyde had thus become openly an adherent of the king, he long refused office. He declined the proffered post of secretary of state; and it was not till March 1643 that, on the promotion of Sir John Colepepper to the mastership of the rolls, he accepted the chancellorship of the exchequer. He was one of the commissioners at the negotiations at Uxbridge, where, as on other occasions, he fruitlessly laboured to effect peace between king and parliament, as far as was compatible with a preservation of the royal prerogative and the rights of the established church.

In 1644, after the battle of Naseby, Hyde was appointed, together with Sir John Colepepper and Lords Capel and Hopton, to form a council to attend, watch over, and direct the Prince of Wales. After hopelessly witnessing for many months a course of disastrous and ill-conducted warfare in the west, they fled with him, first to Scilly, and thence to Jersey; from which, at the entreaty of the queen, but against the opinion of Hyde and others of the council, the prince, in 1646, repaired to his mother at Paris, attended only by Sir John Colepepper, and leaving Hyde at Jersey. In this retreat Hyde remained till the spring of 1648, engaged in the composition of his history of the rebellion. He also wrote, during this period, an answer to a declaration of the parliament, in which they charged the king with all the evils which had happened, and justified the discontinuance of all further addresses to him. In May 1648, he was summoned to attend the prince, who, at the head of a fleet which had espoused the royal cause, was blockading the Thames. Hyde, after encountering sundry difficulties, and amongst others seizure by privateers off Ostend, did not meet the prince till his return to the Hague, about the end of August, from his fruitless expedition. Hyde found dissensions in the prince's little court at the Hague, especially between Prince Rupert and Lord Colepepper. The news of the death of Charles I. for a while afflicted and appalled them; but their animosities soon broke out afresh, and disturbed the councils of the new sovereign. In 1649, at the suggestion of Lord Cottington, Hyde and that nobleman were sent as ambassadors to the court of Spain for the purpose of soliciting its assistance. They were coolly received, and had the mortification of perceiving that the Spanish court was more inclined to cultivate the friendship of the commonwealth of England; and to the memorial which they presented to the king of Spain in a private audience, they obtained only a cold and ambiguous reply. The treatment they experienced from the Spanish government was meanly time-serving, and varied with the fortune of Charles's affairs. On his determining to proceed to Scotland, upon the invitation of the Scotch council and parliament, the ambassadors were treated with more regard. Upon the news of Cromwell's victory over Argyll's army, they were desired to depart. Accordingly, Hyde quitted Spain, unaccompanied by his colleague Lord Cottington, who chose to remain as a private person, though not permitted to reside at Madrid. On Hyde's return from Spain in 1651, he met at Paris the king, returned from the ill-fated expedition which terminated in his defeat at Worcester; which rash interference, and the king's negotiation with the Scotch, and acceptance of the covenant, Hyde severely censured. He found himself exposed to the enmity of many, especially of the queen. Sundry calumnies were circulated against him, and two petitions were prepared, one from presbyterians, the other from papists, praying his removal from Charles's councils. But Charles's confidence in Hyde was not shaken by these intrigues; and he appears to have seen their groundlessness, and properly appreciated the valuable services of so honest, able, and zealous a minister. Extreme poverty was amongst the evils which, in a greater or less degree, since Hyde's departure from Jersey, he and his family had been compelled to bear. His family resided principally at Antwerp, and he and they were almost reduced to want the most common necessaries of life; yet his courage and integrity never faltered, and he would not even (as many had done) compound for his estates in England, lest thereby he should seem to acknowledge the existing government. Year after year, too, the hope of relief to the royalist party from foreign aid was waning away; and neither foreign war nor domestic conspiracy seemed to avail against the power of Cromwell. In 1658 Cromwell died, but the protectorate passed, like an inheritance, into the hands of his son; and though the hopes of the royalists were naturally excited, the prospects of restoration were still found to be dark, vague, and distant. Hyde, who was now lord chancellor, corresponded much with those whom the weakness of Richard Cromwell and the distracted state of England had rendered favourable to the royal cause, and proved instrumental in forwarding that Restoration which was at length more ostensibly effected by the powerful agency of Monk.

The period immediately following the Restoration was that of Hyde's greatest power. He was the first minister, presiding over a cabinet in which the principal offices were filled by his friends (for such were Sir Edward Nicholas, the Earl of Southampton, and the Marquis of Ormonde), and the principal measures of the government were peculiarly his. The first great measure of his administration was the act of indemnity. This was in accordance with the king's declaration from Breda, in which he promised pardon to all his subjects, save such as should be excepted by parliament, by which was intended the exclusion of those who had been instrumental to his father's death. The lord chancellor was on the side of mercy, and urged the speedy adoption of this healing measure on a reluctant and vindictive parliament. In the settlement of property under the act of indemnity some apparent injustice was unavoidably committed, by the necessity of dealing differently, not according to the merits of persons, but the nature of the property to be dealt with, and the title by which it was held. Transactions between individuals could not be reached; but grants to or purchases by individuals from the usurping state became subject to revision from defect of title; and crown and church lands were recovered from their holders, whilst the impoverished royalist who had sold his property to support the cause of the king was doomed to see the sale confirmed, and himself debarred from compensation. The royalists consequently murmured loudly. They called the statute an act of "indemnity for the king's enemies, and of oblivion for his friends;" and they hated the chancellor for the part he took in framing this act, and his steady adherence to the principles of it. The next important measure was the settlement of the revenue. It is asserted by several authorities, that the chancellor might have obtained for the king from the parliament, in the first fervour of their revived loyalty, an annual revenue of L.2,000,000. But it was not his wish to render the sovereign independent of the aid of his parliament, and he therefore sought for him only L.1,200,000, a sum scarcely sufficient for the exigencies of the state, unless administered with due economy. This sum the parliament readily granted. Military tenures, and the oppressive privileges of wardship, purveyance, and pre-emption, were abolished, and the excise on liquors was granted in their stead. The restoration of the bishops to the House of Lords, the statute against tumultuous petitioning, the vesting of the supreme command of the militia solely in the crown, and the repeal of the triennial acts, were measures promoted by the chancellor for the purpose of strengthening the prerogative of the crown. In the regulation of the judicature he deserved high praise. He showed a rare impartiality and discernment in his appointments, and eminent integrity and diligence in the administration of his own office. His conduct in ecclesiastical matters was less liberal and judicious. He believed episcopacy to be the only form of church government suitable to monarchy, and was too little tolerant towards other sects. Under his administration several oppressive acts were passed; the act of uniformity, compelling clergymen, on pain of abandoning their livings, to subscribe to the forms of the church of England, and to the doctrine of passive obedience, by which two thousand were ejected; the act against conventicles, imposing fines on all present at any meeting for religious worship at which five assisted besides the family; and the five-mile act, by which dissenting teachers who had not taken the oath of passive obedience were forbidden to approach within five miles of a place where they had preached since the act of indemnity. But the sin of such oppressions lies chiefly with the parliament. In that which succeeded the convention parliament there were a great majority of high churchmen. Venners' insurrection had strengthened the prejudices against sectarians; and it is by no means certain that Clarendon could have stemmed the torrent of intolerance, even if he had wished or attempted to do so.

In 1660, on the 3d of September, his daughter Anne was secretly married to the Duke of York; an union which, after much opposition from the mother and sister of the duke, and the calumnies of profligate courtiers, was acknowledged about the end of the year. The discovery was received by the chancellor with violent demonstrations of indignation and grief. He seems to have been solicitous to repel the imputation of having secretly promoted an alliance so flattering to his ambition, and to have dreaded the effects of the jealousy it might excite. He had in the following year a share in negotiating a marriage for the king with Catherine of Portugal; a marriage which, when it proved unfruitful, was groundlessly supposed to have been promoted by Clarendon under that expectation, and with a view that his son-in-law or his descendants might inherit the throne. Such suppositions would have been far fetched, even if an incapacity in the princess to bear children had really existed; and it must fall to the ground when the contrary is known. Difference of religion was the only obvious objection to this alliance; but there was no Protestant princess to whom Charles would ally himself; and amongst Catholics the princess of Portugal was perhaps least objectionable, and conferred the advantages of a dowry of L.500,000, Tangiers, Bombay, and free trade with Portugal and its colonies. The profligacy of Charles, and the malign influence of Lady Castlemaine, afterwards Duchess of Cleveland, which Clarendon vainly endeavoured to resist, were the main causes of the unhappiness of this marriage.

Hyde showed no avidity for emoluments or distinctions. After the Restoration, when Monk was created a duke, and Montague an earl, Hyde declined a proffered peerage, resting his refusal on unwillingness to excite disaffection amongst the new supporters of monarchy by an apparent eagerness on the part of the king to load with honours his old adherents. When the marriage of his daughter with the Duke of York became known, this objection ceased; a public mark of the king's unaltered regard be-

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came desirable, and Hyde accepted the barony of Hindon. A further elevation took place in 1661, at the coronation, on the request of the Duke of York; and the chancellor was created Earl of Clarendon, and took his seat as such on the 11th of May. At the time when he was made a baron he accepted a present of L.20,000 from the king; but he had declined at an earlier period the more valuable grant of ten thousand acres of crown land, which Charles was willing to bestow.

One of the measures of his administration which has exposed him to most reproach, was the sale of Dunkirk in 1662. Yet it cannot be shown that the motive was corrupt, or the measure indefensible. Money was wanted; large arrears had been due to the army; and large sums had been necessarily expended in military and naval stores. The revenue settled by the parliament was insufficient in amount, and with difficulty collected; and subsidies were granted by the parliament in 1661 as an additional aid. The wants of the state were still urgent. Dunkirk was a source of expense to the yearly amount of L.120,000. France was willing to purchase; and after much negotiation between Clarendon and D'Estrades, Dunkirk was sold to France for 5,000,000 livres. A more truly censurable act of Clarendon's administration was sanctioning the acceptance of money for Charles from Louis XIV. though he had the honesty to refuse it for himself, and laying the foundation of that secret correspondence which at length rendered the king of England almost the pensioned servant of France. The sale of Dunkirk tended to weaken the popularity of Clarendon with the nation. He soon began to lose the favour of the king, by his opposition, in July 1663, to a measure Charles had much at heart, namely, a bill to invest the king with a discretionary power of dispensing, for a fine, penal laws against all sects, by which Charles hoped to favour the Catholics, though this purpose was necessarily cloaked under a promise of toleration, including all Protestant dissenters. Clarendon, who knew and disapproved of the motive, vehemently opposed this bill, and caused it to be laid aside; and Charles from that time began to entertain a dislike of his minister, which the enemies of Clarendon sedulously fostered. The Duke of Buckingham and other chosen associates of the king tried to undermine the influence of Clarendon by mimicry and taunts, representing him as a churlish pedagogue, and inciting the king to emancipate himself from restraint. His influence as a minister was also lessened by the substitution of Bennet for his firm friend Sir Edward Nicholas, and by the reviving power of Coventry and Ashley. He also paid the penalty of power, in bearing the load of whatever calamities befel the nation. Even the plague, and the fire of London, and the disastrous issue of the Dutch war (a war to which the public was favourable, and he was adverse), concurred to weaken his popularity. The defenceless state of the Thames, which enabled the Dutch to invade it successfully, and the conclusion of a peace which the people disliked, were imputed to the chancellor. Anxious to pursue a middle course, and careless of the public favour, he had gained the friendship of no party alike able and willing to support him. The Protestant dissenters disliked him as the promoter of the measures against non-conformists; the Catholics as having frustrated the king's endeavour to grant them indulgence; the Royalists as the supporter of the act of indemnity and oblivion; the populace because he had built a large house, which, it was already rumoured, was the ostentatious result of secret bribes from France or Holland. The profligate and ambitious court disliked him as a reprover of their license, and an obstacle to their advancement; and Charles, who, aided by the high-church party, might have supported him against these assailants, had recently entertained a fresh ground of dislike. He knew that Clarendon opposed his infamous plan of obtaining a divorce; and he believed him to have promoted the marriage of Miss Stewart, whom, after obtaining such divorce, Charles had intended to espouse. The discontented nation clamoured for a victim; and the ungrateful king was glad to sacrifice to popular vengeance the minister whose stubborn honesty was opposed to the gratification of his will. He sent a message to Clarendon, then in affliction from the recent death of his wife, advising him to resign, with a view of saving himself from impeachment. Clarendon refused to take so humiliating a step; and Charles deprived him of the great seal on the 13th of August 1667. Clarendon, whom the impeachment preferred by Lord Bristol four years before had left unshaken, was now again exposed to this attack under circumstances which rendered it more powerful against him. Urged by the Dukes of Buckingham and Albemarle, the Commons drew up, on the 6th of November, an impeachment, consisting of seventeen articles, which, after several days' debate, was on the 12th carried up to the Lords. He was accused of designing to govern by a standing army, and advising the king to discontinue parliaments; of saying that the king was in his heart a Papist; of receiving money for illegal patents; of imprisoning in remote garrisons; of unjust sale of offices; of corruptly procuring the customs to be farmed at low rates, pretended debts to be paid by the king, and the company of vintners to obtain undue advantages; of procuring grants to be made to himself and his relations; of introducing arbitrary government in the colonies; of frustrating a proposal for the preservation of Nevis and St Christopher's; of advising and effecting the sale of Dunkirk; of unduly causing the king's letters-patent to Dr Croucher to be altered; of arbitrary conduct in the council; of having caused *quo warrantos* to be issued against corporations, with the intent of extorting money; of having corruptly procured the bill of settlement for Ireland; of having deceived the king in his administration of foreign affairs, and betrayed his councils to the enemy; and of having counselled the division of the fleet in June 1666. To these flimsy charges Lord Clarendon replied by the mouth of his son, that if any one was proved, he would submit to the rest. His accusers were ashamed to make any one of them the specific ground of an impeachment; and accordingly he was impeached of high treason in general terms, and his imprisonment demanded, until the Commons, "in convenient time," shall exhibit "articles against him." The Lords refused to imprison him on this general accusation. Much controversy ensued between the two houses, during which, in compliance with the entreaties of his friends, and the intimated wishes of the king, Clarendon closed the dispute by withdrawing himself from the kingdom on the 29th of November 1667, and retiring to France. He left on his departure a vindication of his conduct, addressed to the House of Lords, which address was communicated to the Commons, by whom it was voted that it was scandalous and seditious, and should be burned by the hangman. The Commons then attempted to obtain his attainder, but were opposed by the Lords; and the two houses finally concurred in an act of banishment and incapacity, unless he appeared and took his trial before the 1st of February, which act was passed on the 18th of December 1667. Fresh persecutions awaited Clarendon. The court of France, in order to gain the favour of England, wished to expel him from their dominions; and it was not till their hopes of alliance were dispelled by the triple league, that they showed kindness to the distinguished exile, and Clarendon received a special permission to reside in any part of France. He abode principally at Montpellier, where, resuming his literary labours, he completed his celebrated History, and the Memoir of his own Life. From thence he re-

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paired to Rouen, where, in the year 1674, he addressed to Charles II. a fruitless prayer for permission to spend the short remainder of his life in England. A few months afterwards he died at Rouen, on the 9th of December 1674, in the sixty-fifth year of his age.

The character of Lord Clarendon has been much exposed to undeserved extremes of praise and of censure. He has been made the idol of the high-church party, and bitterly assailed by their opponents. As a minister he appears to have been incorrupt, indefatigable, zealous for the public service, and anxious to hold an even balance between the liberties of the subject and the privileges of the crown, and to secure to the restored king only the constitutional powers of limited monarchy. His chief faults were harshness towards the non-conformists, and acquiescence in the king's clandestine acceptance of pecuniary aid from France. His merits cannot be fairly estimated, without considering the difficulties of his position, the profligacy and corruption of the times in which he lived, to which he boldly and honourably opposed himself, and comparing his administration with the disgraceful epoch by which it was succeeded. He was upright and uncompromising, and neglectful of the arts of popularity, both towards men of high and of humble station. His abilities were very great, but consisted perhaps rather in quickness than in depth and comprehensiveness of mind. He was ready and powerful as an orator, and prompt and able in the despatch of business, of which, in spite of frequent illness, he bore by far the greatest share during the period of his administration. In private life he was unimpeachable. As a writer he will ever occupy a high place. His history, as characterized by a distinguished modern historian, is "a monument of powerful ability and impressive eloquence." Its remarkable beauties are its masterly delineation of celebrated characters, the occasional eloquence of its descriptive passages, and the frequent interspersion of luminous reflections. Its chief faults are diffuseness of style, and the want of accuracy and arrangement. Its fidelity as a history cannot be upheld; a defect attributable partly to the circumstance of his having trusted much to recollection in the absence of requisite materials, partly to that desire to render it serviceable to the cause of the royalists, with which he professed to have commenced it.

His principal works are, his History of the Rebellion; A short View of the State of Ireland; and The Life of Edward Earl of Clarendon, in which is included a Continuation of his History of the Grand Rebellion. Of these three works, a complete edition, containing the passages suppressed by former editors, was published for the first time at Oxford in 1826. Brief View and Survey of the Dangerous and Pernicious Errors to Church and State in Mr Hobbes' Book entitled the Leviathan, Oxford, 1676; A Collection of Tracts, fol. London, 1727, containing, A Vindication of Himself; Reflections on several Christian Duties, Divine and Moral, by way of Essays; Contemplations and Reflections upon the Psalms of David; A Dialogue of the Want of Respect due to Age; and A Dialogue concerning Education.

(See *Life of Clarendon*, by himself, and his *History of the Rebellion;* Clarendon's *State Papers;* Wood's *Athenæ-Oxonienses;* Whitelocke's *Memorials;* Burnet's *History of his Own Times; Memoirs of James II.;* Pepys's *Diary;* Evelyn's *Diary; Parliamentary History;* and *State Trials.*) (Y. Y.)

Hyde, *Thomas*, professor of Arabic at Oxford, and one of the most learned writers of the seventeenth century, was born at Billingsley, near Bridgenorth, Shropshire, in 1636. He studied first at Cambridge, and afterwards at Oxford. Before he was eighteen years of age, he was sent from Cambridge to London to assist Mr Brian Walton in the great work of the Polyglott Bible; and about the same period he undertook to transcribe the Pentateuch out of the Hebrew characters, in which it was first printed at Constantinople, into the proper Persian characters. After he had happily succeeded in this, he assisted in correcting several parts of Mr Walton's work, for which he was perfectly qualified. "Nec prætereundus est D. Thomas Hyde," says the editor, "summæ spei juvenis, qui in linguis orientalibus supra ætatem magnos progressus fecit, quorum specimina dedit tum in Arabibus, Syriacis, Persicis corrigendo, tum in Pentateucho Persico characteribus Persicis describendo, quia antea solis Hebraicis extitit, ejusque versionem Latinam concinnando." He was made archdeacon of Gloucester, canon of Christ-church, head keeper of the Bodleian Library, and professor of Hebrew and Arabic in the university of Oxford. He was interpreter and secretary of the oriental languages during the reigns of Charles II. James II. and William III.; and he was perfectly qualified to fill this post, as he could converse in all the languages which he understood. There never was an Englishman in his situation of life who made so great progress; but his mind was so engrossed by his beloved studies, that he is said to have been but ill qualified to appear to any advantage in common conversation. This distinguished orientalist died on the 18th of February 1702. Of all his writings, the very catalogue of which is a curiosity, the most celebrated is his *Religio Veterum Persarum*, a work of profound and various erudition, and abounding with many new lights and ingenious conjectures concerning the theology, history, and learning of the eastern nations. Amongst his other works may be mentioned, 1. A Latin translation of Ulug Beig's observations on the longitude and latitude of the fixed stars; and, 2. A Catalogue of the printed books in the Bodleian Library. Dr Gregory Sharpe, master of the Temple, collected and republished some of Dr Hyde's pieces formerly printed, under the title of *Syntagma Dissertationum et Opuscula*, in 2 vols. 4to, 1767; to which is prefixed, a life of the author, containing a very judicious estimate of his labours and acquisitions. At the time of his death, Dr Hyde had planned, and partly prepared for the press, no less than thirty-one different works, some of greater and other of less importance, a list of which will be found in Chalmers's *Biographical Dictionary*, article Hyde.

HYDERABAD, an extensive province of Hindustan, in the Deccan, which is situated principally between the 16th and 19th degrees of north latitude. The name is now applied generally to all the territories of the nizam, so that it is exceedingly difficult to ascertain its exact limits. This territory composed a considerable portion of the ancient Selingana. The country is hilly, but not mountainous, being for the most part an elevated table-land, in consequence of which the climate is colder than might be expected from the latitude. During three months of the year the thermometer at the city of Hyderabad, and in the country to the north, is often as low as 45°, 40°, and even 35° of Fahrenheit. The country is fertile, and, under proper management, would yield abundantly. But the whole territory is principally rented to powerful zemindars, or is granted in jaghires to the officers of government. This distribution of the landed property, which, with the exception of some portions set aside for charitable purposes, and the estates of the nizam and the different branches of his family, is in the hands of a few individuals, is supposed to be injurious to agriculture, and of course to the interests of the revenue. The cultivators are wretchedly poor, and are much oppressed by their superiors the holders, who are subject to little or no restraint from their nominal sovereign. Where they are properly cultivated, the fields yield excellent crops of wheat, which is transported by the inland carriers to the sea-coast, whence salt is brought in return. The districts acquired by the nizam are particularly rich and fertile. But as agriculture is discouraged by the oppression of the cultivators, commerce is obstructed by heavy and injudicious internal taxes. In 1801 the custom-duties on importation amounted to 15 per cent., which formed the principal revenue of the state; and when the British remonstrated against the impolicy of these internal duties, the nizam evinced the most decided aversion to reduce them, and still more to abolish them, which was the counsel of the British government. It was at length agreed that the tax should be reduced to two and a half per cent. But even the levying of this duty was attended with such oppressions and vexation, that it greatly impeded commerce. At present, the principal trade carried on between the nizam's dominions and those under the British government, consists in the exportation of cotton to Berar and to the Northern Circars, and also to the markets at Vellore, Arnee, and the vicinity. They bring back salt and salted fish, cloths manufactured in the Northern Circars, Arnee muslins, and European manufactures; the latter principally for the supply of the British forces subsidised by the nizam, and for clothing his army. The chief towns of this kingdom are Hyderabad, Golcondah, Warangole, Aurungabad, Beder, and Ellichpore. The majority of the people are Hindus; but having been long the seat of a Mahommedan government, a considerable portion of the inhabitants are of that religion.

This country was formerly subject to the rajahs of Telingana and Bijanagur; but being afterwards conquered by the Mahommedans, was formed into a separate kingdom in the year 1512, under the name of Golcondah, by Mahommed Kooly, originally a Turkish adventurer. In 1687, it was brought under the dominion of Aurungzebe, and was converted into one of the provinces of the Mogul empire, and, with the other five southern provinces, was formed into a viceroyalty, under an officer appointed by the court of Delhi, called the soobahdar of the Deccan. In 1719, a Mogul officer, Cheen Khilij Khan, being appointed to this government, with the title of Nizam al Moolk, or superintendent of the kingdom, collected a large army, and got possession of all the strongholds of the Deccan; and setting up for independence, he overawed the emperor Mahommed Shah and his ministers. After the invasion of Nadir Shah in 1739, he left to the Mogul nothing but the name of sovereign; and having made Aurungabad his capital, he died at Boorhanpore in the year 1748, aged 104 years. He was succeeded by his second son, who was assassinated in 1750, and succeeded by his nephew Muzuffer Jung, who was assassinated the following year, and succeeded by his cousin Salabut Jung. He had been confined for ten years by his brother Nizam Ali, who for nearly twenty years was engaged in wars with Hyder Ali, the British, and the Mahrattas, during which his territories were greatly contracted. On the 12th of October 1800, he concluded a treaty offensive and defensive, by which he became a dependent and ally of the British. He agreed to receive into his territories a British force of 8000 infantry and 1000 cavalry; to relinquish to the British the management of all his foreign relations; and, for the regular payment of the troops stationed in his country, to cede certain portions of territory to the British. By a commercial treaty concluded in 1802 with the British, it was agreed, in lieu of all local duties, that a duty of five per cent. should be levied on all articles respectively imported into the territories of each. In 1804, after the conclusion of the war with Scindia and the rajah of Nagpoor, the nizam acquired a large accession of territory. At present the nizam's dominions comprehend the greater part of Berar, the whole of Hyderabad, Nandere, and Beeder, and part of Aurungabad and Bejapoor. Towards the Nagpoor territories their limits are marked by the course of the Wurda river, and on the one side of the British by the Krishna and Toombuddra. This territory may be estimated in length at 420 by 220 miles, and contains 8,000,000 of inhabitants.

Hyderabad.

Hyderabad, the capital of the above-mentioned province of Hyderabad, and of the nizam's dominions. It is situated on the south side of the Musa river, which runs rapidly during the rains, but in the dry season has scarcely two feet of water. It is said to have been founded about the year 1586 by Sultan Mahommed Kootub Shah, who, thinking the air of Golcondah did not agree with his constitution, gave orders for building a new city, which continued to be the residence of the Kootub Shah dynasty till the year 1687, when it was taken by Aurungzebe. The late Nizam Ali was the first of the nizams who made it his residence, and he spent considerable sums in improving it. It is now a large and populous place, about seven miles in circumference, and is surrounded by a stone wall, with towers at the angles and gates, which, though incapable of defence against artillery, is a good protection against the incursions of cavalry. It contains two palaces and some elegant mosques, this having long been the seat of Mahommedanism in the Deccan; and between it and Golcondah there are some handsome tombs. This city possesses large magazines, in which are deposited the presents received at various times from the different native and European powers, consisting of bales of woollen, cases of glass, glass-ware, China-ware, clocks, watches, &c. of European manufacture. These presents have accumulated during a course of seventy or eighty years, having been received by the father and grandfather of the present nizam as far back as the time of Dupleix and Bussy. Since the late Nizam Ali transferred his residence to Hyderabad, it has experienced no disturbance; and being the residence of the court, has rapidly increased in wealth and population. At present it is estimated to contain 120,000 inhabitants, including the suburbs. The travelling distance from Calcutta by the Northern Circars is 902 miles, by Nagpoor 1043 miles, from Madras 352, from Bombay 480, from Delhi 923, from Poonah 387, from Seringapatam 406. Long. 78. 42. E. Lat. 17. 15. N.

Hyderabad, a city of Hindustan, in the province of Sinde, of which it is the capital. The fortress of Hyderabad, which is appropriated solely to the residence of the princes and their families, is situated on a rock the foot of which is washed by a branch of the river Indus, here named the Fulalee. It is of an irregular pentagonal figure, suited to the natural form of the rock, and is defended by round towers, and a high brick wall perforated with loop-holes. The situation is remarkably strong; the sides of the hill being in many places so steep as to render the ascent to the fortress difficult, even though a breach were made in the walls. The weakest point is towards the south-east, opposite a break in the rock from the Fulalee. A dry ditch twelve feet broad protects the northern side. The position is good, and the fortifications adequate to resist any attack of native tooops, though it would not stand a siege of three days against Europeans. There is a good bazar and several handsome mosques within the fort; and although little encouragement is given to industry, the artisans are numerous and skilful. The Ameers, as mentioned by Dr Burnes, who went on a mission to Hyderabad in 1828, pride themselves greatly in the brilliant collection which they possess of jewels and armour. A great part of their treasure consists in rubies, diamonds, pearls, and emeralds, with which their daggers, swords, and matchlocks are adorned, and many of which they wear as rings and clasps on different parts of their dresses. The arts connected with this pursuit are encouraged by them. One or two Persian goldsmiths are engaged at court, where they work in enamel, and contrive expedients to display the jewellery of their masters. They have brought to great perfection the art of inlaying letters of gold on steel. They acknowledge the superiority of the English in the manufacture of gun-locks; and the dress of their princes and nobles consists partly of English cloths.[1] Hyderabad is situated 130 miles from the sea, on the eastern side of the main stream of the Indus, with which it is connected by the Fulalee at the distance of three miles. The country around Hyderabad rises into hills, although it is level till within a few miles of that city. The Indus is a perpetual source of fertility, affording an inexhaustible supply of water for the irrigation of the fields. The flat country of Sinde is intersected by branches from the main stream, and by canals; and the transition from the parched deserts of Cutch to such a scene of fertility is described by Dr Burnes as affording a very striking contrast. The Fulalee in the month of August is from two and a half to three fathoms deep at Hyderabad, and is covered with boats laden with heavy goods. The population is 20,000. Long. 68. 41. E. Lat. 25. 22. N.

HYDERBUNGE, a populous village of Hindustan, in the province of Lahore, dependent on Attack, and situated at a short distance from the Indus. Long. 71. 25. E. Lat. 33. 20. N.

HYDERGUR, a town of Hindustan, in the nabob of Oude's territories, thirty-two miles south-east from Lucknow. Long. 81. 23. E. Lat. 26. 37. N.

HYDERSHY, a town of Hindustan, belonging to the nizam, in the province of Hyderabad, sixty miles east from the city of Hyderabad. Long. 79. 35. E. Lat. 17. 24. N.

HYDRA, in fabulous history, a serpent in the marsh of Lerna, in Peloponnesus, represented by the poets with many heads, one of which being cut off, another immediately succeeded in its place, unless the wound was instantly cauterized. Hercules attacked this monster; and having caused Iolaus to hew down wood for flaming brands, as he cut off the heads he applied the brands to the wounds, by which means he destroyed the hydra. This hydra with many heads is said to have been only a multitude of serpents, which infested the marshes of Lerna near Mycene, and which seemed to multiply as fast as they were destroyed. Hercules, with the assistance of his companions, cleared the country of these reptiles, by burning the reeds in which they lodged.

HYDRA, in *Astronomy*, a southern constellation, consisting of a number of stars, imagined to represent a water serpent.

HYDRAGOGUES, amongst physicians, remedies which evacuate a large quantity of water in dropsies. The word is formed from ὑδωρ, *water*, and ἀγειν, *to draw* or *lead;* but the application of the term proceeds upon a mistaken supposition that every purgative had some particular humour which it would evacuate, and which could not be evacuated by any other. It is now, however, discovered that all strong purgatives will themselves prove *hydragogues*, if administered in large quantity, or to persons of weak constitutions. The principal medicines recommended as hydragogues are, the juice of elder, the root of the iris, soldanella, mechoacan, jalap, &c.

HYDRARGYRUM, a name given to mercury or quicksilver. The word is formed from ὑδωρ, *aqua*, water, and ἀργυρος, *argentum*, silver, *water of silver*, on account of its resembling liquid or melted silver.

HYDRAULICS, the science of the motion of fluids, and the construction of all kinds of machines relating thereto. See HYDRODYNAMICS.

HYDRENTEROCELE, in *Surgery*, a species of hernia, in which the intestines descend into the scrotum, together with a quantity of water.

HYDROCEPHALUS, a preternatural distension of the head by a stagnation and extravasation of the lymph, which, when collected in the inside of the cranium, is termed *internal*, as that collected on the outside is termed *external*. See MEDICINE, *Index*.

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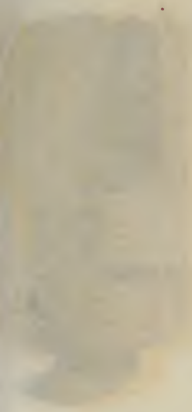
[1] See *Visit to the Court of Sinde*, by J. Burnes, p. 92.

END OF VOLUME ELEVENTH.

Printed by THOMAS ALLAN & Co. and NEILL & Co.
and Stereotyped by THOMAS ALLAN & Co.



Engd by G. Aikman, Edinr

Hyderabad. Hydra.

thate. One or two Persian [illegible] are engaged at court, where they work in a [illegible] to display the jewellery [illegible] brought to great [illegible] of [illegible] of gold in steel. [illegible] of the [illegible] of [illegible] distinct [illegible] the east- [illegible] which it is [illegible] of three miles. [illegible] two miles, although [illegible]. The Indus [illegible] an inexhaus- [illegible] for the irrigation of the fields. The [illegible] branches from the [illegible] from the [illegible] fertility is de- [illegible] as affording a very striking con- [illegible] is from two [illegible] at Hyderabad, and is ca- [illegible] yards. The population [illegible]

[illegible] Hindostan, in [illegible]

[illegible] in the nabob of [illegible] from Luck- [illegible] N.

[illegible] belonging to the [illegible] miles east from [illegible] Long. 74. 50. E. Lat. 17. 24. N.

[illegible] a serpent in the marsh [illegible] represented by the poets with [illegible] being cut off, another imme- [illegible] unless the wound was in- [illegible] Hercules attacked this monster; and [illegible] wood for flaming brands, as he cut off the heads he applied the brands [illegible] wounds, by which means he destroyed the hy[illegible] hydra with many heads is said to have been [illegible] titude of serpents, which infested the marshes [illegible] near Mycenæ, and which seemed to multiply as fast [illegible] were destroyed. Hercules, with the assistance of [illegible] panions, cleared the country of these reptiles, by [illegible] the reeds in which they lodged.

Hydra, in *Astronomy*, a southern constellation, [illegible] sisting of a number of stars, imagined to represent [illegible] serpent.

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HYDRARGYRUM, a name given to mercury or [illegible] silver. The word is formed from *ὕδωρ*, *aqua*, wate[illegible] *ἄργυρος*, *argentum*, silver, *water of silver*, on account [illegible] resembling liquid or melted silver.

HYDRAULICS, the science of the motion of [illegible] and the construction of all kinds of machines re[illegible] thereto. See HYDRODYNAMICS.

HYDRENTEROCELE, in *Surgery*, a species o[illegible] nia, in which the intestines descend into the scrotu[illegible] gether with a quantity of water.

HYDROCEPHALUS, a preternatural distens[illegible] the head by a stagnation and extravasation of the [illegible] which, when collected in the inside of the cran[illegible] termed *internal*, as that collected on the outside is [illegible] *external*. See MEDICINE, *Index*.

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[1] See *Visit to the Court of Sinde*, by J. Burnes, p. 92.

END OF VOLUME ELEVENTH.

Printed by Thomas [illegible]
[illegible] stereotyped by [illegible] & Co.

GUN-MAKING.

PLATE CCLXXIII.

Fig. 1.

AMBER PLUG BREECHING.

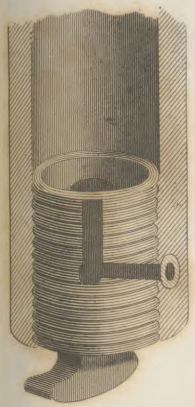
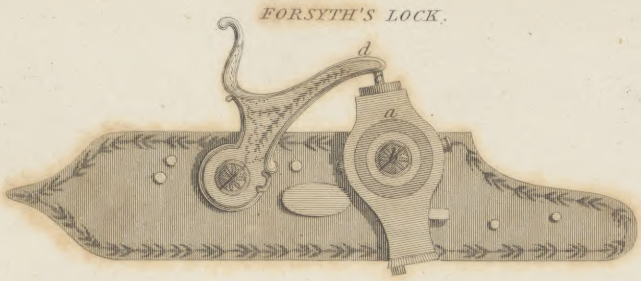


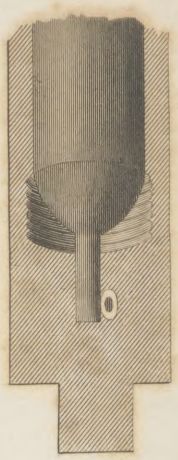
Fig. 2.

FORSYTH'S LOCK.



ORDINARY PATENT BREECHING.

Fig. 3.



ORDINARY PERCUSSION LOCK.

Fig. 4.

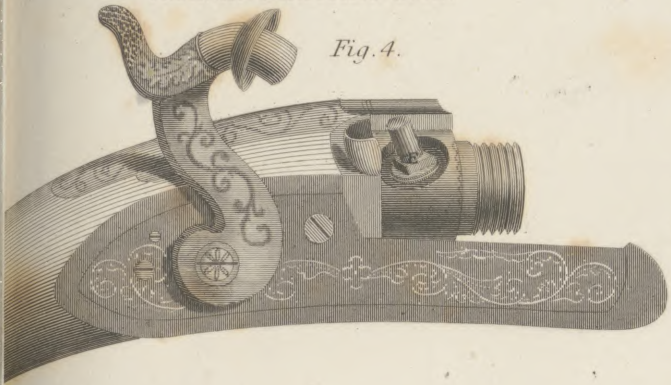


Fig. 5.

Dr SOMERVILLE'S, 1st METHOD OF SAFETY.

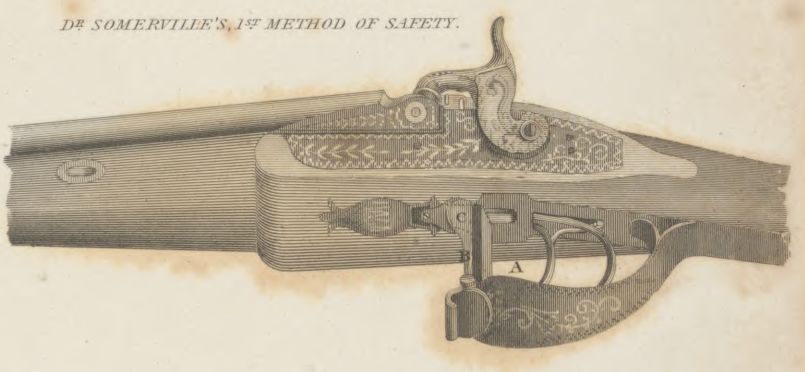
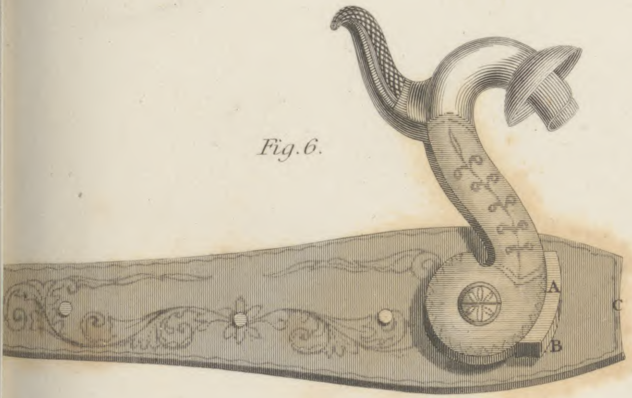


Fig. 6.



2ND METHOD OF SAFETY.

Fig. 7.

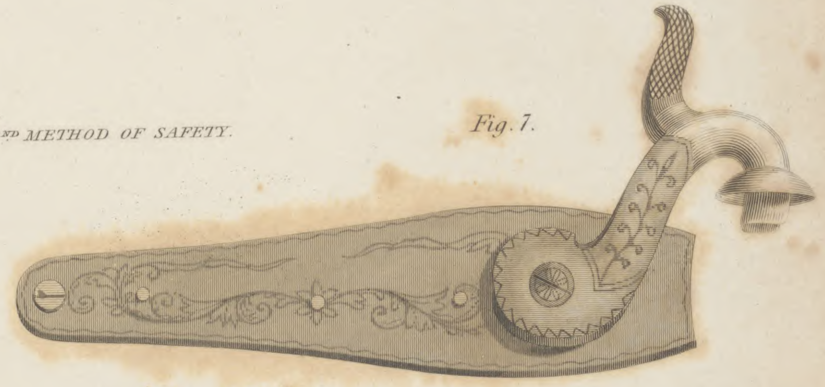
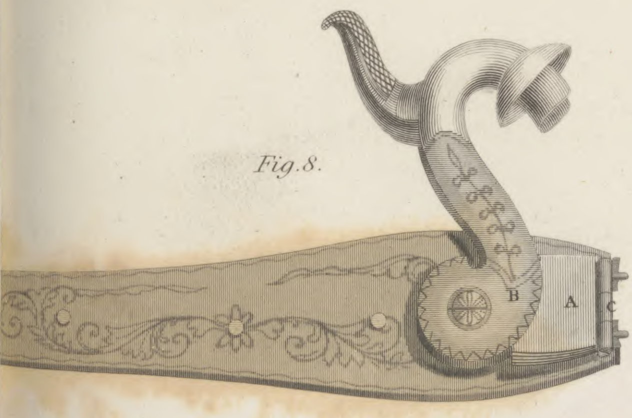
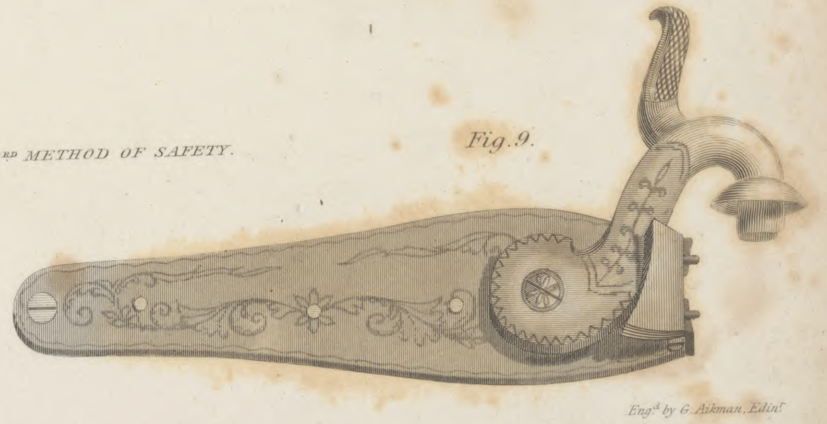


Fig. 8.



3RD METHOD OF SAFETY.

Fig. 9.

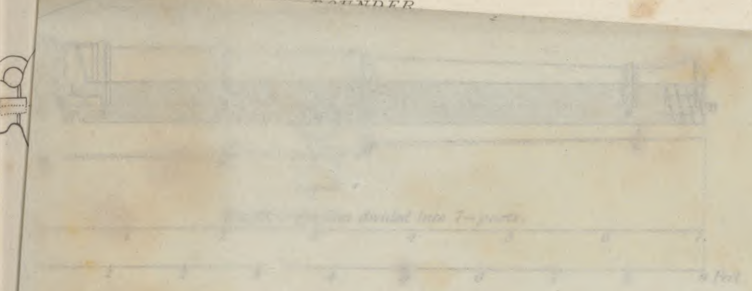


Engd by G. Aikman. Edinr

Fig. 1.

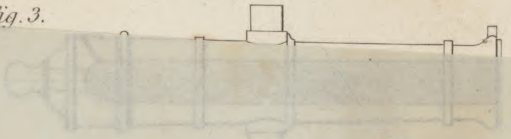
GENERAL CONSTRUCTION OF IRON GUNS.

[illegible] POUNDER



12 POUNDER BRASS HOWITZER.

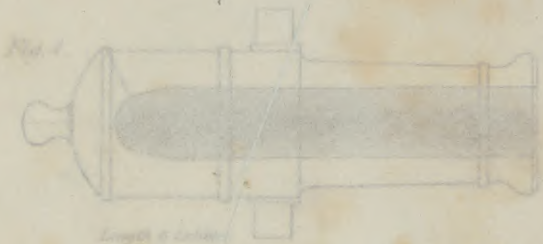
Fig. 3.



Length 10 Calibres.
Weight 6·2 Cwt.
Charge 1·4 lbs Powder.

10 INCH IRON HOWITZER.

Fig. 4.

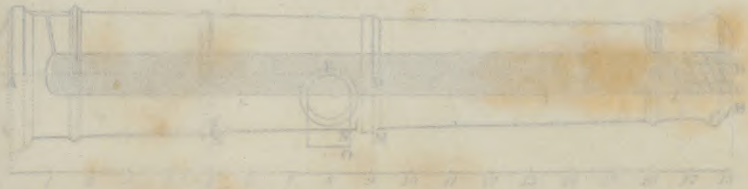


Length 6 Calibres.
Weight 40 Cwt.
To contain 7 lb.

Fig. 2.

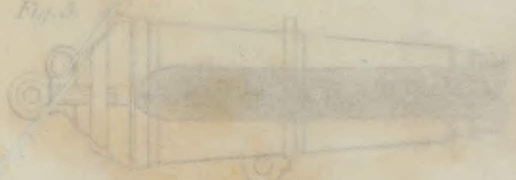
GENERAL CONSTRUCTION OF BRASS GUNS.

9 POUNDER



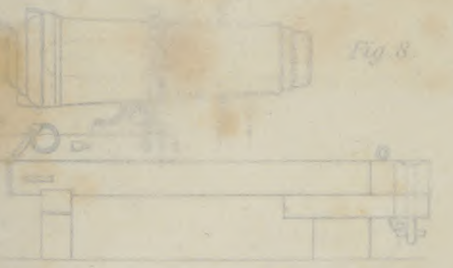
[illegible] POUNDER CARRONADE.

Fig. 5.



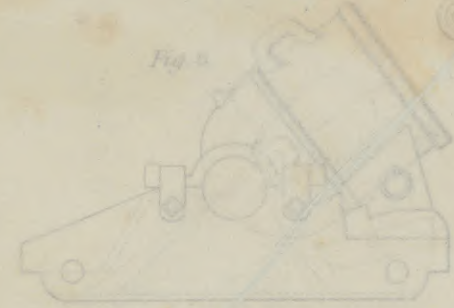
Length 3 feet 2 Inches.
Weight [illegible] Cwt.

Fig. 8.



24 POUNDER CARRONADE.

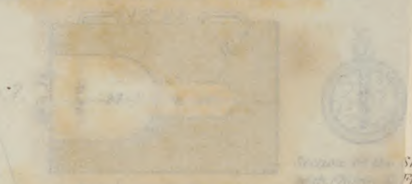
Fig. 6.



13 INCH LAND SERVICE MORTAR.

Section of the [illegible]

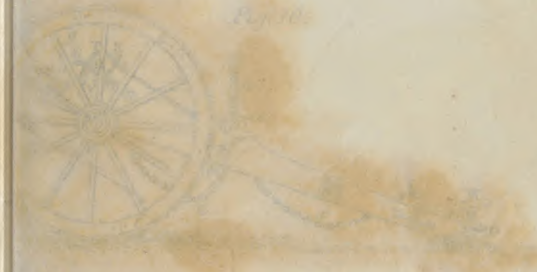
Fig. 7.



[illegible]

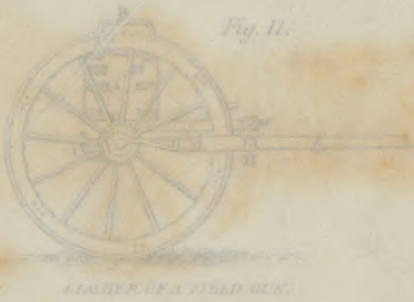
Section of the Shell with Charge & Fuze.

Fig. 10.



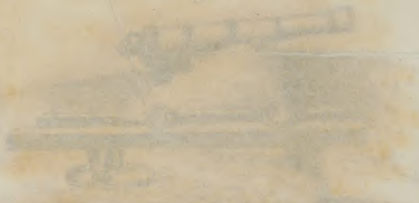
[illegible] CARRIAGE [illegible] BRASS FIELD GUN.

Fig. 11.



LIMBER OF A FIELD GUN.

Fig. 9.



[illegible] GUN ON A [illegible] PLATFORM.

Fig. 12.

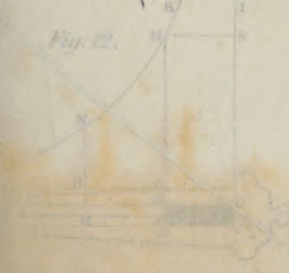


Fig. 13.

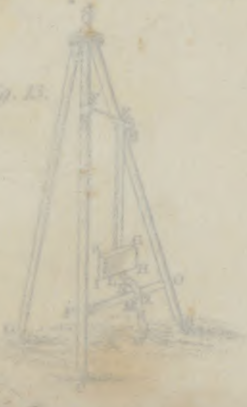


Fig. 14.

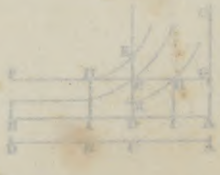


Fig. 15.

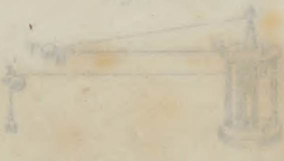
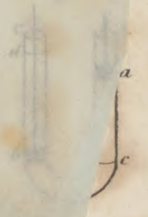


Fig. 16.



G. Aikman, Edin.

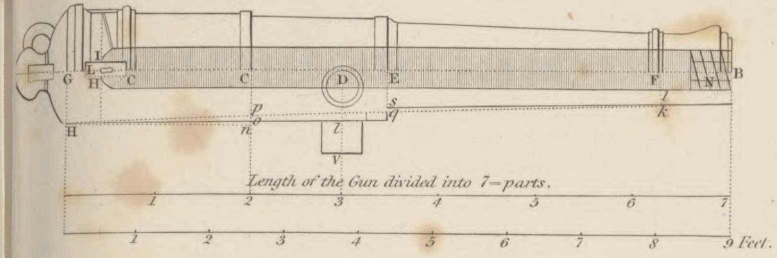
GUNNERY.

PLATE CCLXXIV.

Fig. 1.

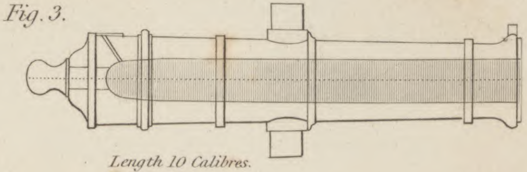
GENERAL CONSTRUCTION OF IRON GUNS.

24 POUNDER.



12 POUNDER BRASS HOWITZER.

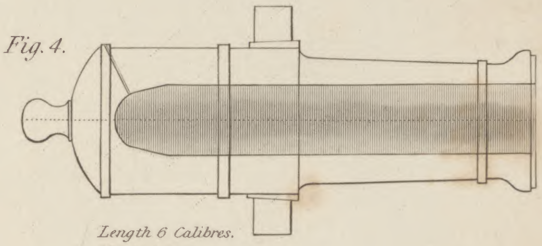
Fig. 3.



Length 10 Calibres.
Weight 6·2 Cwt.
Charge 1·4 lbs Powder.

10 INCH IRON HOWITZER.

Fig. 4.

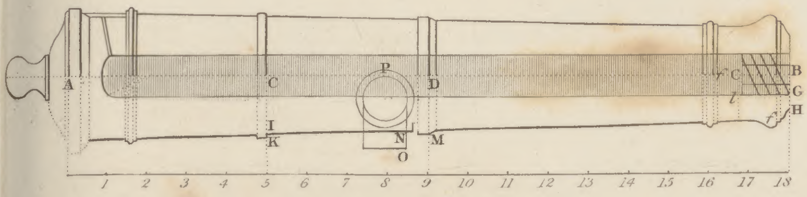


Length 6 Calibres.
Weight 10 Cwt.
To contain 7 lbs.

Fig. 2.

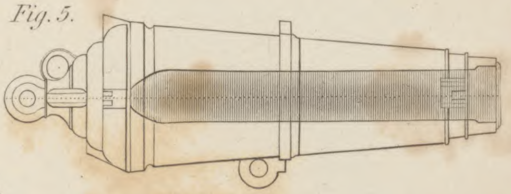
GENERAL CONSTRUCTION OF BRASS GUNS.

9 POUNDER.



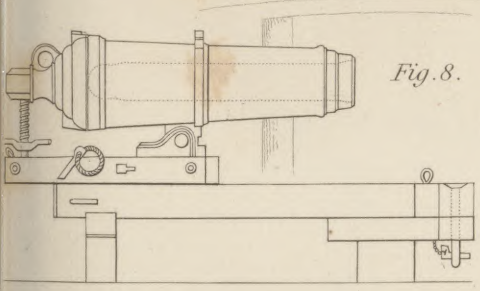
68 POUNDER CARRONADE.

Fig. 5.



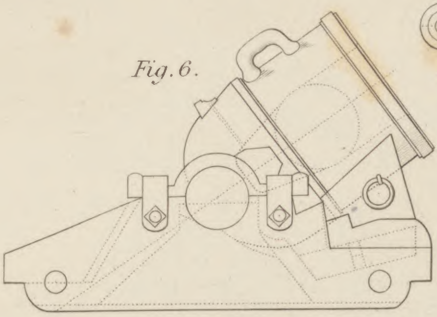
Length 5 feet, 2 inches.
Weight 36 Cwt.

Fig. 8.



24 POUNDER CARRONADE.

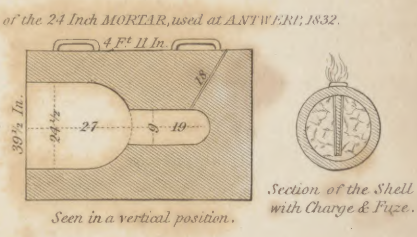
Fig. 6.



13 INCH LAND-SERVICE MORTAR.

Section of the 24 Inch MORTAR, used at ANTWERP, 1832.

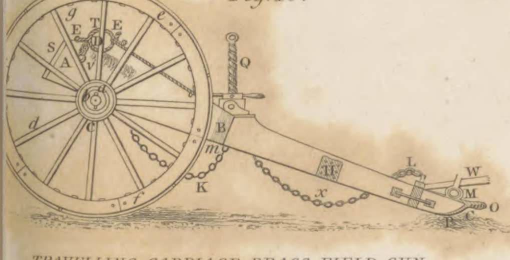
Fig. 7.



Seen in a vertical position.

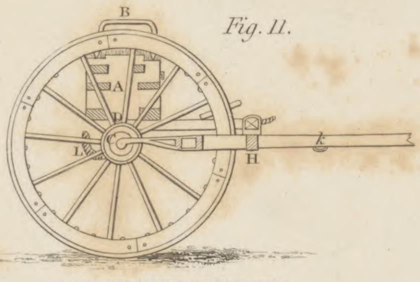
Section of the Shell with Charge & Fuze.

Fig. 10.



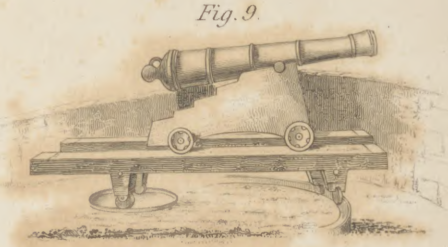
TRAVELLING CARRIAGE BRASS FIELD GUN.

Fig. 11.



LIMBER OF A FIELD GUN.

Fig. 9.



A GARRISON GUN ON A TRAVERSING PLATFORM.

Fig. 12.

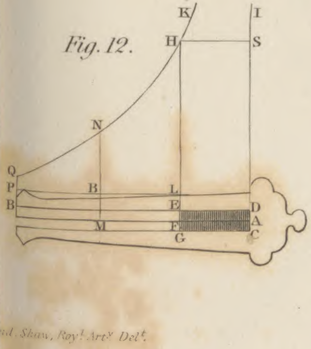


Fig. 13.

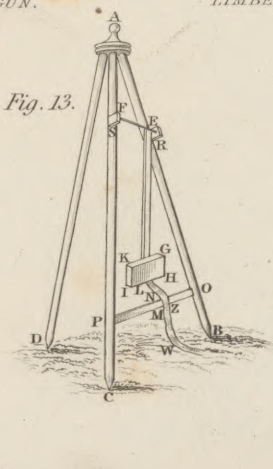


Fig. 14.

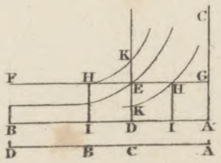


Fig. 15.

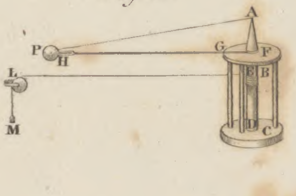
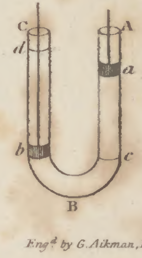


Fig. 16.



ud. Shaw, Roy.l Art.y Del.t

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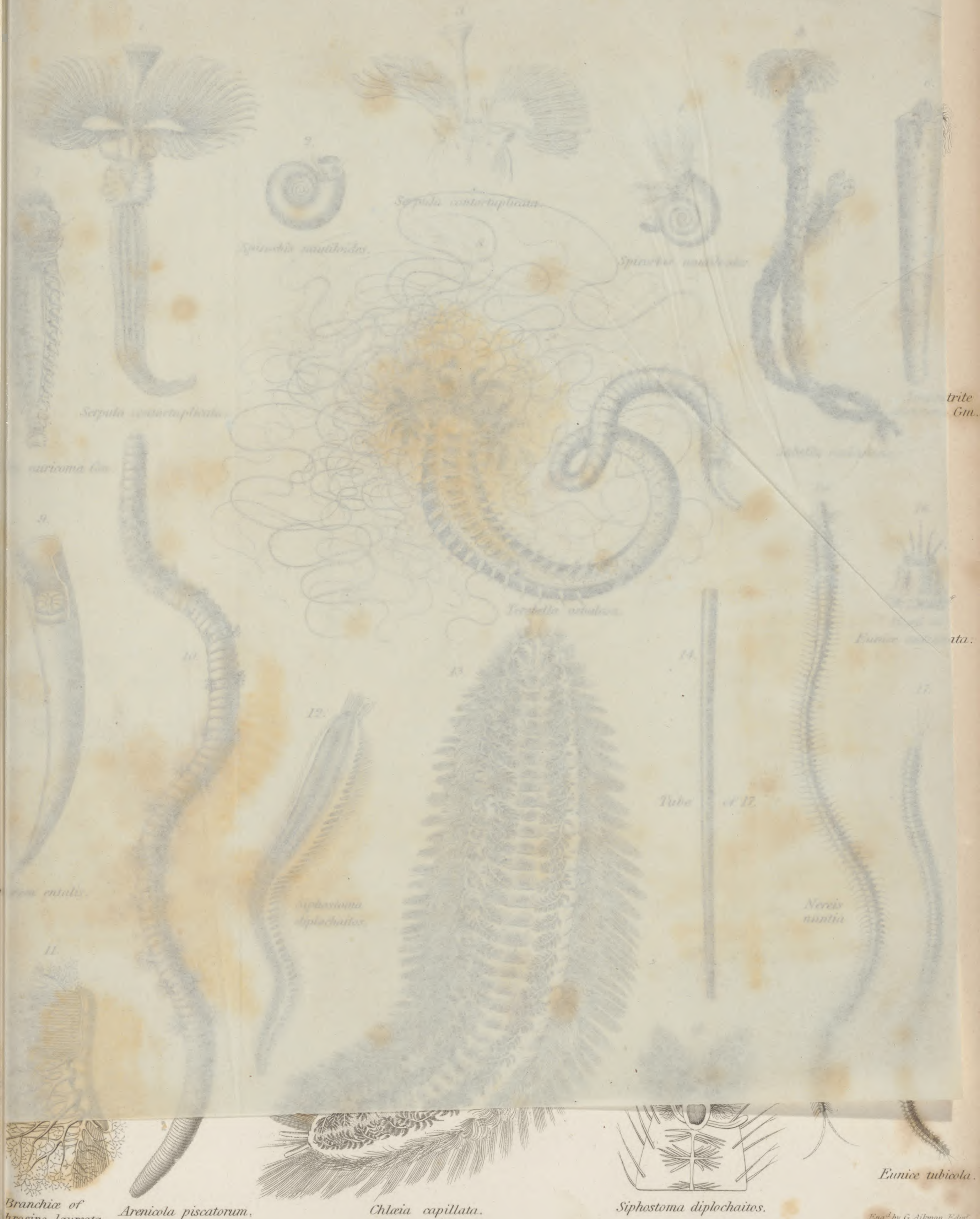

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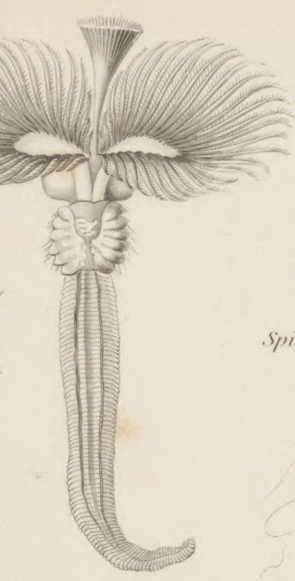
HELMINTHOLOGY.

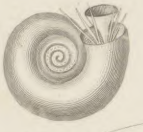
PLATE CCLXXV.

1.



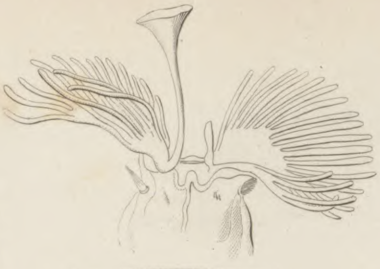
Serpula contortuplicata.

2.



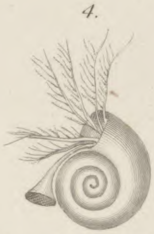
Spirorbis nautiloides.

3.



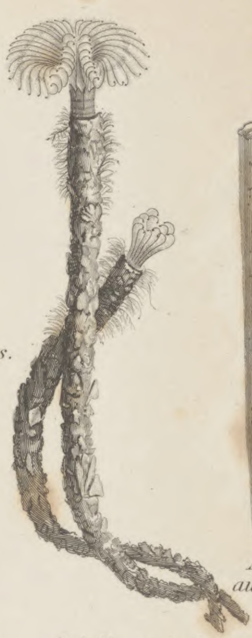
Serpula contortuplicata.

4.



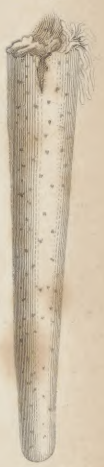
Spirorbis nautiloides.

5.



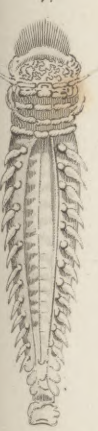
Sabella vesiculosa.

6.



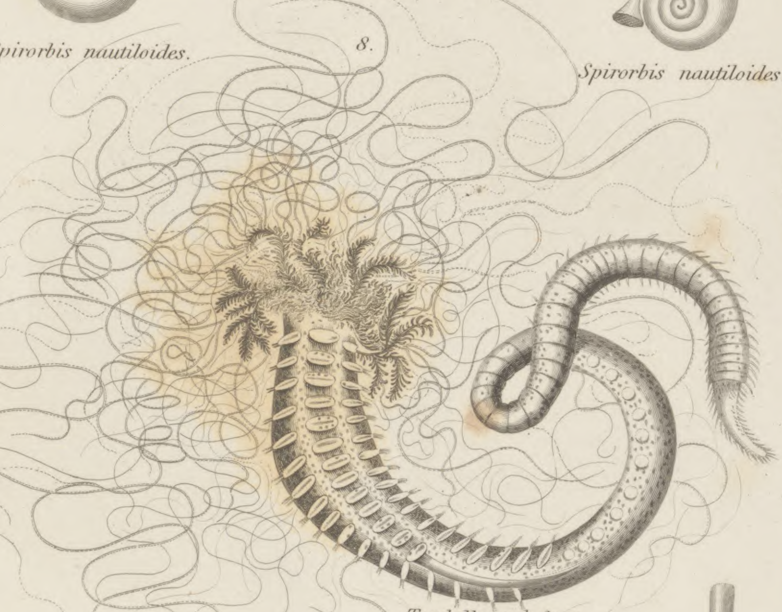
Amphitrite auricoma Gm.

7.



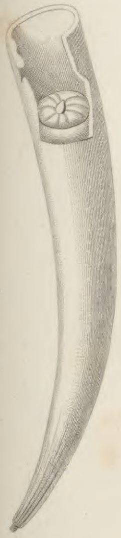
mphitrite auricoma Gm.

8.



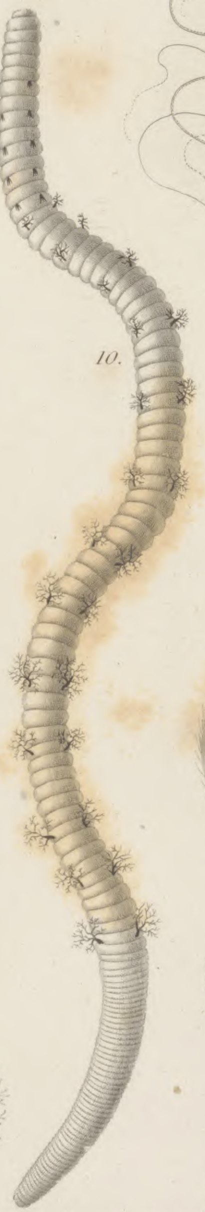
Terebella nebulosa.

9.



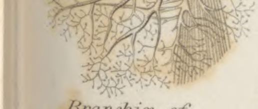
Dentalium entalis.

10.



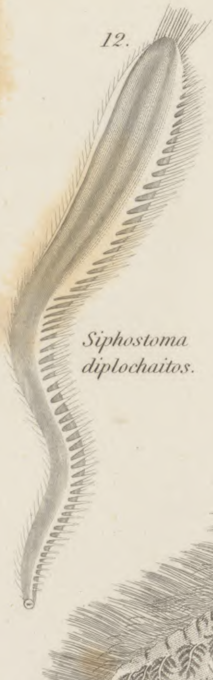
Arenicola piscatorum.

11.



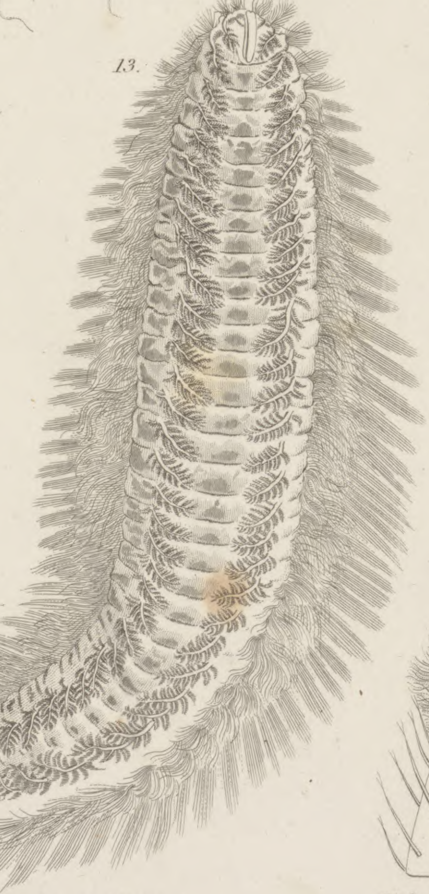
Branchiæ of Euphrosine laureata.

12.



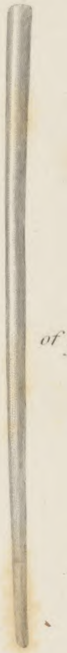
Siphostoma diplochaitos.

13.



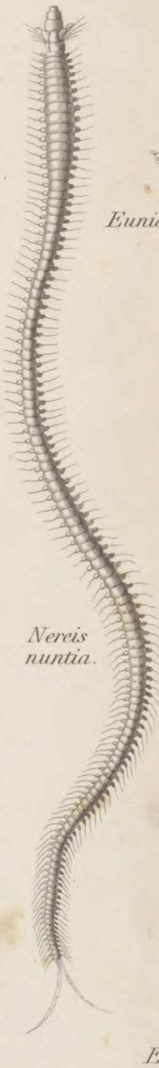
Chlæia capillata.

14.



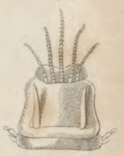
Tube of 17.

15.



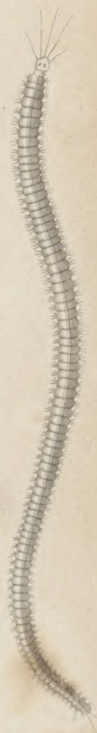
Nereis nuntia.

16.



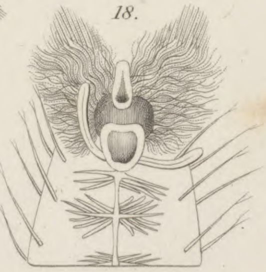
Head of Eunice antennata.

17.



Eunice tubicola.

18.



Siphostoma diplochaitos.

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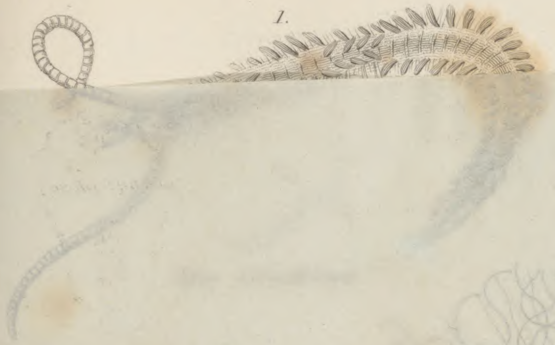
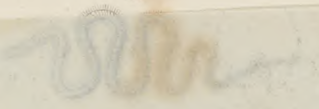
1.



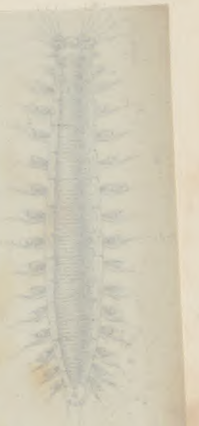
[illegible]

2.

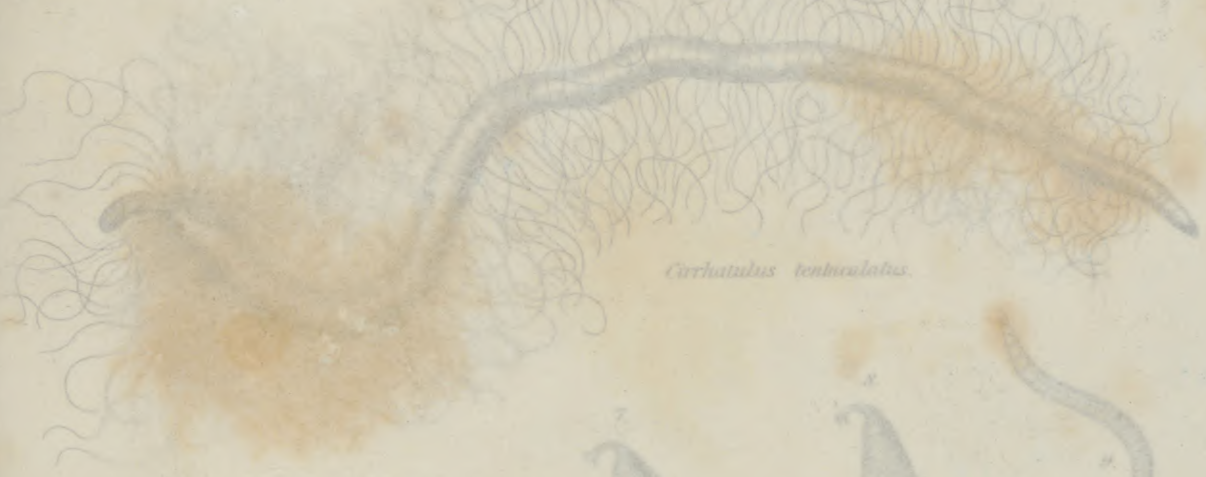


Syllis monilaris.

3.

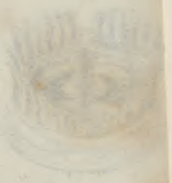


Hesione splendida.



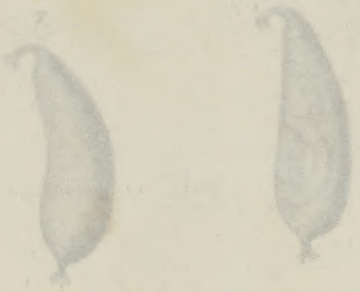
Cirrhatulus tentaculatus.

6.

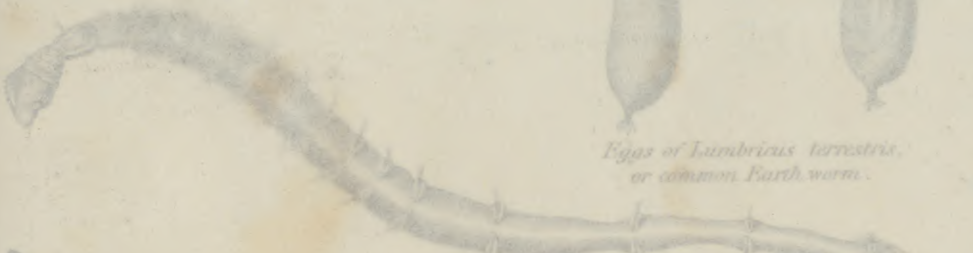


Head of Polynoë impatiens.

7. 8.

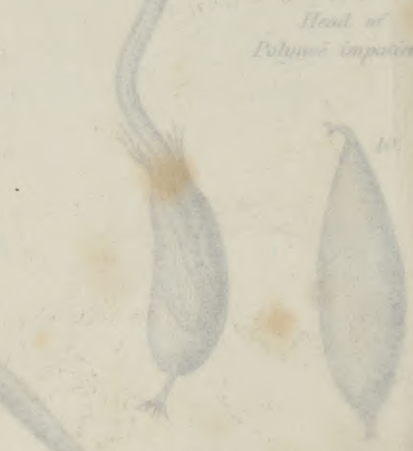


Eggs of Lumbricus terrestris, or common Earth worm.



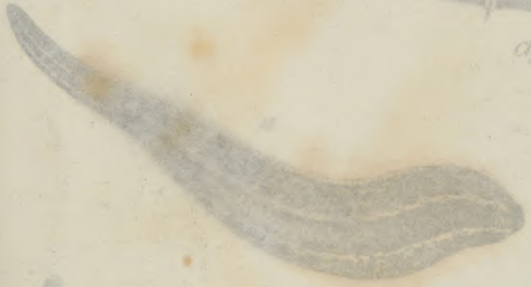
Clymene amphistoma.

9. 10.



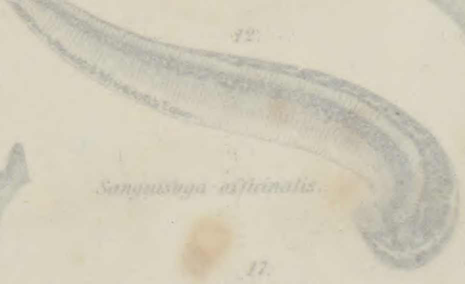
Eggs of Lumbricus terrestris.

11.



Sanguisuga officinalis.

12.

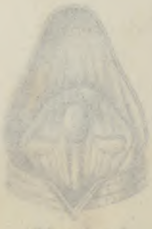


Sanguisuga officinalis.

14.

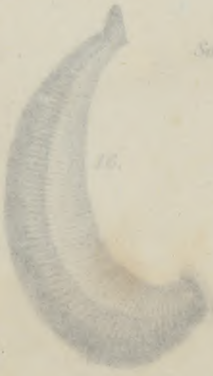
guisuga medicinalis.

15.



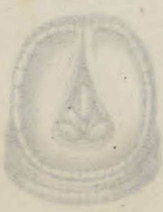
Mouth of Hæmopis sanguisorba.

16.



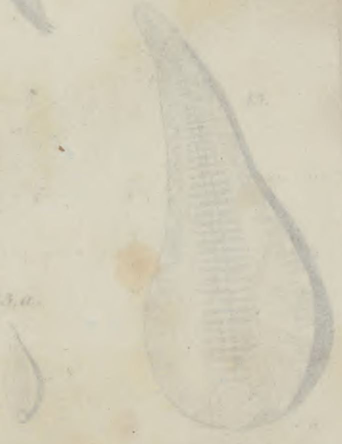
Bdella nilotica.

17.

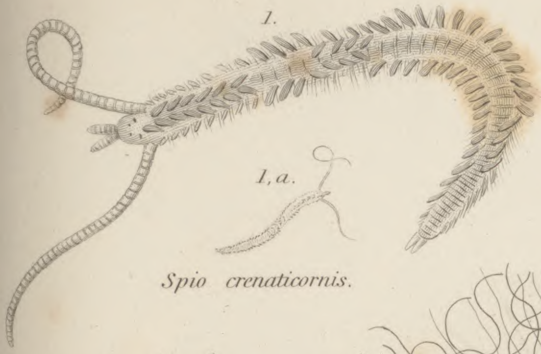


Mouth of 16.

13,a. 13.

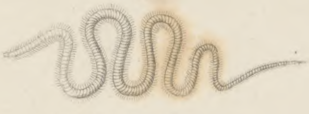


Clepsina crenata.

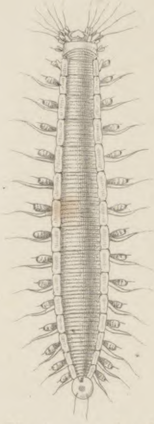

1.

1, a.

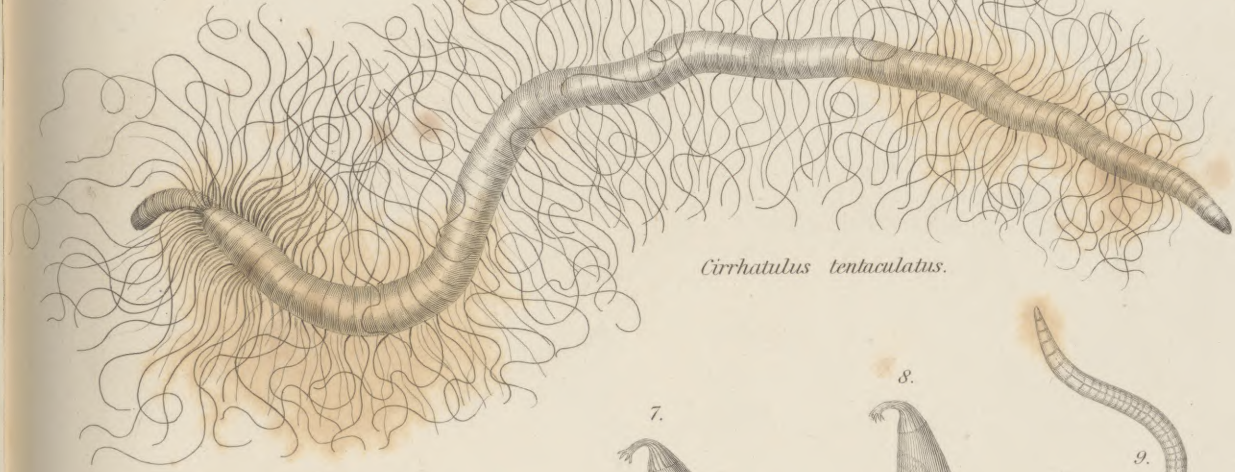
Spio crenaticornis.


2.

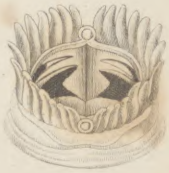
Syllis monilaris.


3.

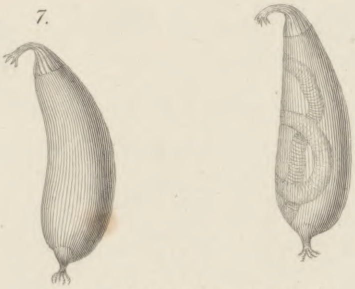
Hesione splendida.


4.

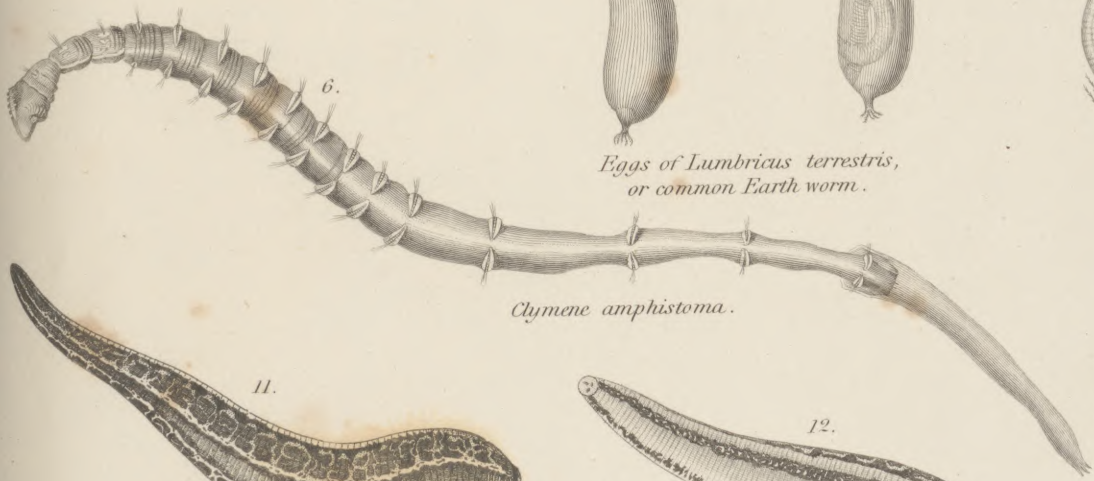
Cirrhatulus tentaculatus.


5.

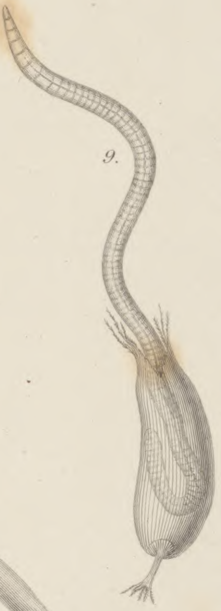
Head of Polynoë impatiens.


7. 8.

Eggs of Lumbricus terrestris, or common Earth worm.


6.

Clymene amphistoma.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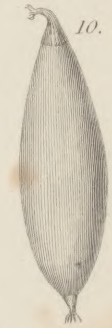
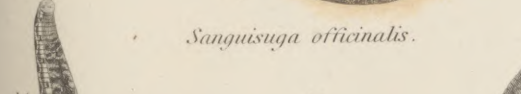
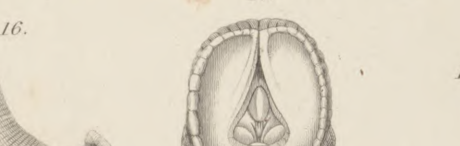

10.

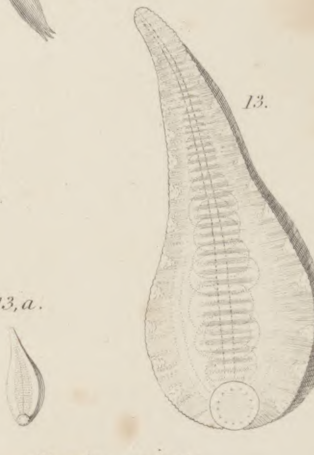
Eggs of Lumbricus terrestris.


11.

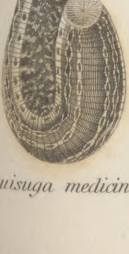
Sanguisuga officinalis.


12.

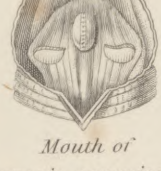
Sanguisuga officinalis.


13. 13, a.

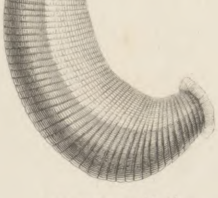
Clepsina crenata.


14.

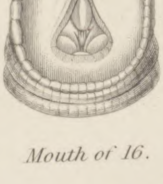
Sanguisuga medicinalis.


15.

Mouth of Hæmopis sanguisorba.


16.

Bdella nilotica.


17.

Mouth of 16.

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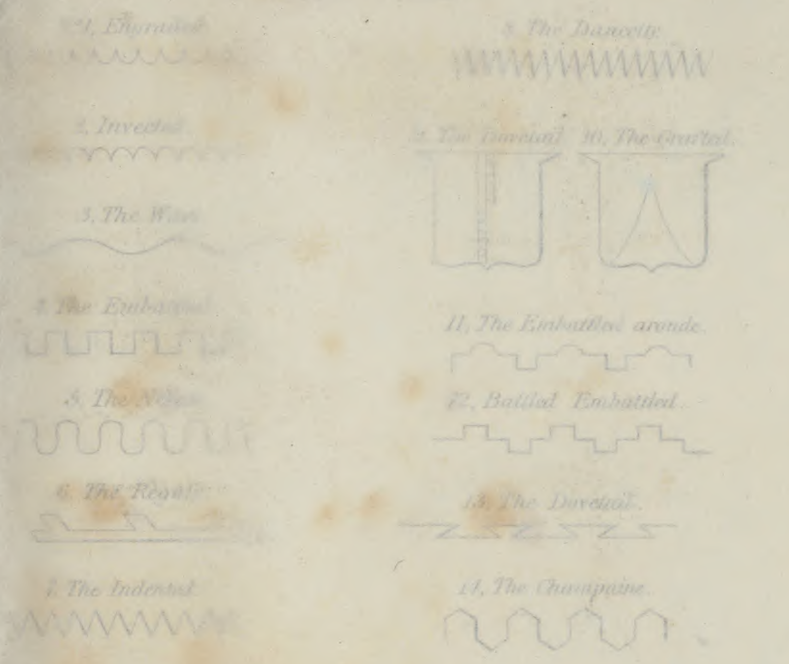
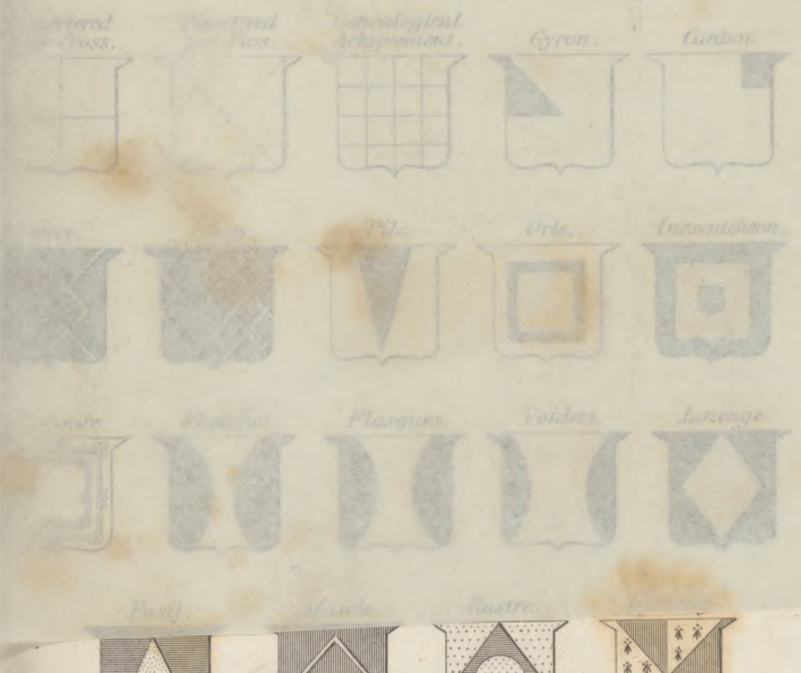
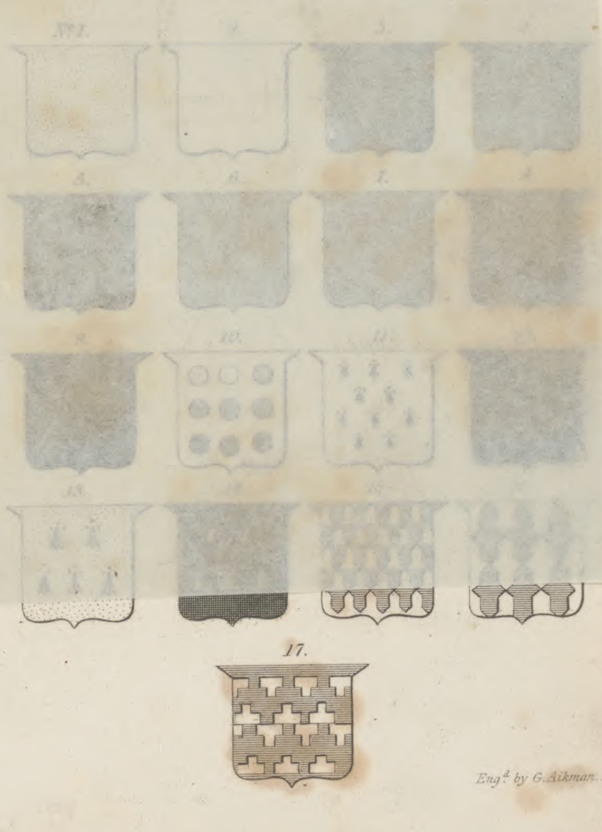


1, Label.
4, Martlet.
5, Annulet.
Fleur de lis.
8, Cross Moline.
9, Quatre foil.



ESCUTCHEONS.

TINCTURES.



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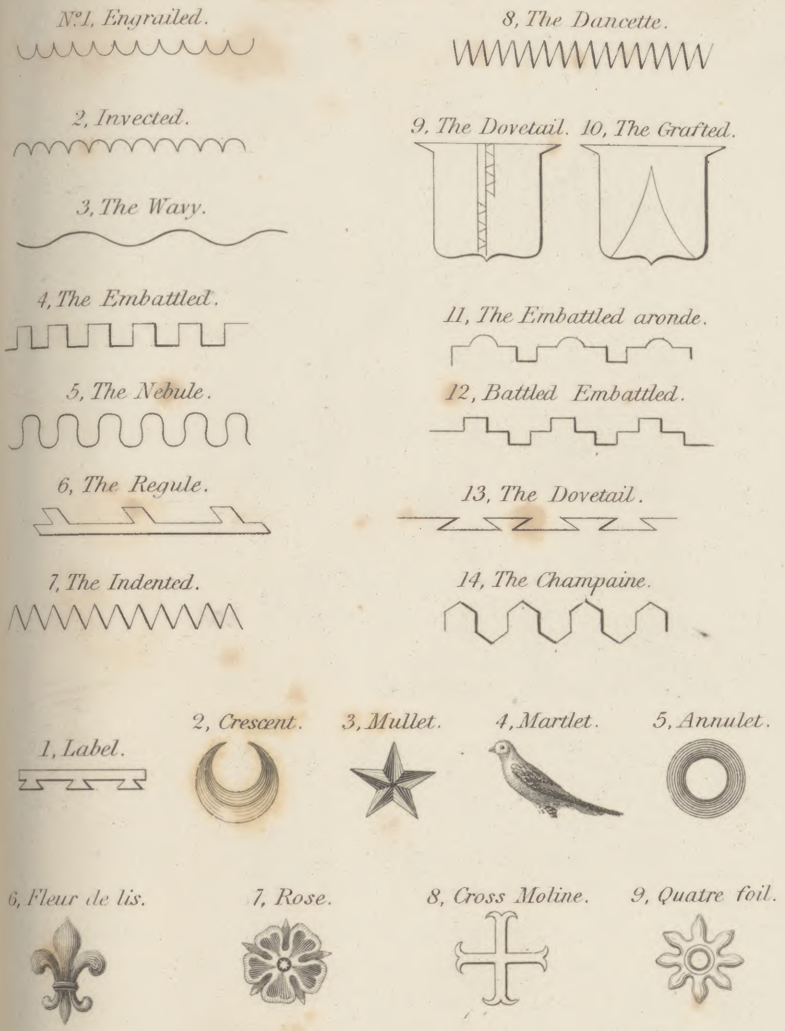
HERALDRY.

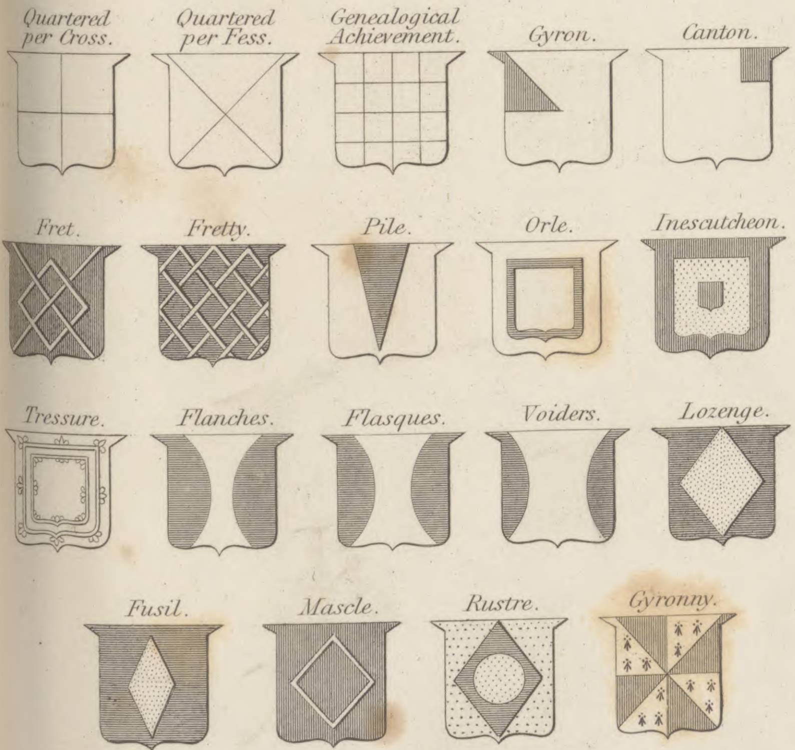
PLATE CCLXXVII.

Fig. 1.

LINES, DIFFERENCES, &c.



N.º 1, Engrailed.
2, Invected.
3, The Wavy.
4, The Embattled.
5, The Nebule.
6, The Regule.
7, The Indented.
8, The Dancette.
9, The Dovetail.
10, The Grafted.
11, The Embattled aronde.
12, Battled Embattled.
13, The Dovetail.
14, The Champaine.
1, Label.
2, Crescent.
3, Mullet.
4, Martlet.
5, Annulet.
6, Fleur de lis.
7, Rose.
8, Cross Moline.
9, Quatre foil.



Quartered per Cross.
Quartered per Fess.
Genealogical Achievement.
Gyron.
Canton.
Fret.
Fretty.
Pile.
Orle.
Inescutcheon.
Tressure.
Flanches.
Flasques.
Voiders.
Lozenge.
Fusil.
Mascle.
Rustre.
Gyronny.

Fig. 2.

ESCUTCHEONS.

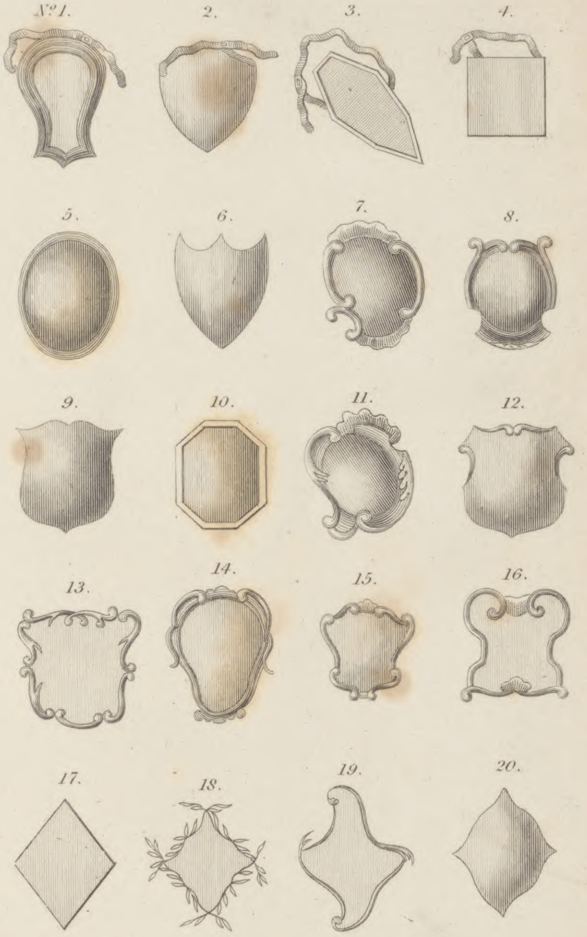
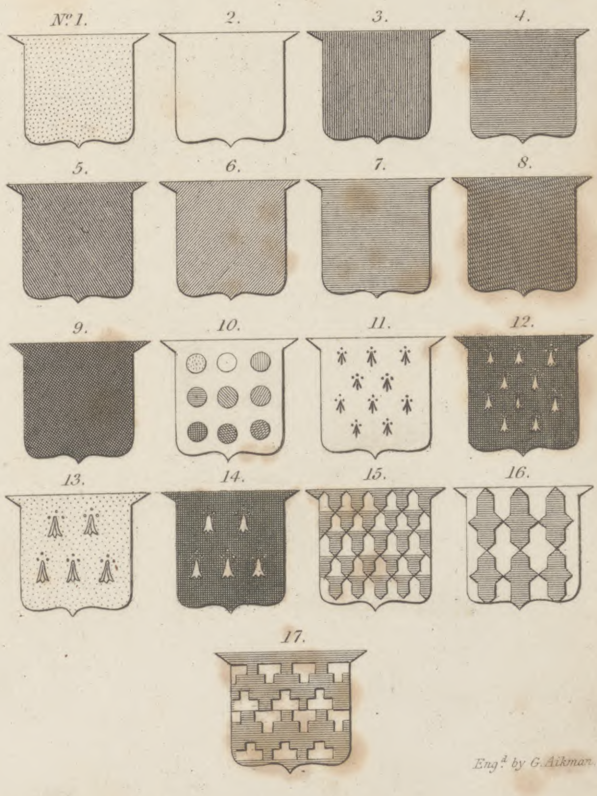


Fig. 3.

TINCTURES.



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HERALDRY.

PLATE CCLXXVIII.

Fig. 1.

BORDURES.

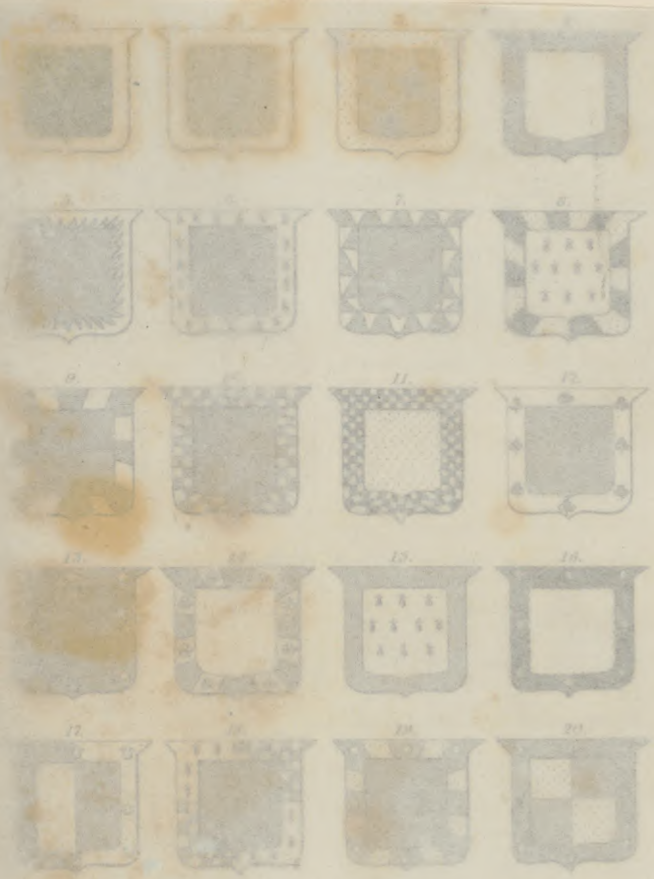


Fig. 2.

CHIEFS, &c.

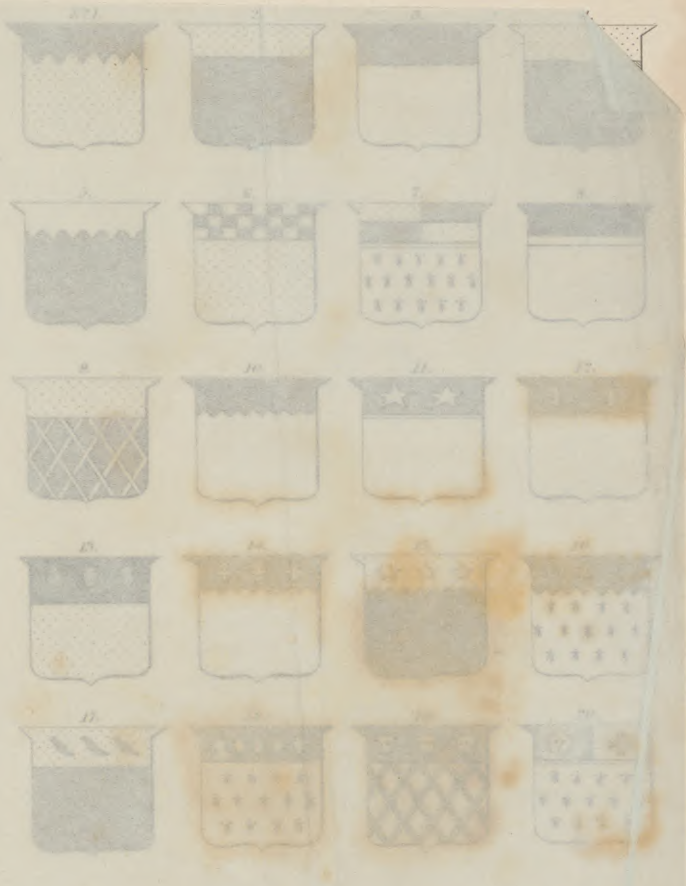
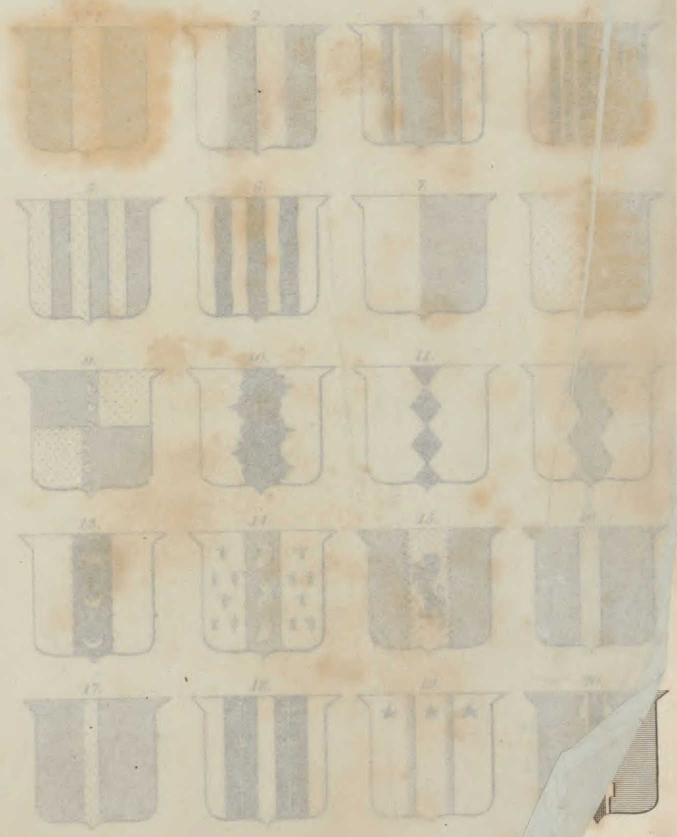


Fig. 3.

TABLE of HOUSES.

Fig. 4.

PALES, &c.



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HERALDRY.

PLATE CCLXXVIII.

Fig. 1.

BORDURES.

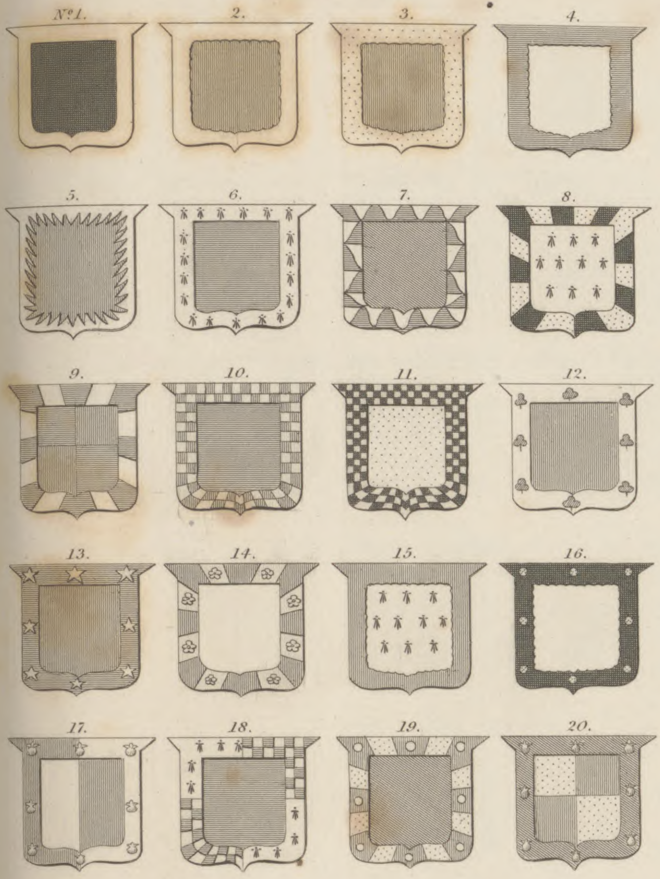

Fig. 2.

CHIEFS, &c.

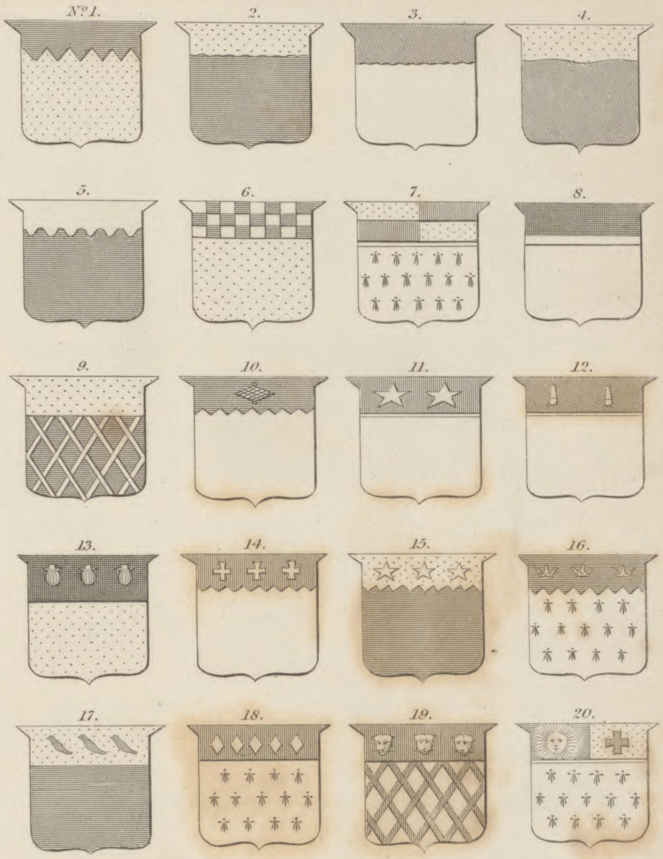

Fig. 3.

TABLE OF HOUSES.

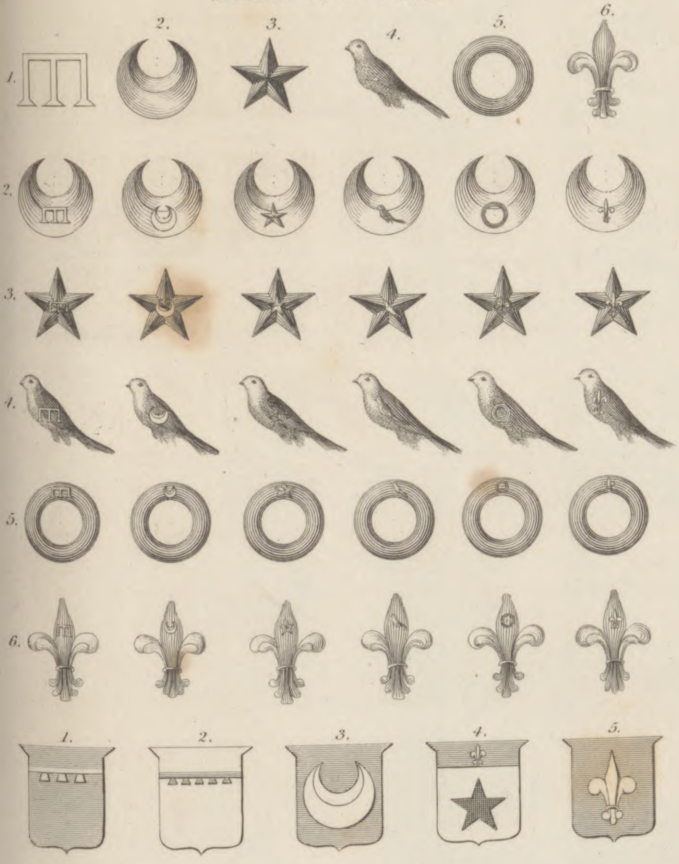

Fig. 4.

PALES, &c.

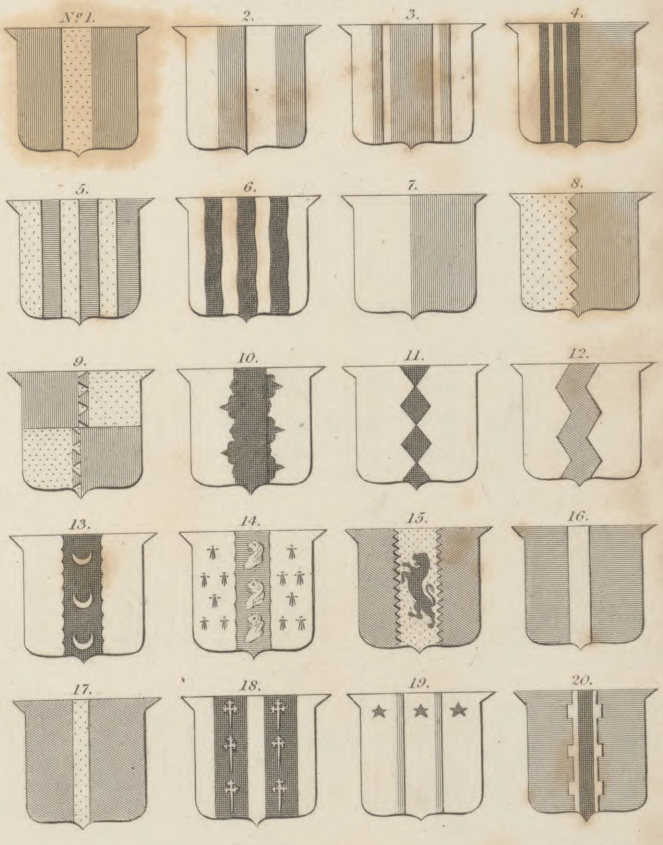

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Fig. 1.
BENDS, &c.

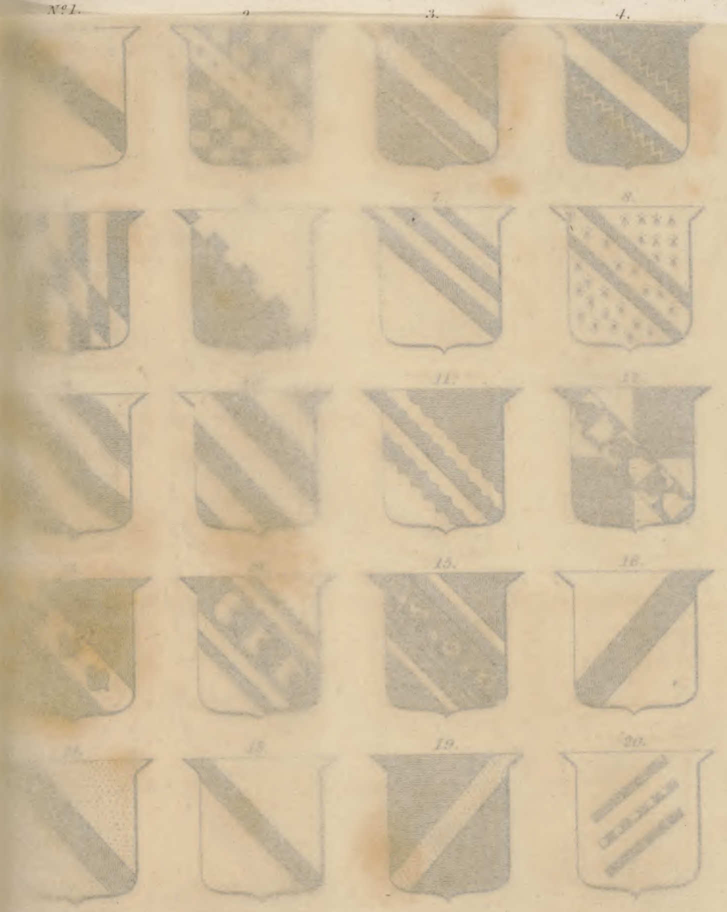


Fig. 2.
FESSES AND BARS.

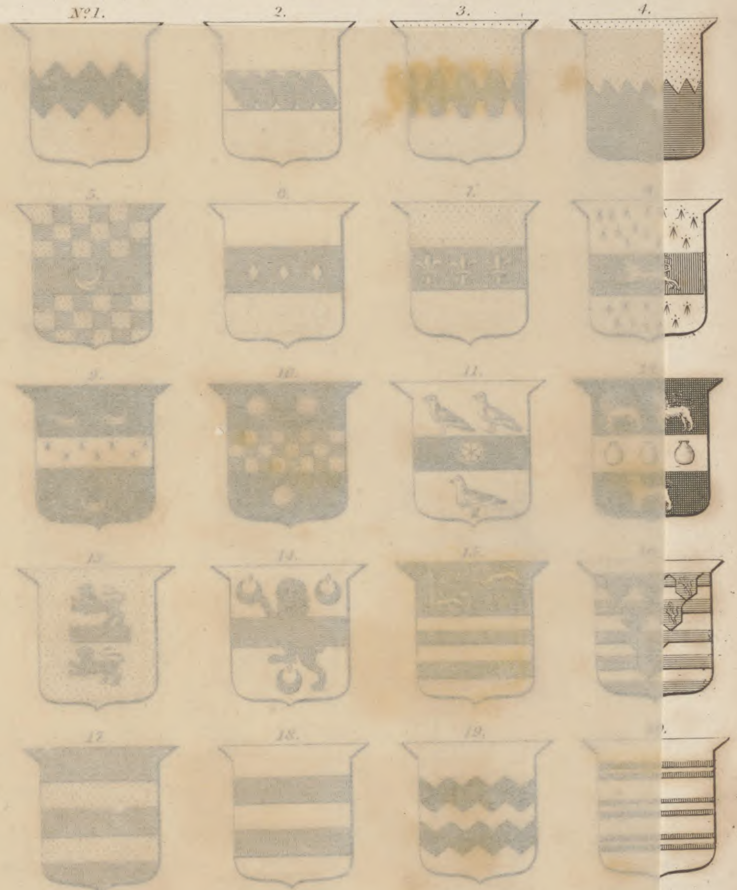


Fig. 3.
CHEVERON, &c.

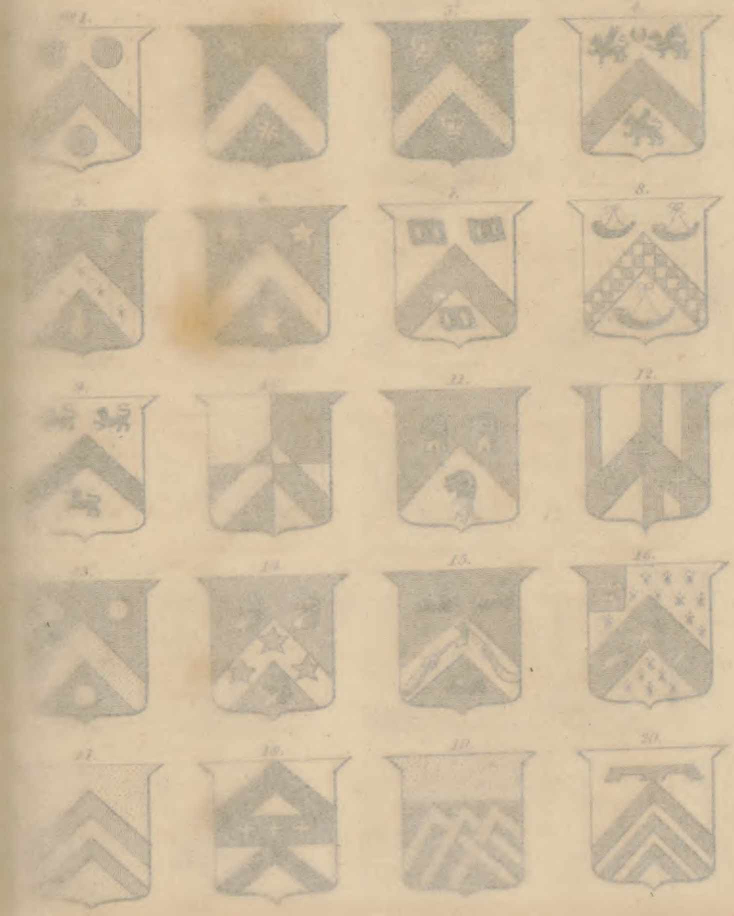
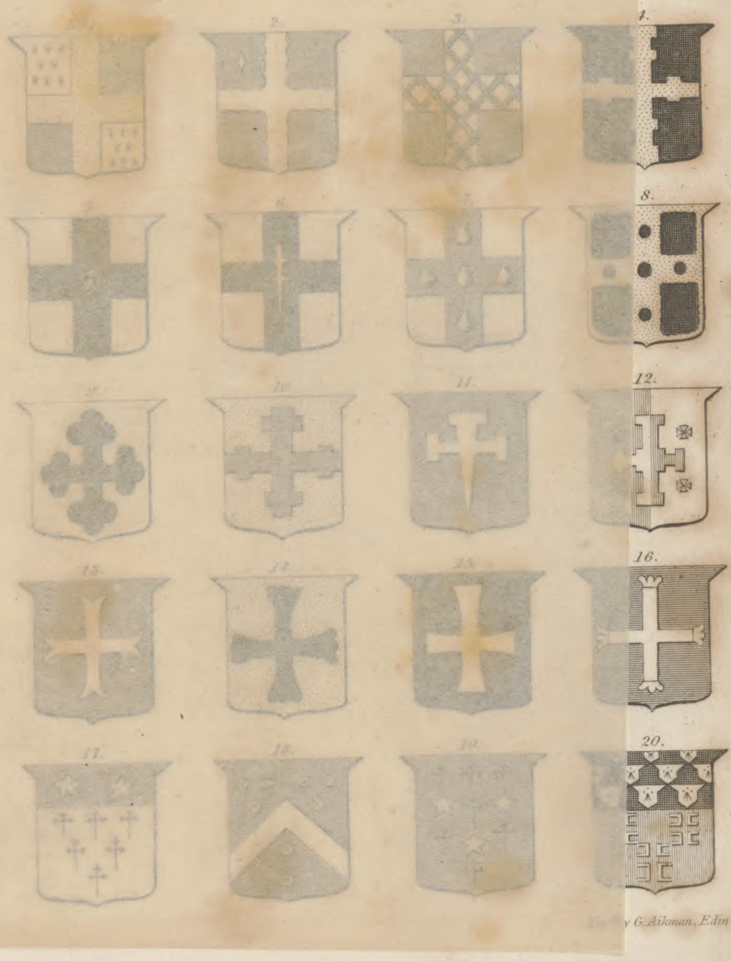


Fig. 4.
CROSSES.



y G. Aikman, Edin^{r}

Fig. 1.

BENDS, &c.

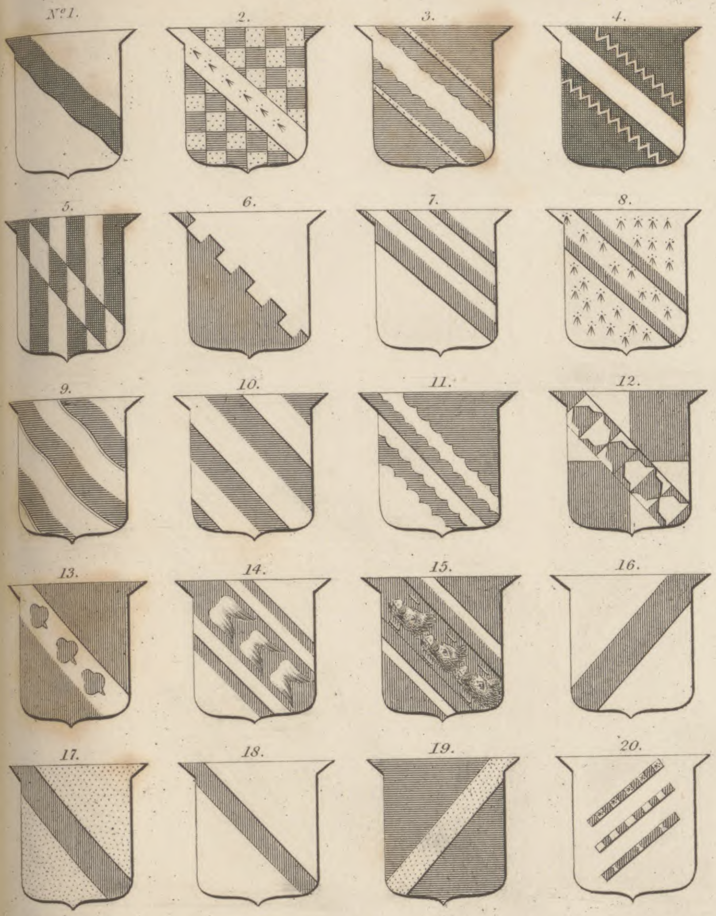


Fig. 2.

FESSES AND BARS.

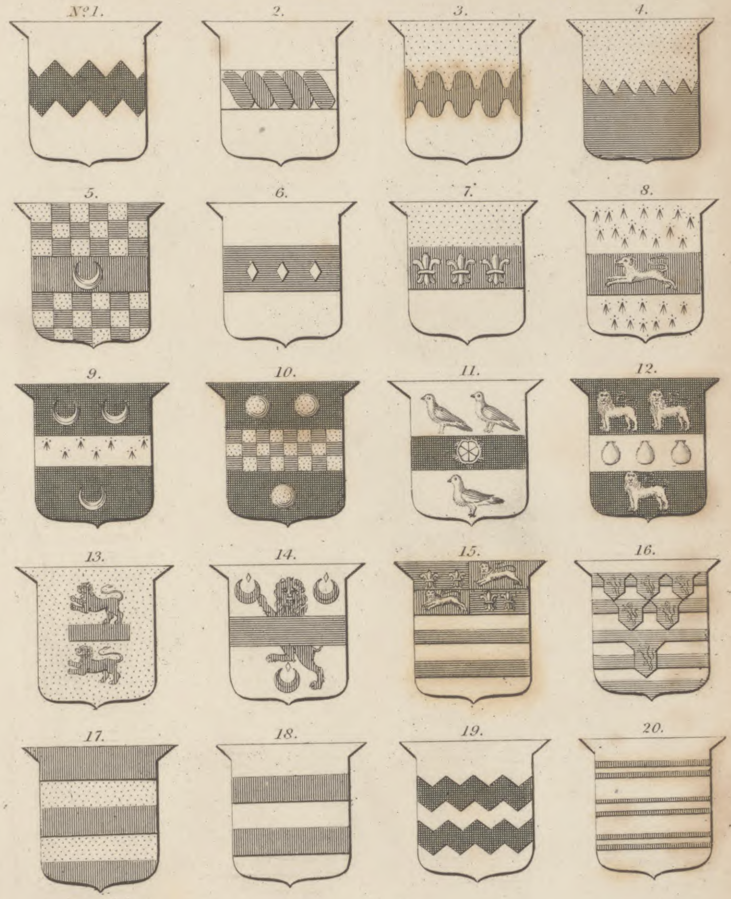


Fig. 3.

CHEVERON, &c.

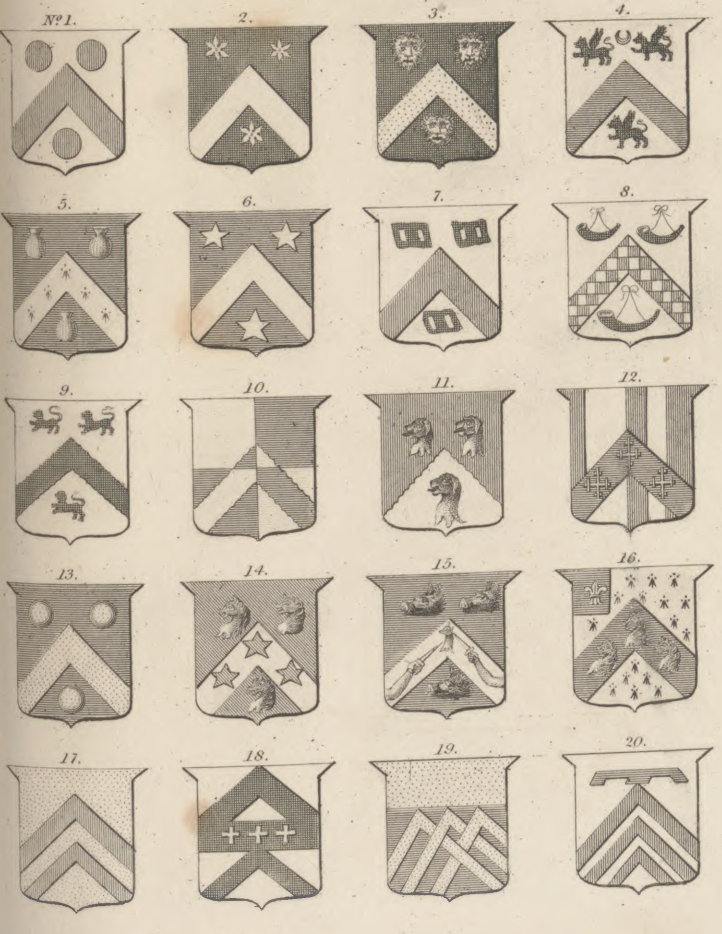


Fig. 4.

CROSSES.

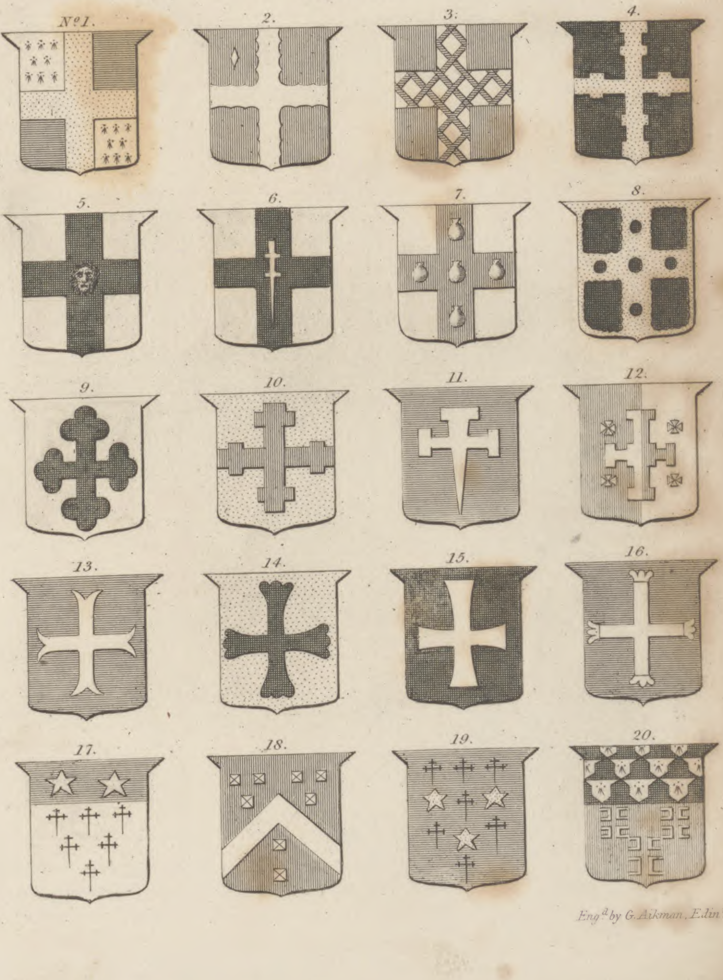


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Fig. 1.

[illegible]

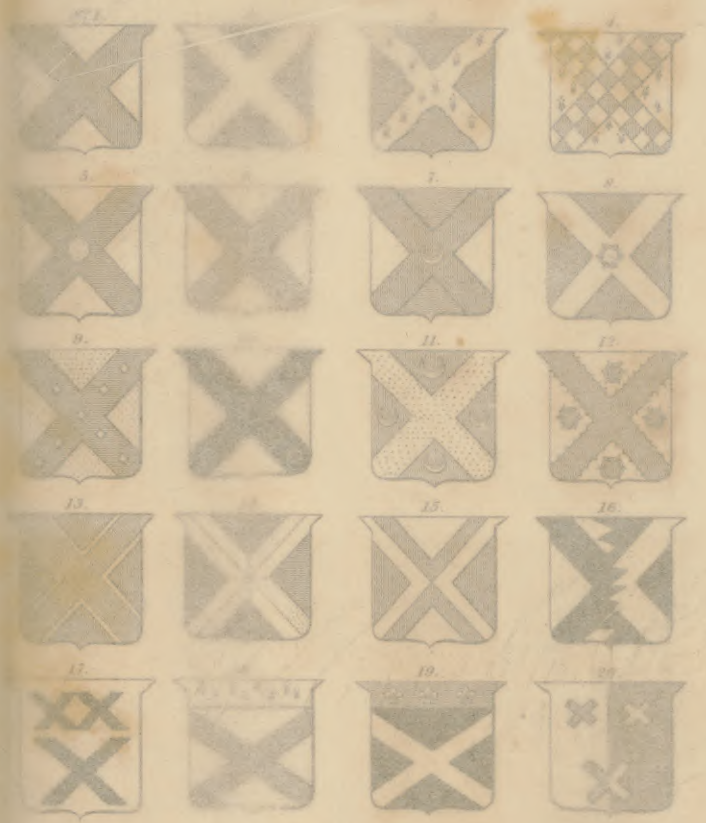


Fig. 2.

ORDINARIES, &c.

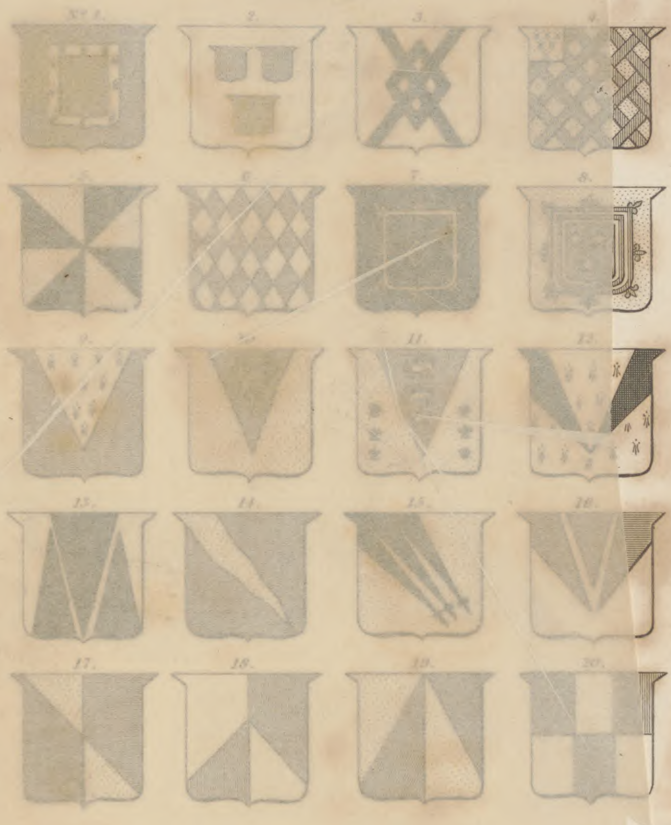


Fig. 3.

CELESTIALS.

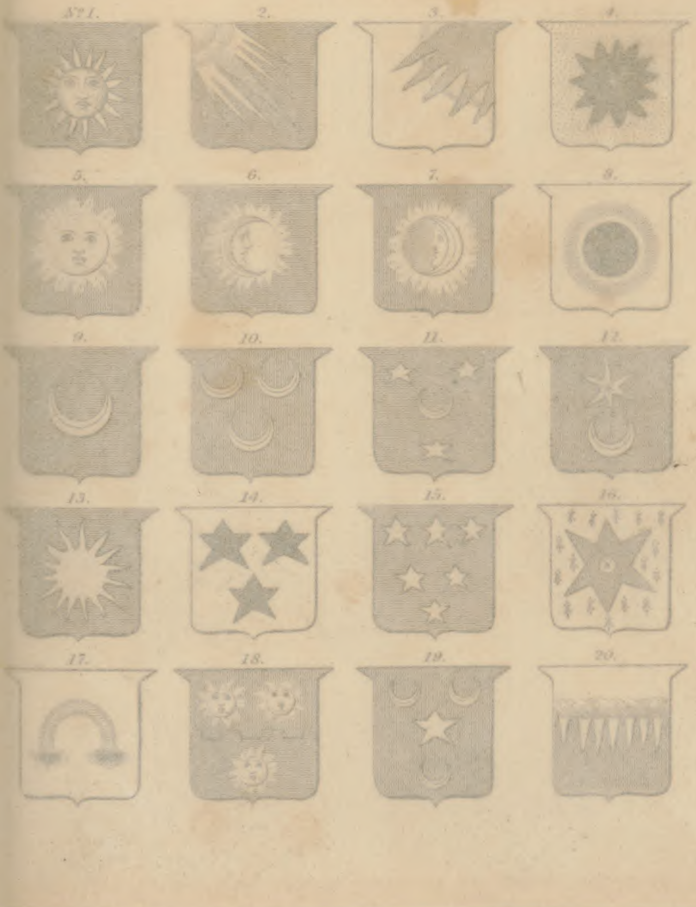
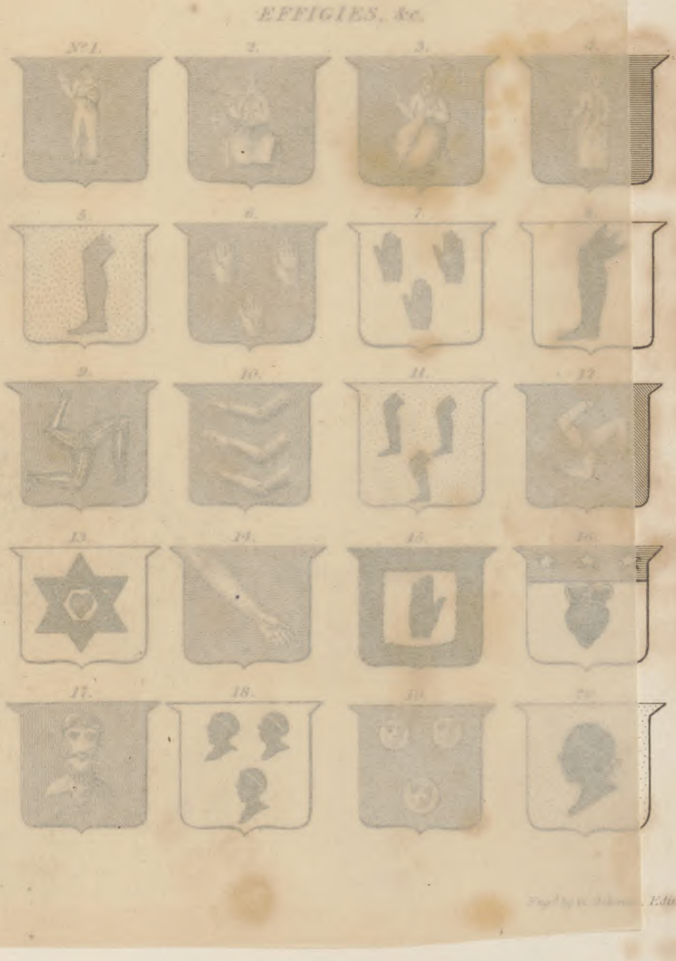


Fig. 4.

EFFIGIES, &c.



Engd by W. Dickson, Edinr

HERALDRY.

PLATE CCLXXX.

Fig. 1.

SALTIERS.

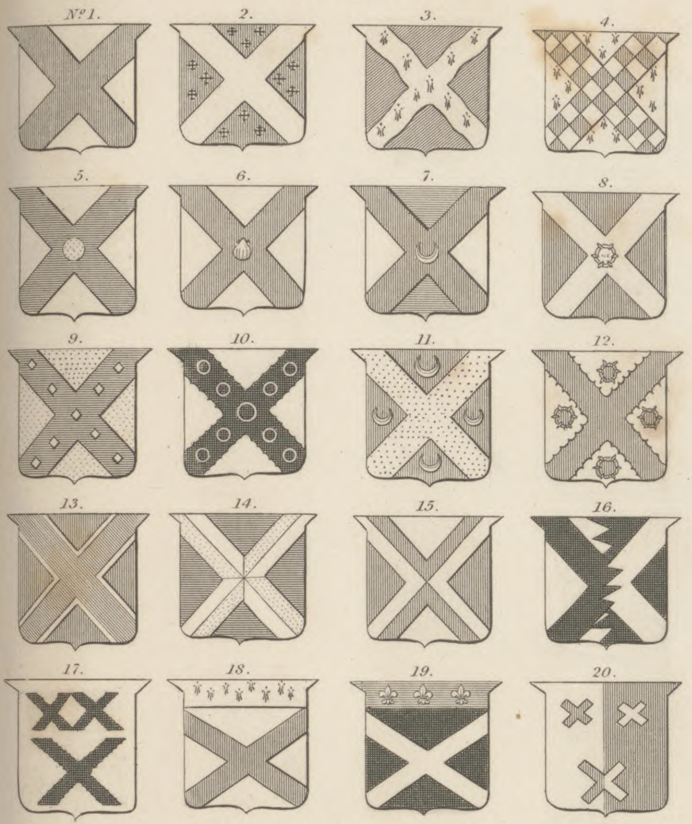


Fig. 2.

ORDINARIES, &c.

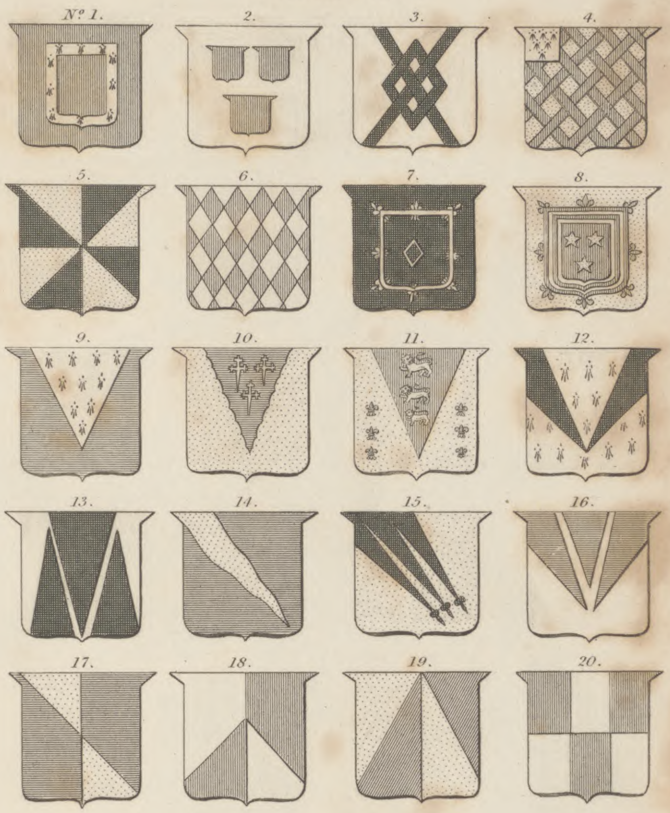


Fig. 3.

CELESTIALS.

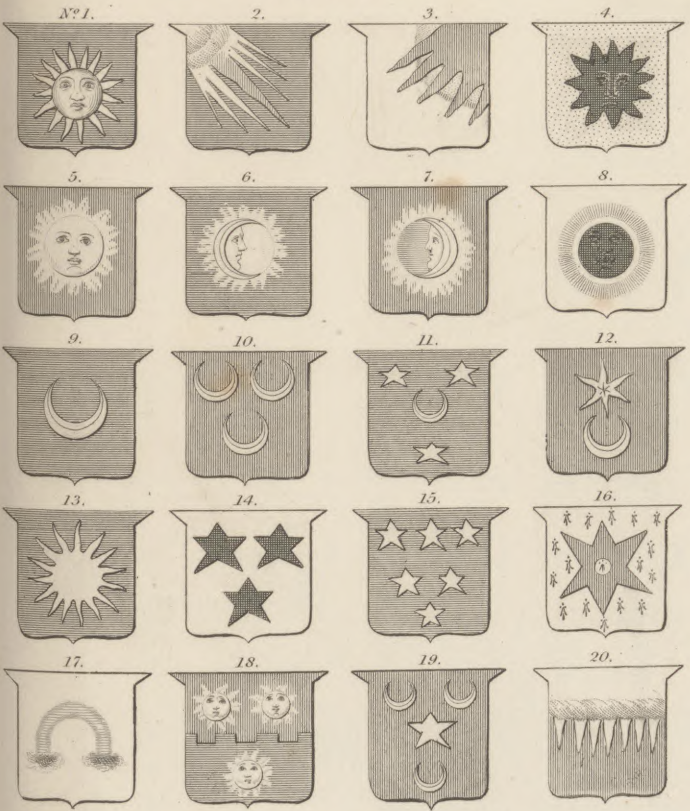


Fig. 4.

EFFIGIES, &c.

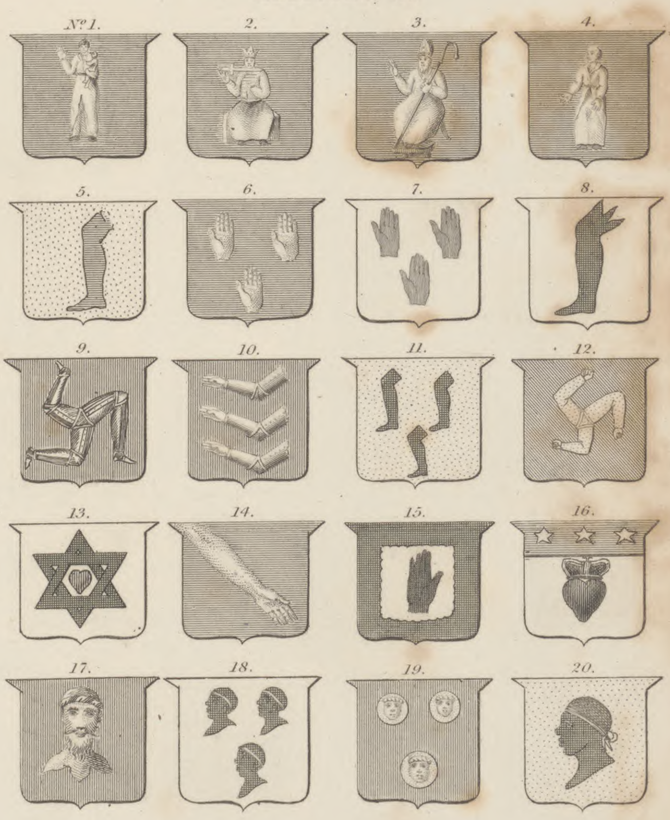


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Fig. 1.

LIONS, &c.

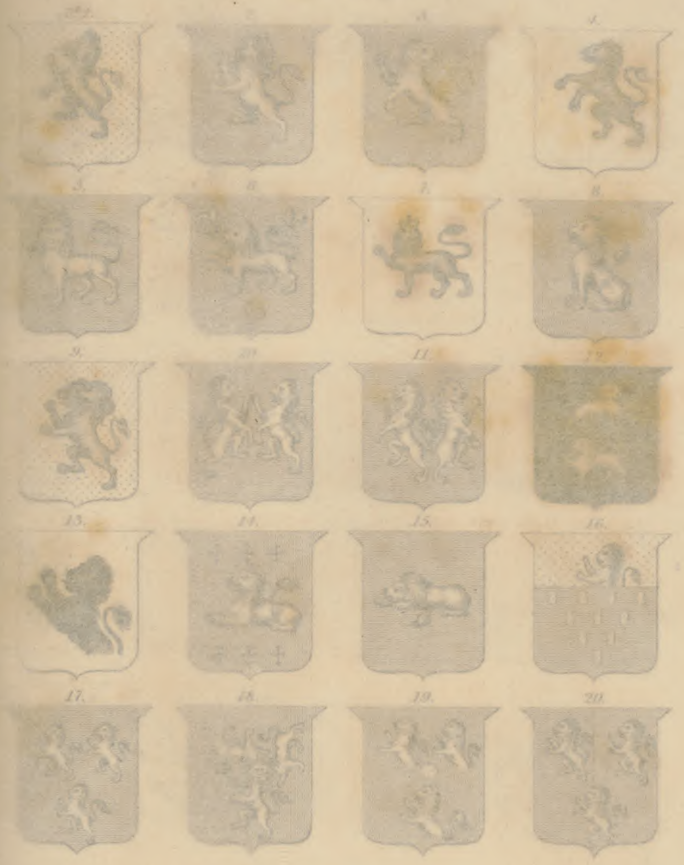


Fig. 2.

ANIMALS, &c.

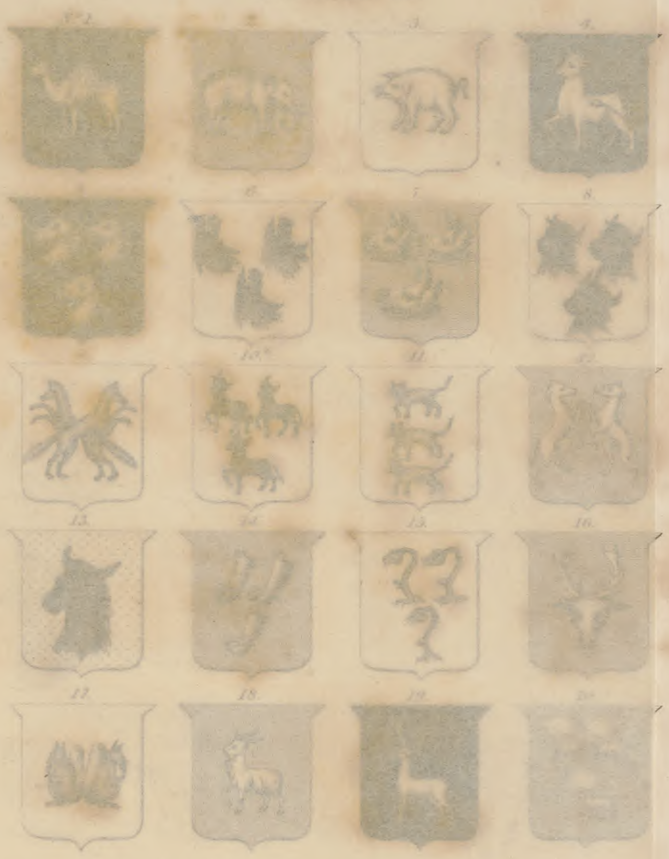


Fig. 3.

BIRDS, &c.

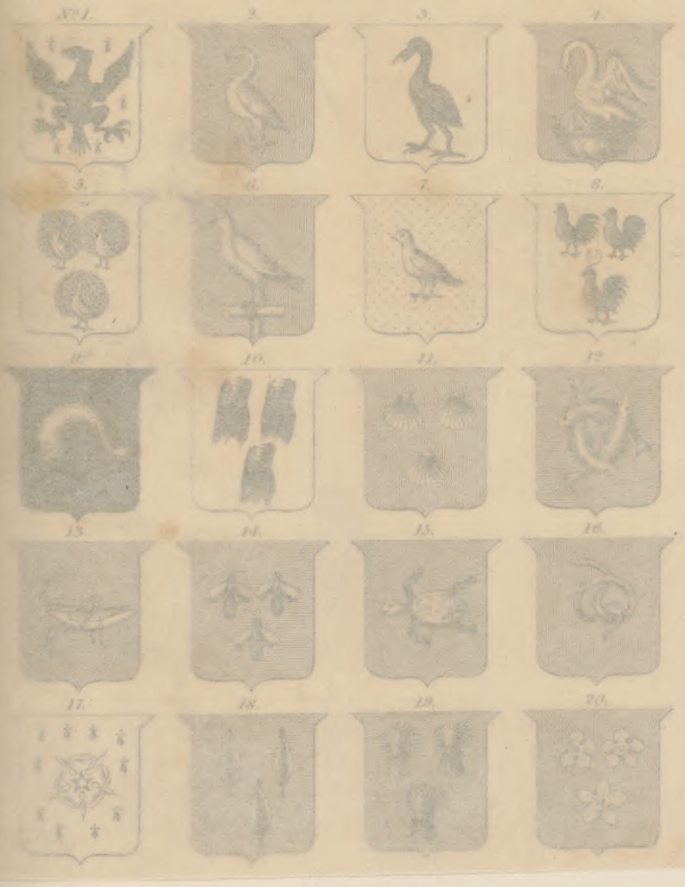
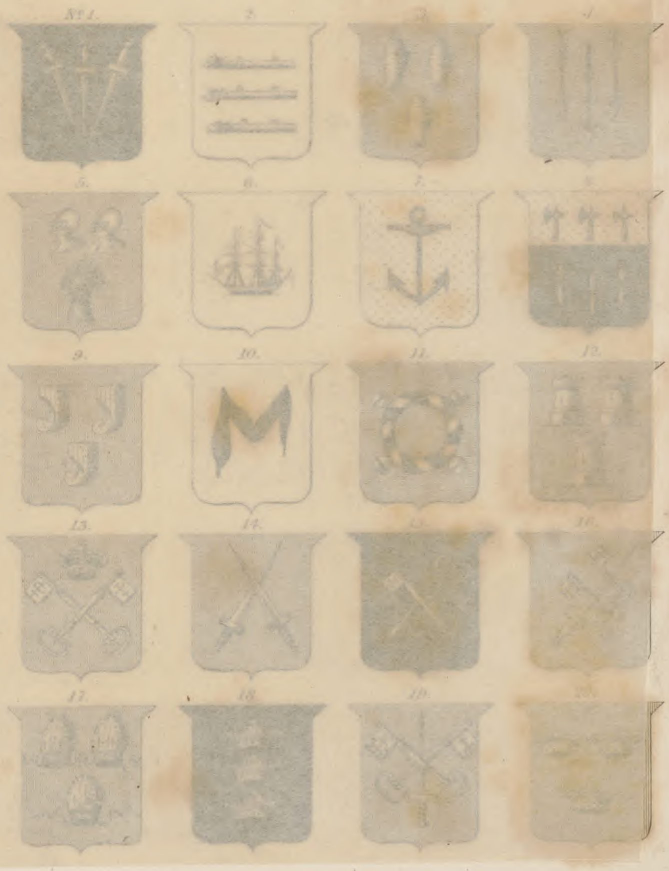


Fig. 4.

ARTIFICIAL FIGURES.



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HERALDRY.

PLATE CCLXXXI.

Fig. 1.

LIONS, &c.

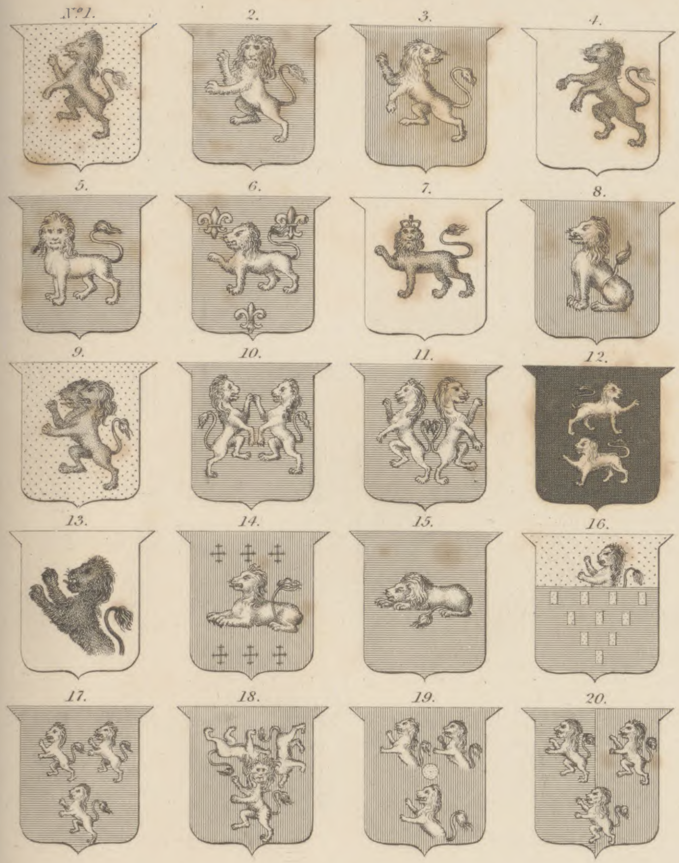


Fig. 2.

ANIMALS, &c.

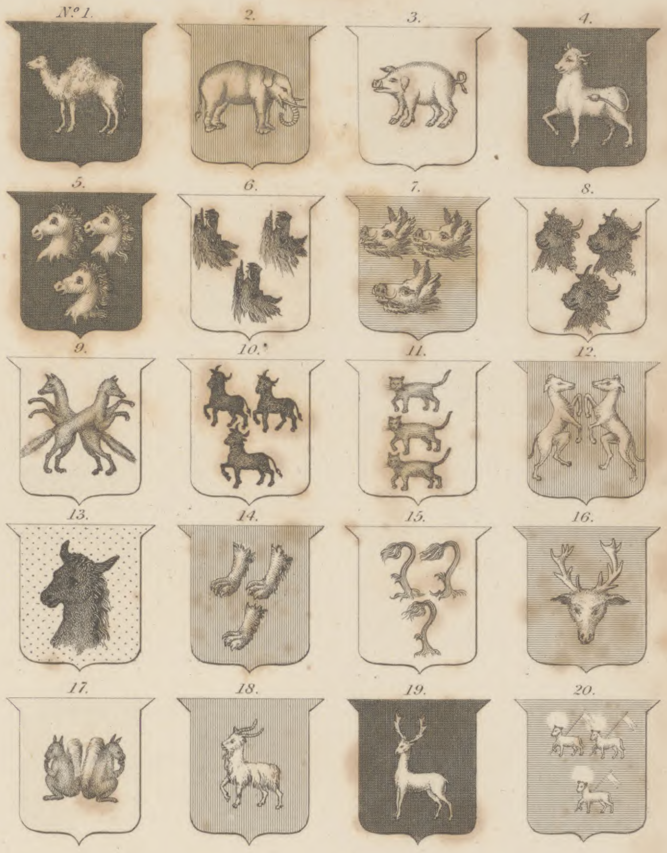


Fig. 3.

BIRDS, &c.

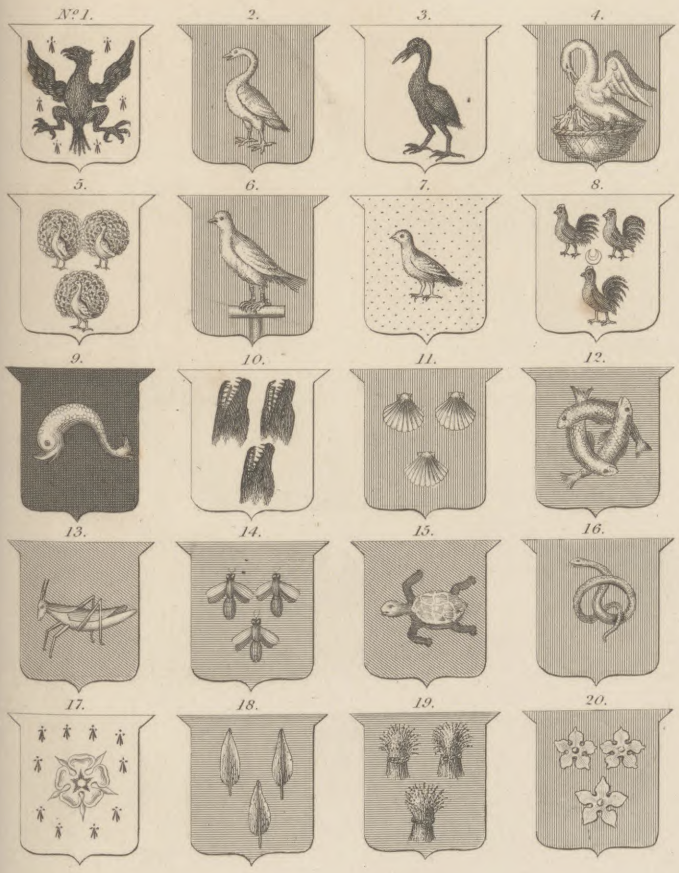
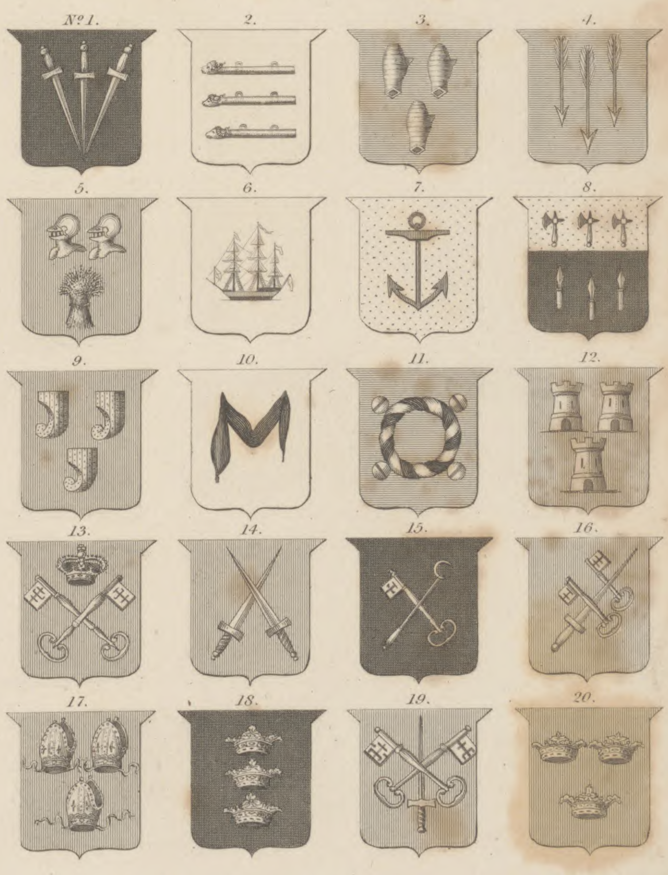


Fig. 4.

ARTIFICIAL FIGURES.



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HERALDRY.

Fig. 1.
CHIMERICAL FIGURES.

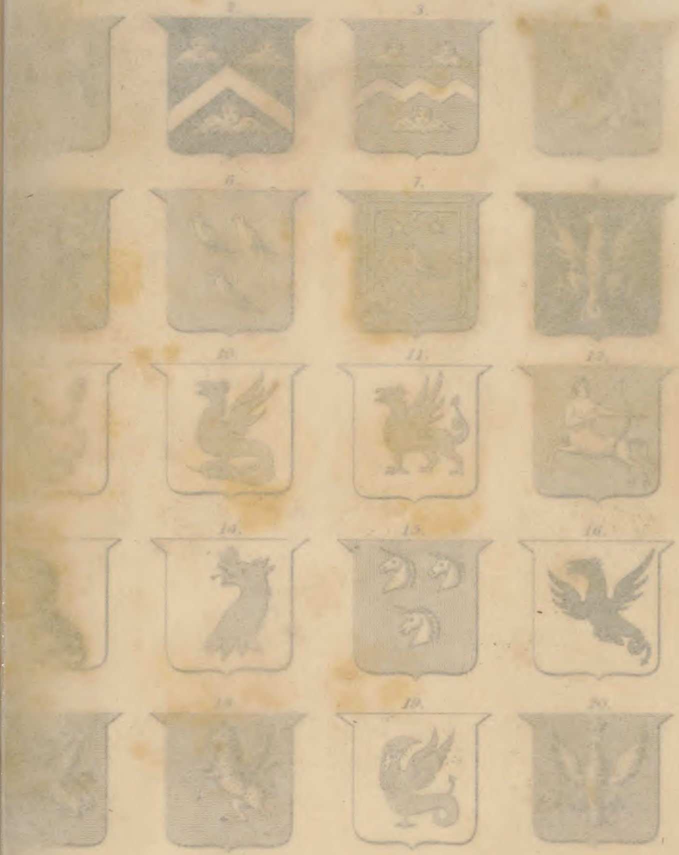


Fig. 2.
CROWNS.

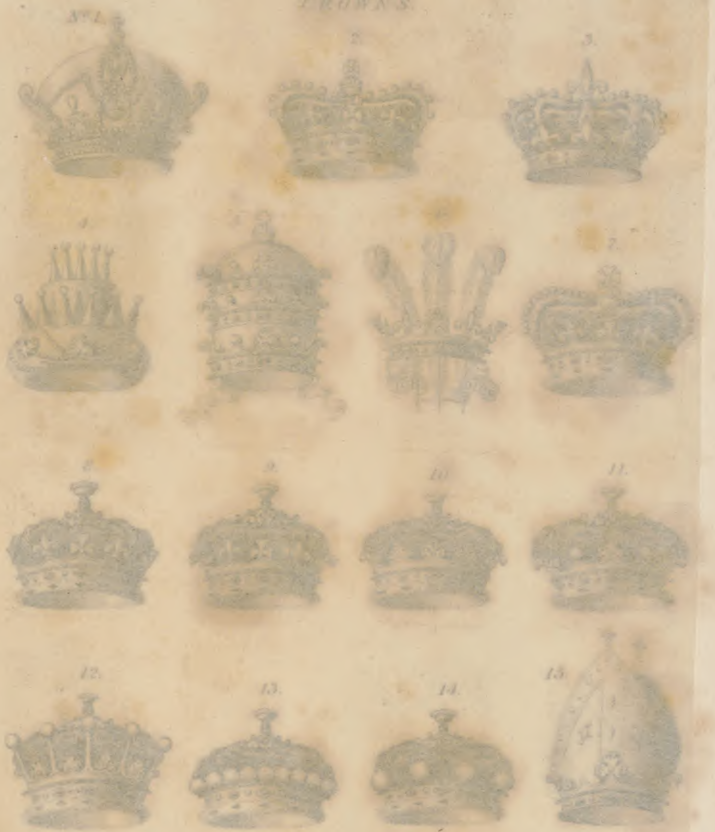
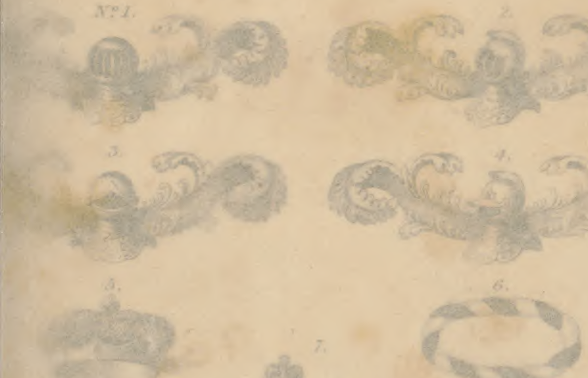
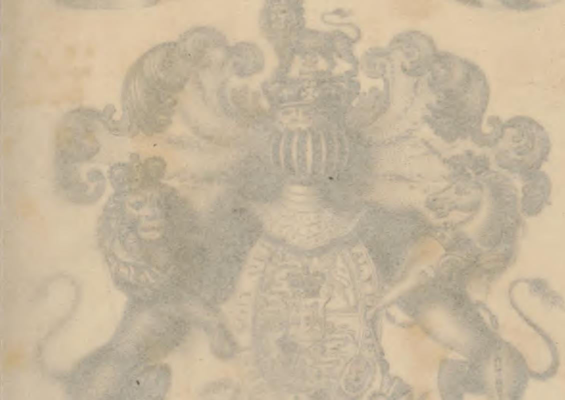


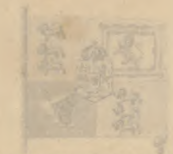
Fig. 3.
ORNAMENTS.



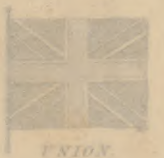


ROYAL ARMS OF BRITAIN.
Settled Nov. 1800.

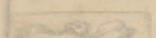
FLAGS.



BRITISH STANDARD.

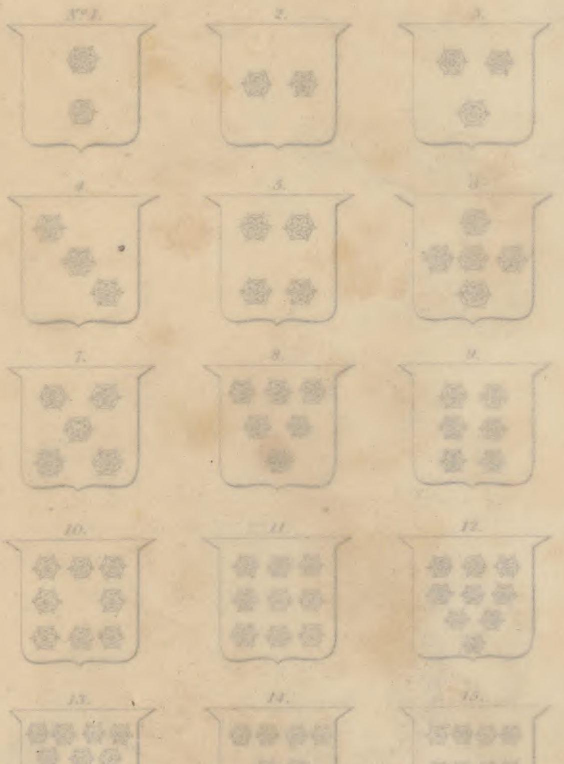


UNION.



AMERICA.

Fig. 4.
DISPOSITIONS.



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HERALDRY.

PLATE CCLXXXII.

Fig. 1.

CHIMERICAL FIGURES.

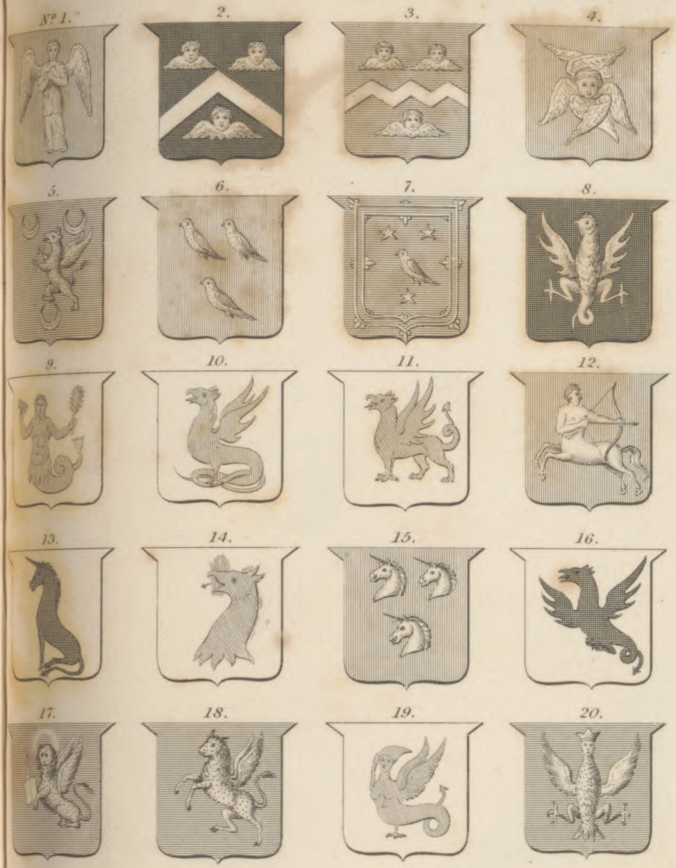


Fig. 2.

CROWNS.

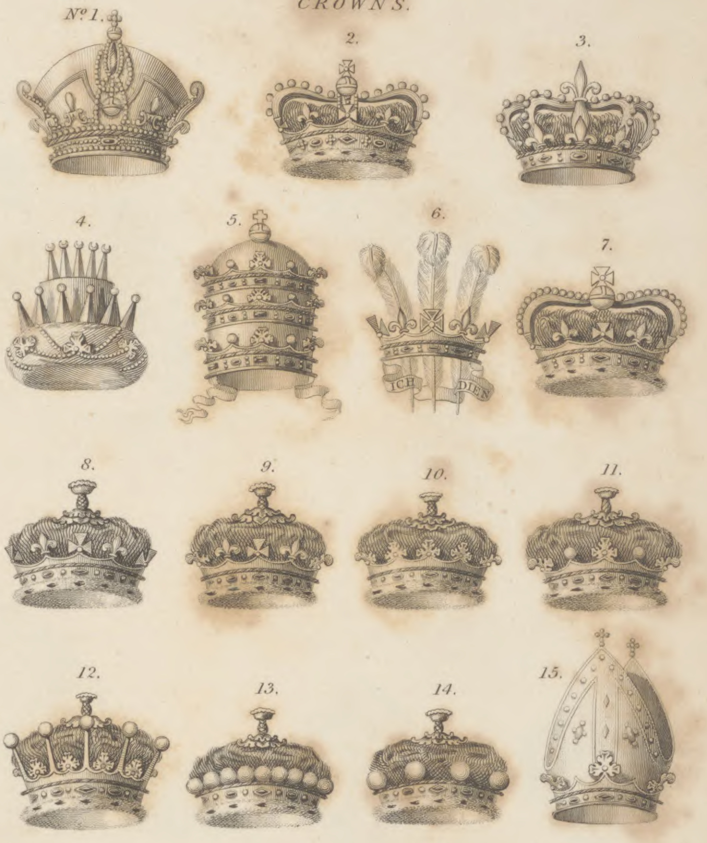
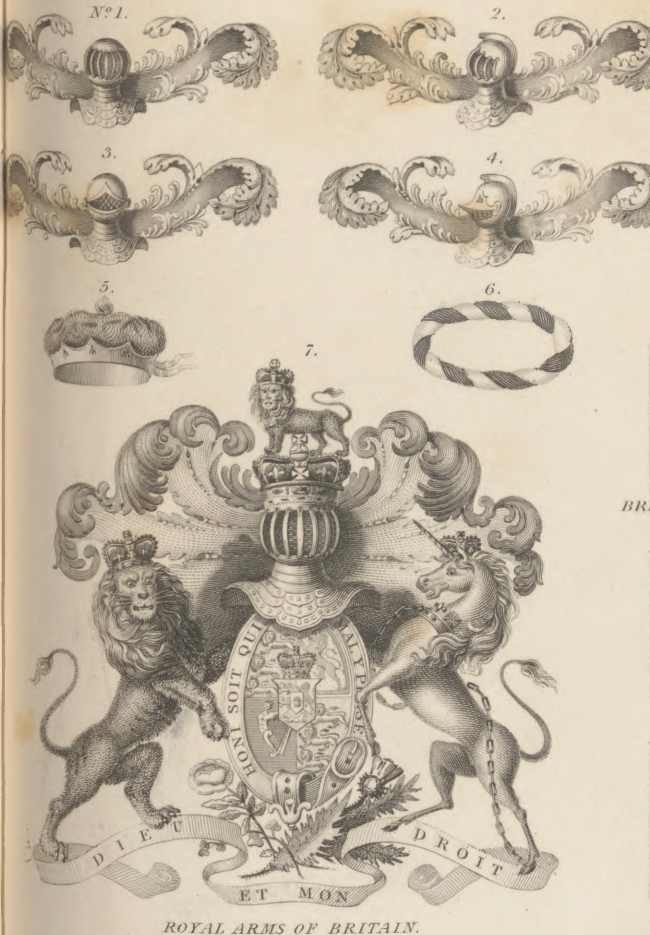


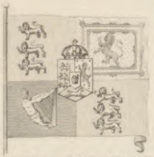
Fig. 3.

ORNAMENTS.

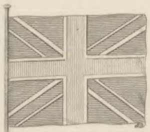


ROYAL ARMS OF BRITAIN.
Settled Nov. 1800.

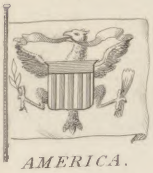
FLAGS.



BRITISH STANDARD.



UNION.



AMERICA.

Fig. 4.

DISPOSITIONS.

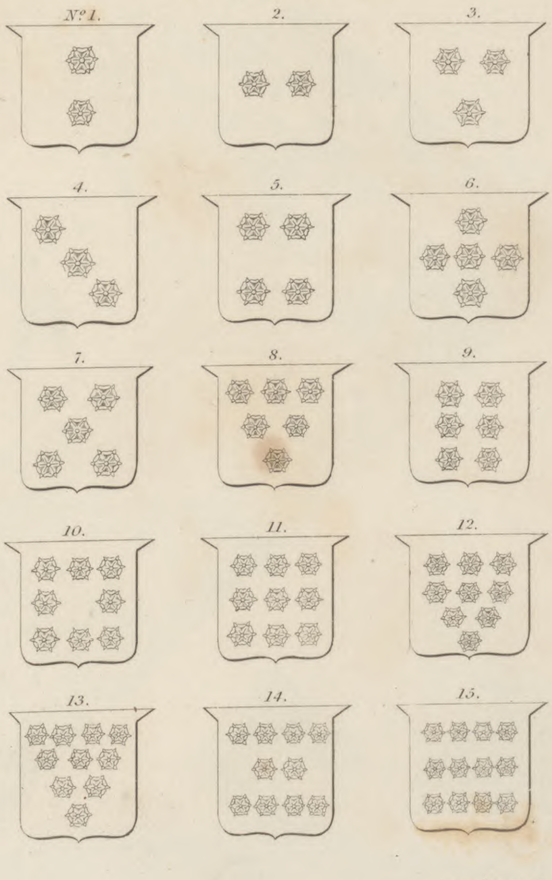


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Fig. 1. ARMS MARSHALLED.

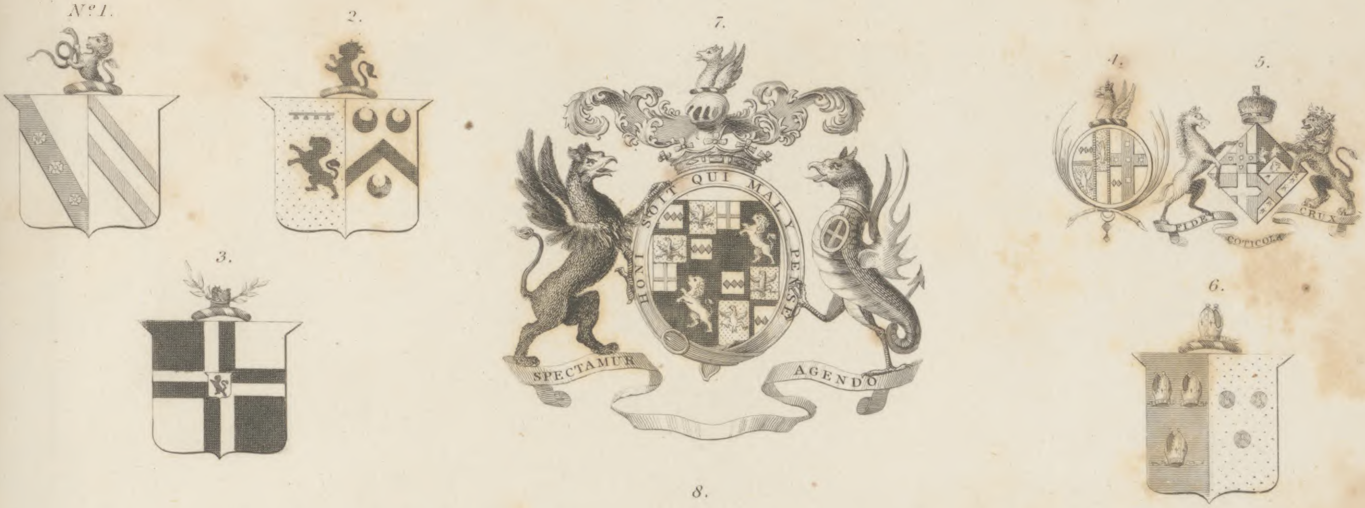
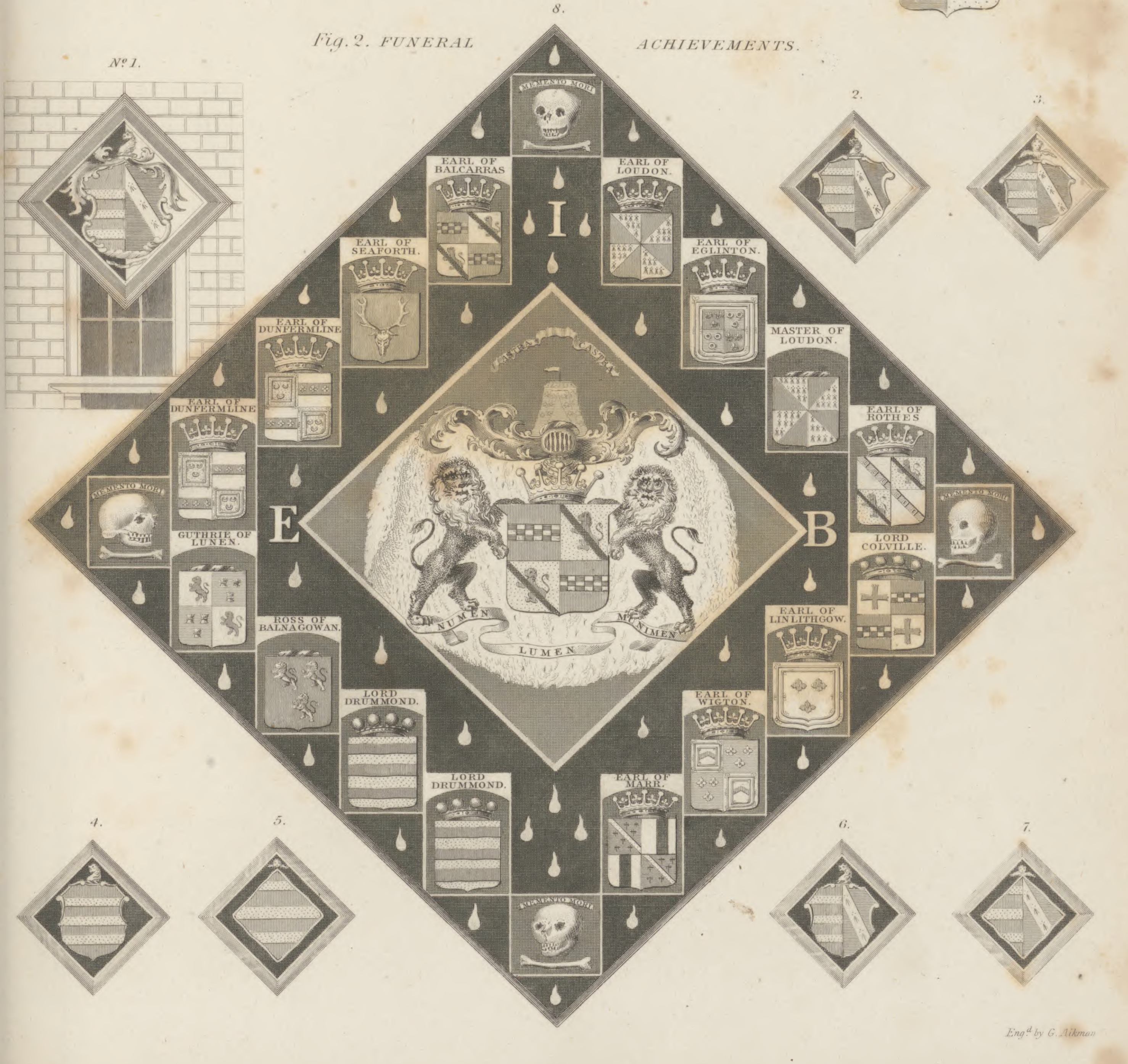
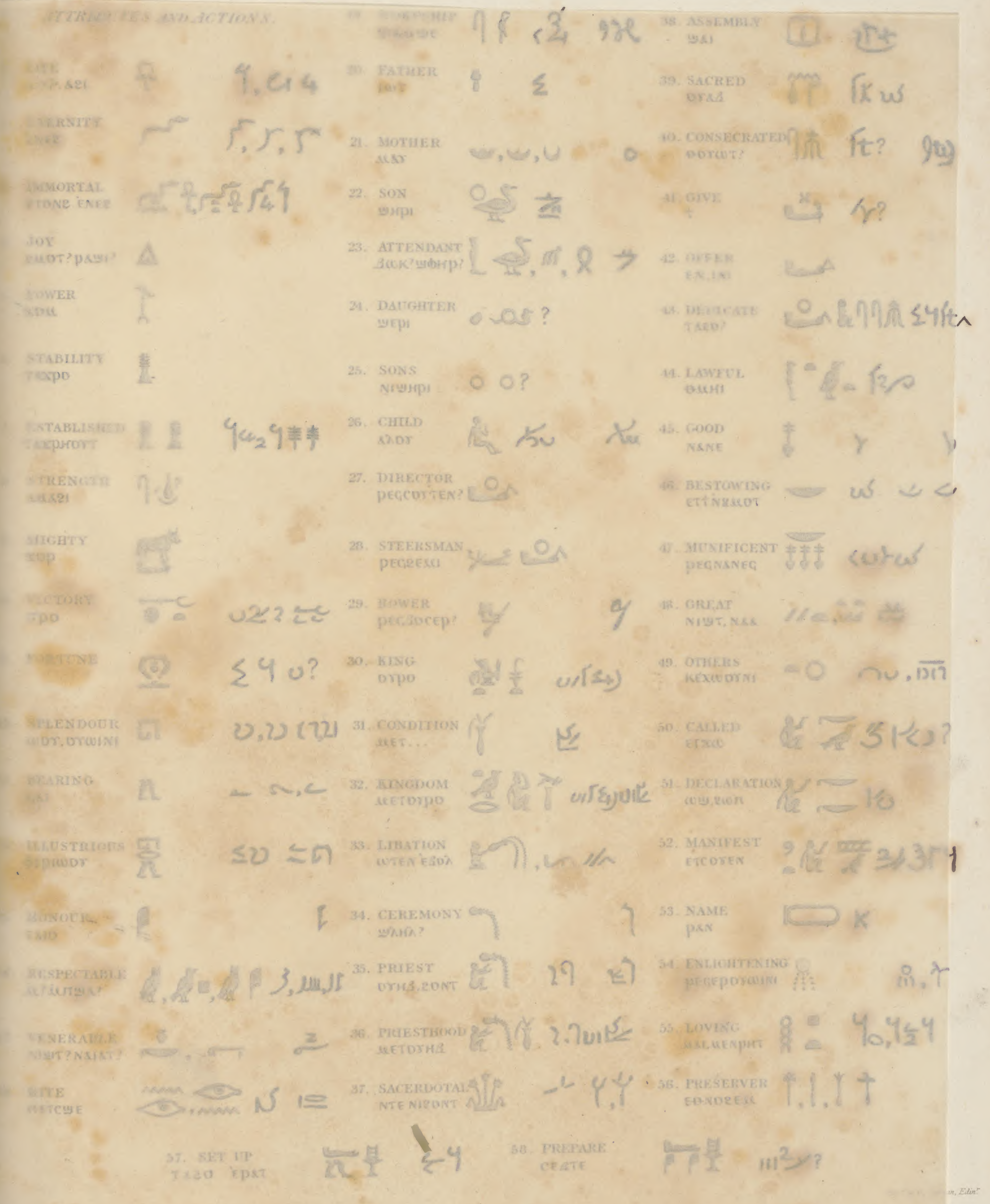


Fig. 2. FUNERAL ACHIEVEMENTS.



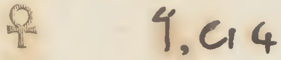
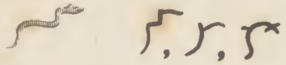
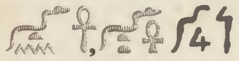
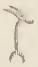
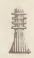
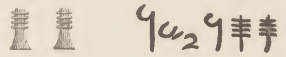
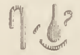
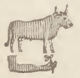
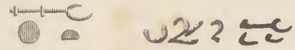
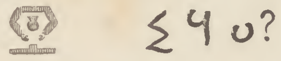
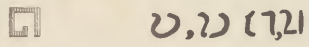
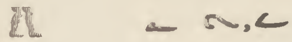
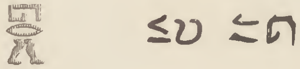
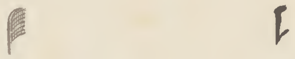
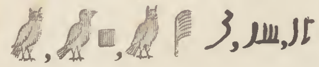
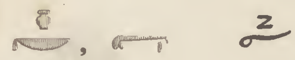
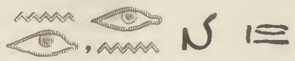
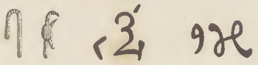
Engd. by G. Aikman


ATTRIBUTES AND ACTIONS.
LIFE
ETERNITY
ⲉⲛⲉϩ
IMMORTAL
ⲉⲛⲉϩ
JOY
ⲣⲁϣⲓ?
POWER
STABILITY
ⲧⲁϫⲣⲟ
ESTABLISHED
ⲧⲁϫⲣⲏⲟⲩⲧ
STRENGTH
MIGHTY
VICTORY
ϫⲣⲟ
FORTUNE
SPLENDOUR
ⲟⲩⲱⲓⲛⲓ
BEARING
ILLUSTRIOUS
HONOUR
ⲧⲁⲓⲟ
RESPECTABLE
VENERABLE
RITE
57. SET UP
ⲧⲁϩⲟ ⲉⲣⲁⲧ
19. WORSHIP
20. FATHER
ⲓⲱⲧ
21. MOTHER
ⲙⲁⲩ
22. SON
ϣⲏⲣⲓ
23. ATTENDANT
ⲃⲱⲕ? ϣⲫⲏⲣ?
24. DAUGHTER
ϣⲉⲣⲓ
25. SONS
ⲛⲓϣⲏⲣⲓ
26. CHILD
ⲁⲗⲟⲩ
27. DIRECTOR
ⲣⲉϥⲥⲟⲩⲧⲉⲛ?
28. STEERSMAN
ⲣⲉϥϩⲉⲙ
29. ROWER
ⲣⲉϥϩⲟⲥⲉⲣ?
30. KING
ⲟⲩⲣⲟ
31. CONDITION
ⲙⲉⲧ...
32. KINGDOM
ⲙⲉⲧⲟⲩⲣⲟ
33. LIBATION
ⲟⲩⲱⲧⲉⲛ ⲉⲃⲟⲗ
34. CEREMONY
ϣⲗⲏⲗ?
35. PRIEST
ⲟⲩⲏⲃ, ϩⲟⲛⲧ
36. PRIESTHOOD
ⲙⲉⲧⲟⲩⲏⲃ
37. SACERDOTAL
ⲛⲧⲉ ⲛⲓϩⲟⲛⲧ
58. PREPARE
ⲥⲉⲃⲧⲉ
38. ASSEMBLY
ϣⲁⲓ
39. SACRED
ⲟⲩⲁⲃ
40. CONSECRATED
ⲧⲟⲩⲃⲟ?
41. GIVE
ϯ
42. OFFER
ⲉⲛ, ⲓⲛⲓ
43. DEDICATE
ⲧⲁⲗⲟ?
44. LAWFUL
ⲑⲙⲏⲓ
45. GOOD
ⲛⲁⲛⲉ
46. BESTOWING
ⲉⲧϯ ⲛϩⲙⲟⲧ
47. MUNIFICENT
ⲣⲉϥⲛⲁⲛⲉϥ
48. GREAT
ⲛⲓϣϯ, ⲛⲁⲁ
49. OTHERS
ⲕⲉⲭⲱⲟⲩⲛⲓ
50. CALLED
ⲉⲧϫⲱ
51. DECLARATION
ⲱϣ, ϩⲓⲱⲓϣ
52. MANIFEST
ⲉⲧⲥⲟⲩⲉⲛ
53. NAME
ⲣⲁⲛ
54. ENLIGHTENING
ⲣⲉϥⲉⲣⲟⲩⲱⲓⲛⲓ
55. LOVING
ⲙⲁⲓⲙⲉⲛⲣⲓⲧ
56. PRESERVER
ⲉⲧⲛⲟϩⲉⲙ

an, Edinʳ.

HIEROGLYPHICS.

ATTRIBUTES AND ACTIONS.

1.	LIFE	ⲱⲛϧ, ⲁϩⲓ	
2.	ETERNITY	ⲉ̀ⲛⲉϩ	
3.	IMMORTAL	ⲉⲧⲟⲛϩ ⲉ̀ⲛⲉϩ	
4.	JOY	ϩⲙⲟⲧ? ⲣⲁϣⲓ?	
5.	POWER	ϫⲟⲙ	
6.	STABILITY	ⲧⲁϫⲣⲟ	
7.	ESTABLISHED	ⲧⲁϫⲣⲏⲟⲩⲧ	
8.	STRENGTH	ⲁⲙⲁϩⲓ	
9.	MIGHTY	ϫⲟⲣ	
10.	VICTORY	ϭⲣⲟ	
11.	FORTUNE		
12.	SPLENDOUR	ⲱⲟⲩ, ⲟⲩⲱⲓⲛⲓ	
13.	BEARING	ϥⲁⲓ	
14.	ILLUSTRIOUS	ⲫⲉⲣⲓⲱⲟⲩ	
15.	HONOUR	ⲧⲁⲓⲟ	
16.	RESPECTABLE	ⲙ̀? ⲙ̀ⲡϣⲁ?	
17.	VENERABLE	ⲛⲓϣⲧ? ⲛⲁⲓⲁⲧ?	
18.	RITE	ⲡⲉⲧⲥϣⲉ	
19.	WORPSHIP	ϣⲁⲙϣⲉ	
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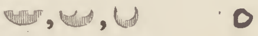
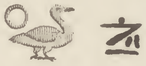
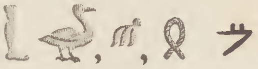
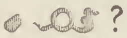
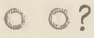
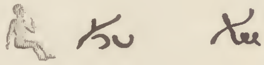
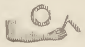
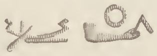
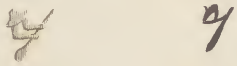
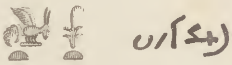
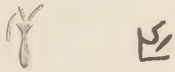
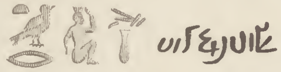
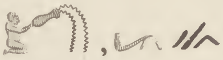
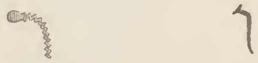
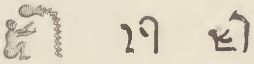
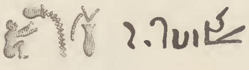
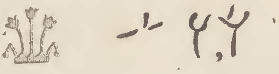
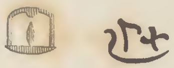
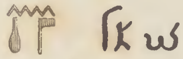
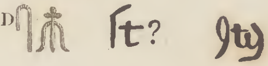
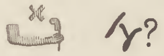
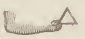
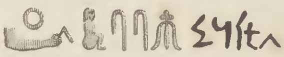
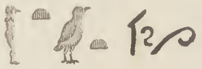
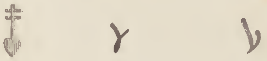
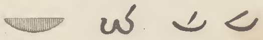
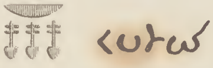
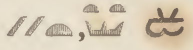
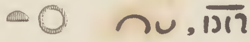
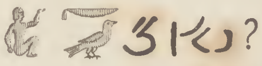
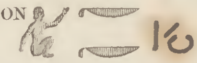
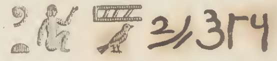
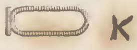
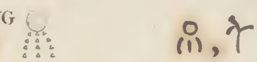
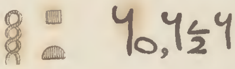
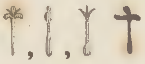
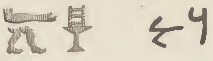
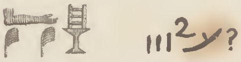
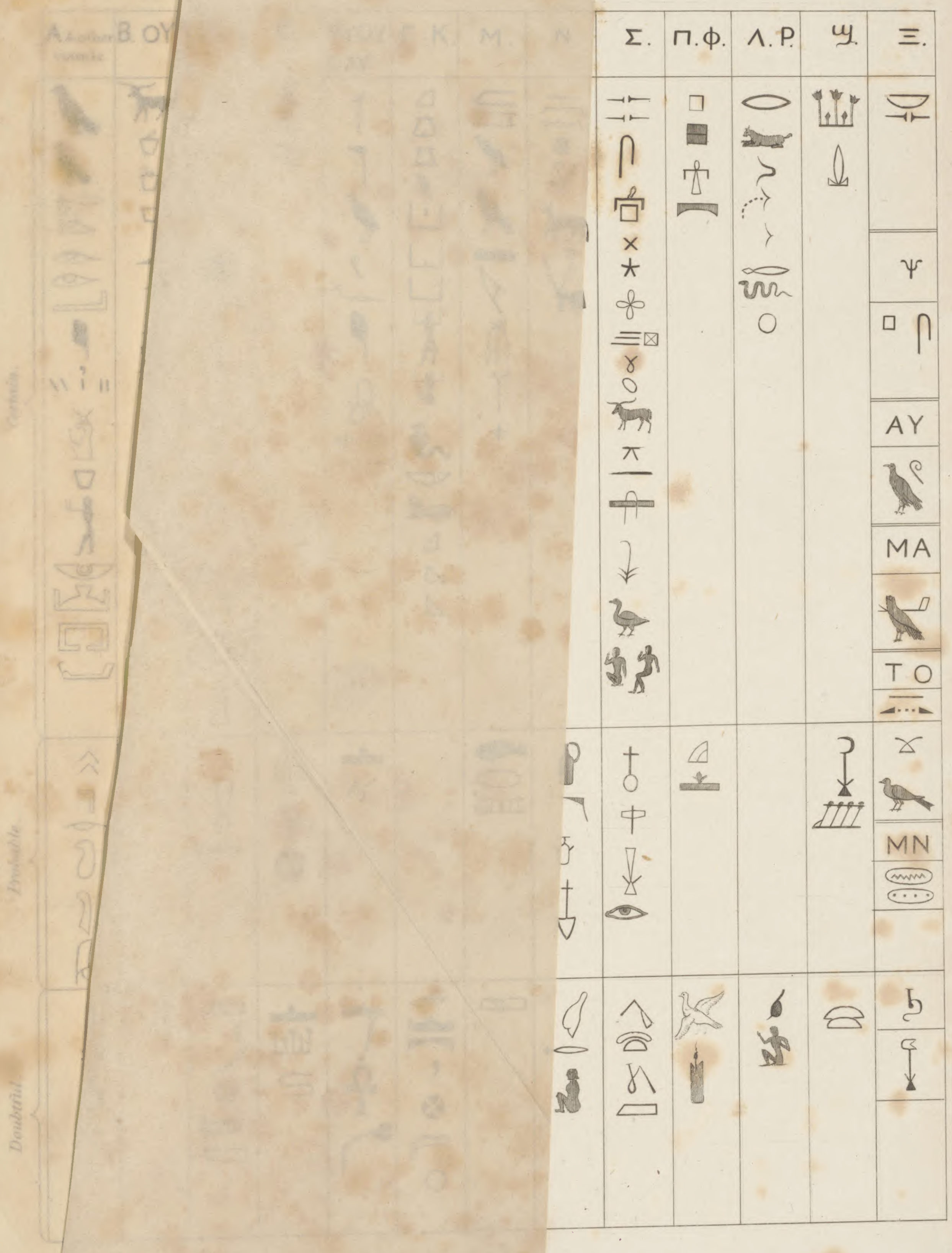
21.	MOTHER	ⲙⲁⲩ	
22.	SON	ϣⲏⲣⲓ	
23.	ATTENDANT	ⲃⲱⲕ? ϣⲫⲏⲣ?	
24.	DAUGHTER	ϣⲉⲣⲓ	
25.	SONS	ⲛⲓϣⲏⲣⲓ	
26.	CHILD	ⲁⲗⲟⲩ	
27.	DIRECTOR	ⲣⲉϥⲥⲟⲩⲧⲉⲛ?	
28.	STEERSMAN	ⲣⲉϥϩⲉⲙⲓ	
29.	ROWER	ⲣⲉϥⲃⲟⲥⲉⲣ?	
30.	KING	ⲟⲩⲣⲟ	
31.	CONDITION	ⲙⲉⲧ. . .	
32.	KINGDOM	ⲙⲉⲧⲟⲩⲣⲟ	
33.	LIBATION	ⲱⲧⲉⲛ ⲉ̀ⲃⲟⲗ	
34.	CEREMONY	ϣⲗⲏⲗ?	
35.	PRIEST	ⲟⲩⲏⲃ, ϩⲟⲛⲧ	
36.	PRIESTHOOD	ⲙⲉⲧⲟⲩⲏⲃ	
37.	SACERDOTAL	ⲛⲧⲉ ⲛⲓϩⲟⲛⲧ	
38.	ASSEMBLY	ϣⲁⲓ	
39.	SACRED	ⲟⲩⲁⲃ	
40.	CONSECRATED	ⲑⲟⲩⲱⲧ?	
41.	GIVE	ϯ	
42.	OFFER	ⲉⲛ, ⲓⲛⲓ	
43.	DEDICATE	ⲧⲁϩⲟ?	
44.	LAWFUL	ⲑⲙⲏⲓ	
45.	GOOD	ⲛⲁⲛⲉ	
46.	BESTOWING	ⲉⲧϯⲛ̀ϩⲙⲟⲧ	
47.	MUNIFICENT	ⲣⲉϥⲛⲁⲛⲉϥ	
48.	GREAT	ⲛⲓϣⲧ, ⲛⲁⲁ	
49.	OTHERS	ⲕⲉϫⲱⲟⲩⲛⲓ	
50.	CALLED	ⲉⲧϫⲱ	
51.	DECLARATION	ⲱϣ, ϩⲱⲡ	
52.	MANIFEST	ⲉⲧⲥⲟⲩⲉⲛ	
53.	NAME	ⲣⲁⲛ	
54.	ENLIGHTENING	ⲣⲉϥⲉⲣⲟⲩⲱⲓⲛⲓ	
55.	LOVING	ⲙⲁⲓ, ⲙⲉⲛⲣⲏⲧ	
56.	PRESERVER	ⲉⲑⲛⲟϩⲉⲙ	
57.	SET UP	ⲧⲁϩⲟ ⲉ̀ⲣⲁⲧ	
58.	PREPARE	ⲥⲉⲃⲧⲉ	

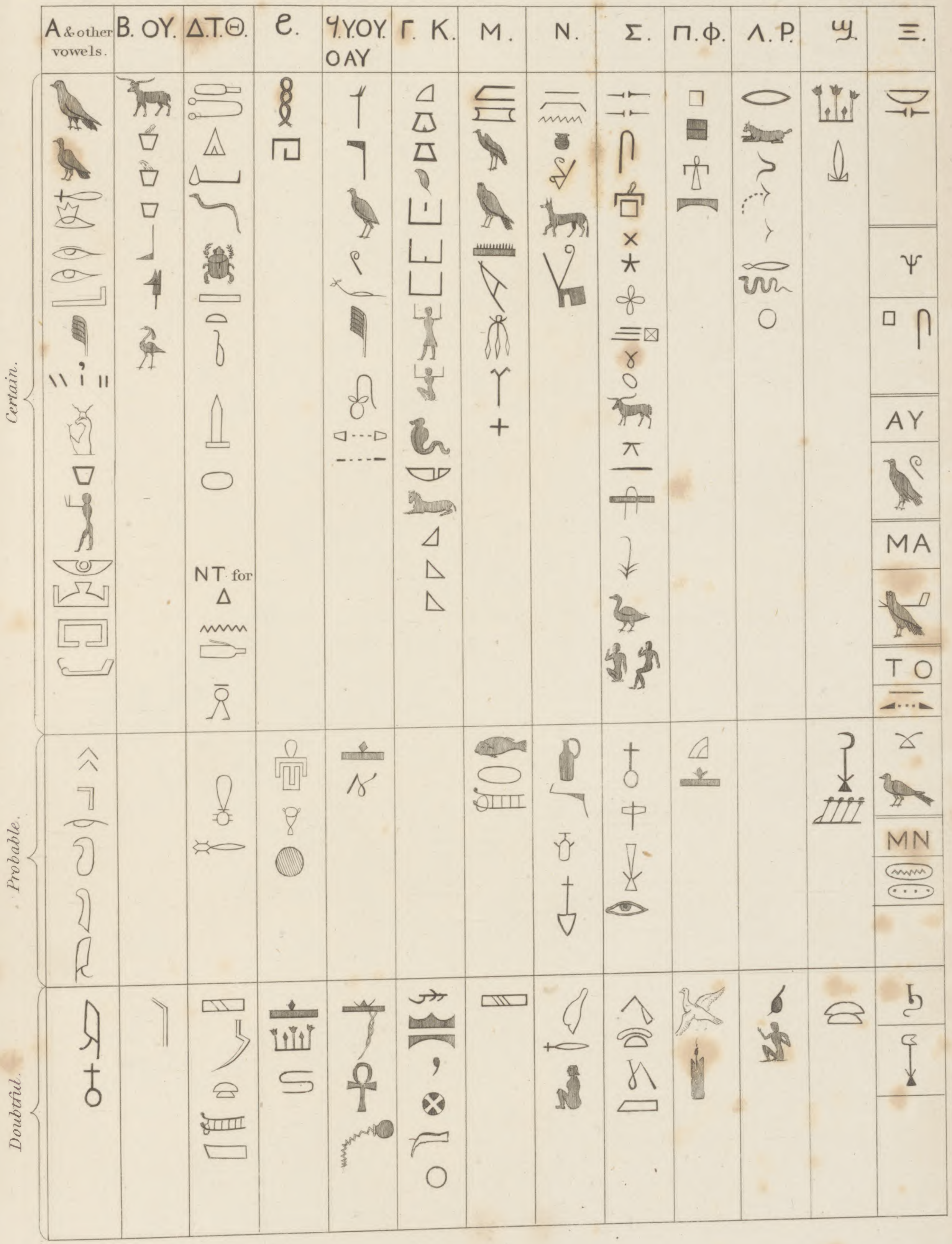
PHONETIC ALPHABET.


A. & other vowels
B. OY
K.
M.
N.
Σ.
Π.Φ.
Λ.Ρ.
Ϣ.
Ξ.
Ψ
AY
MA
TO
MN
Certain.
Probable.
Doubtful.

Engd. by G. Aikman, Edinr.

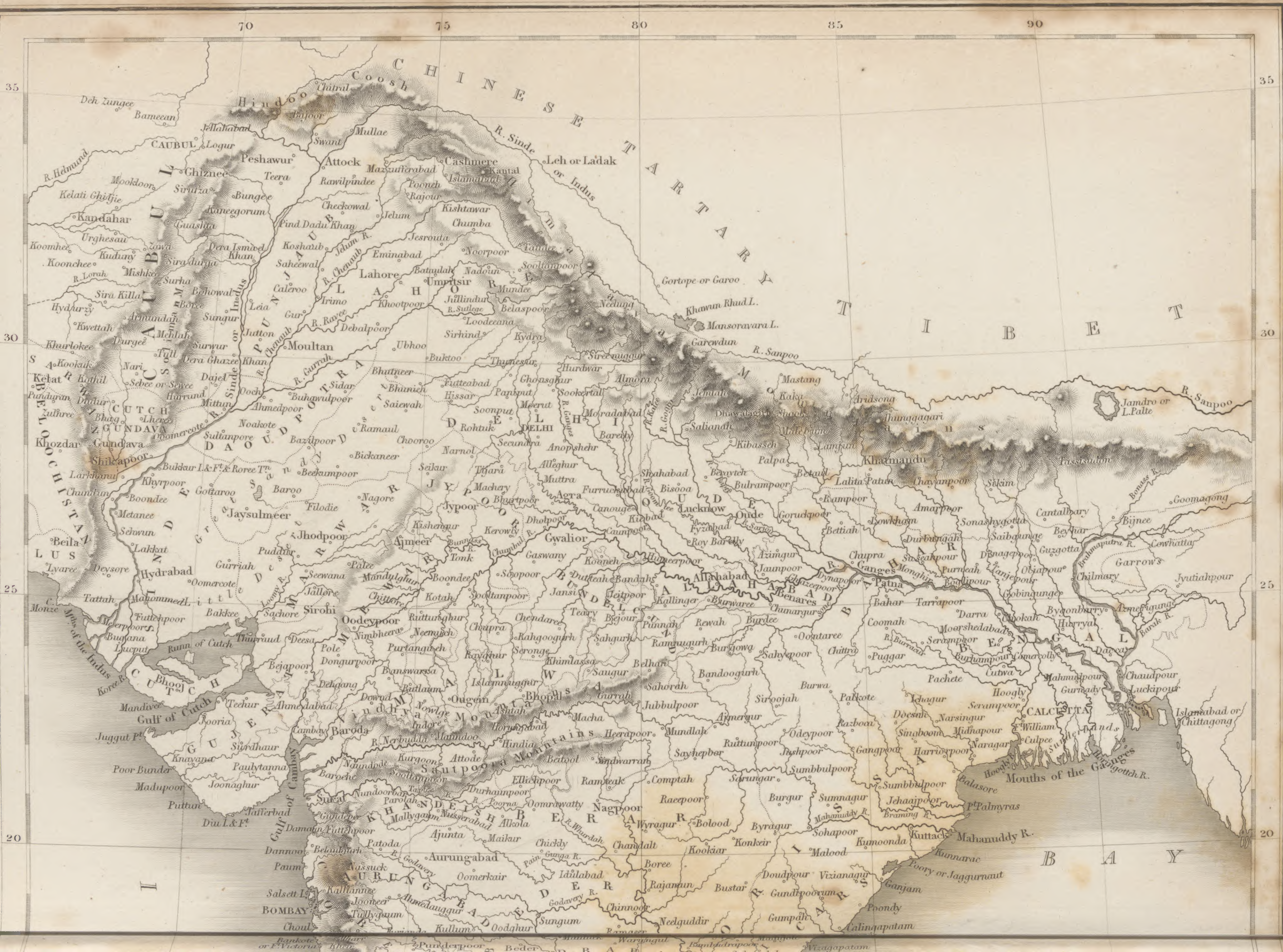
HIEROGLYPHICS. PLATE CCLXXXV.

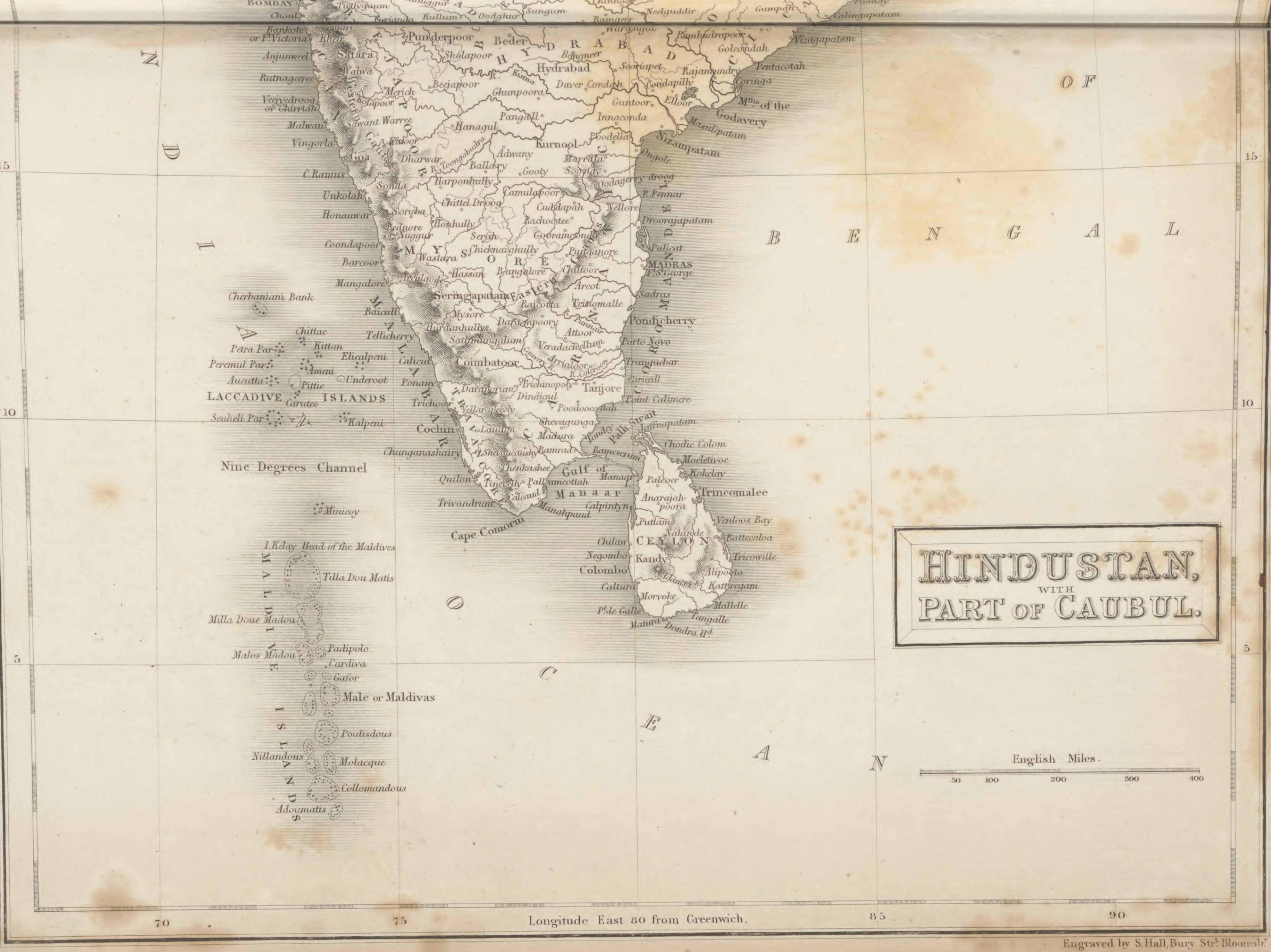
PHONETIC ALPHABET.


A & other vowels.
B. ΟΥ.
Δ.Τ.Θ.
Ⲉ.
Ϥ.Υ.ΟΥ. ΟΑΥ
Γ. Κ.
Μ.
Ν.
Σ.
Π.Φ.
Λ.Ρ.
Ϣ.
Ξ.
Certain.
Probable.
Doubtful.
NT for Δ
Ψ
ΑΥ
ΜΑ
ΤΟ
ΜΝ

Engd by G. Aikman, Edinr.

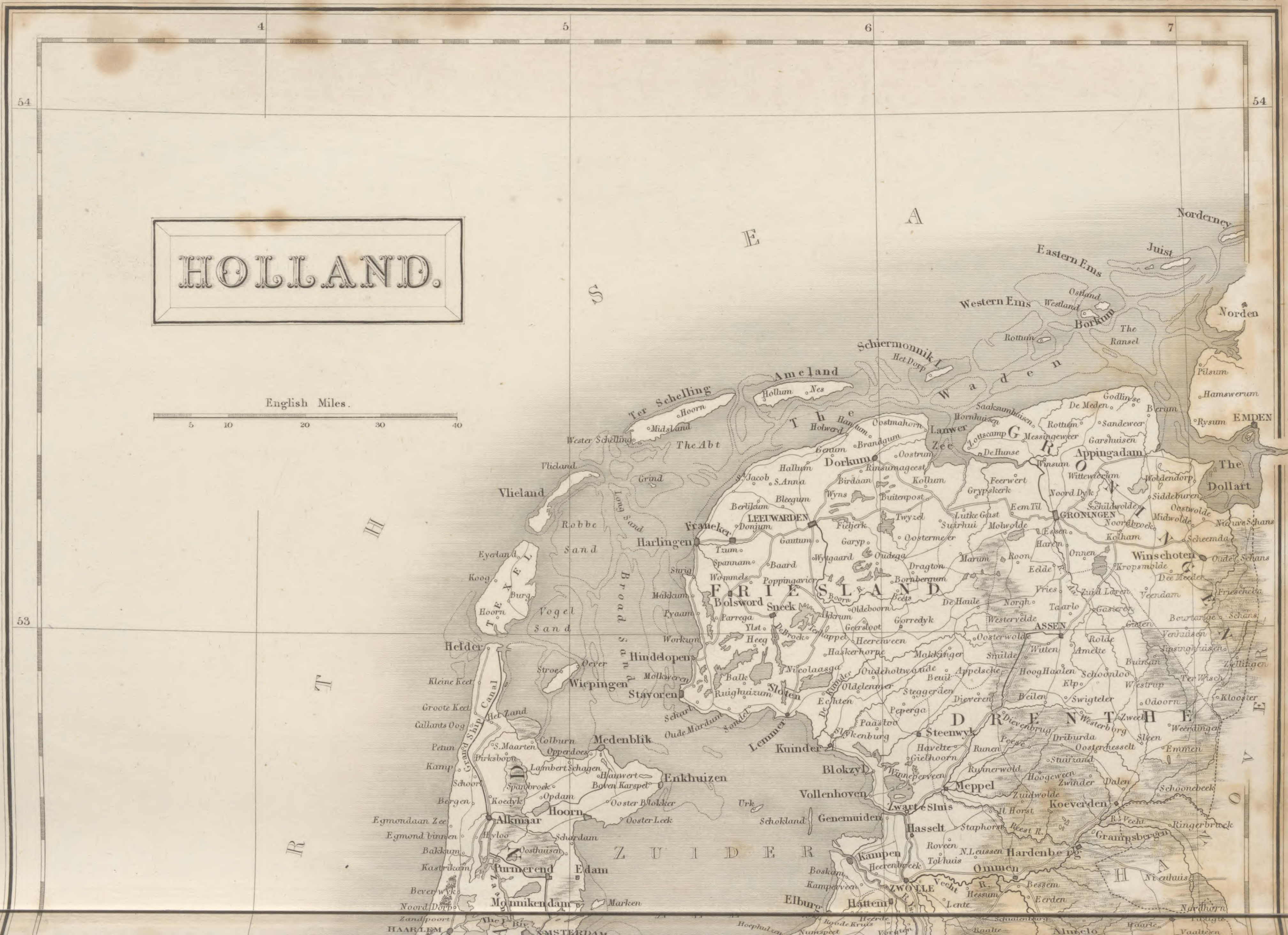
PLATE CCLXXVI.



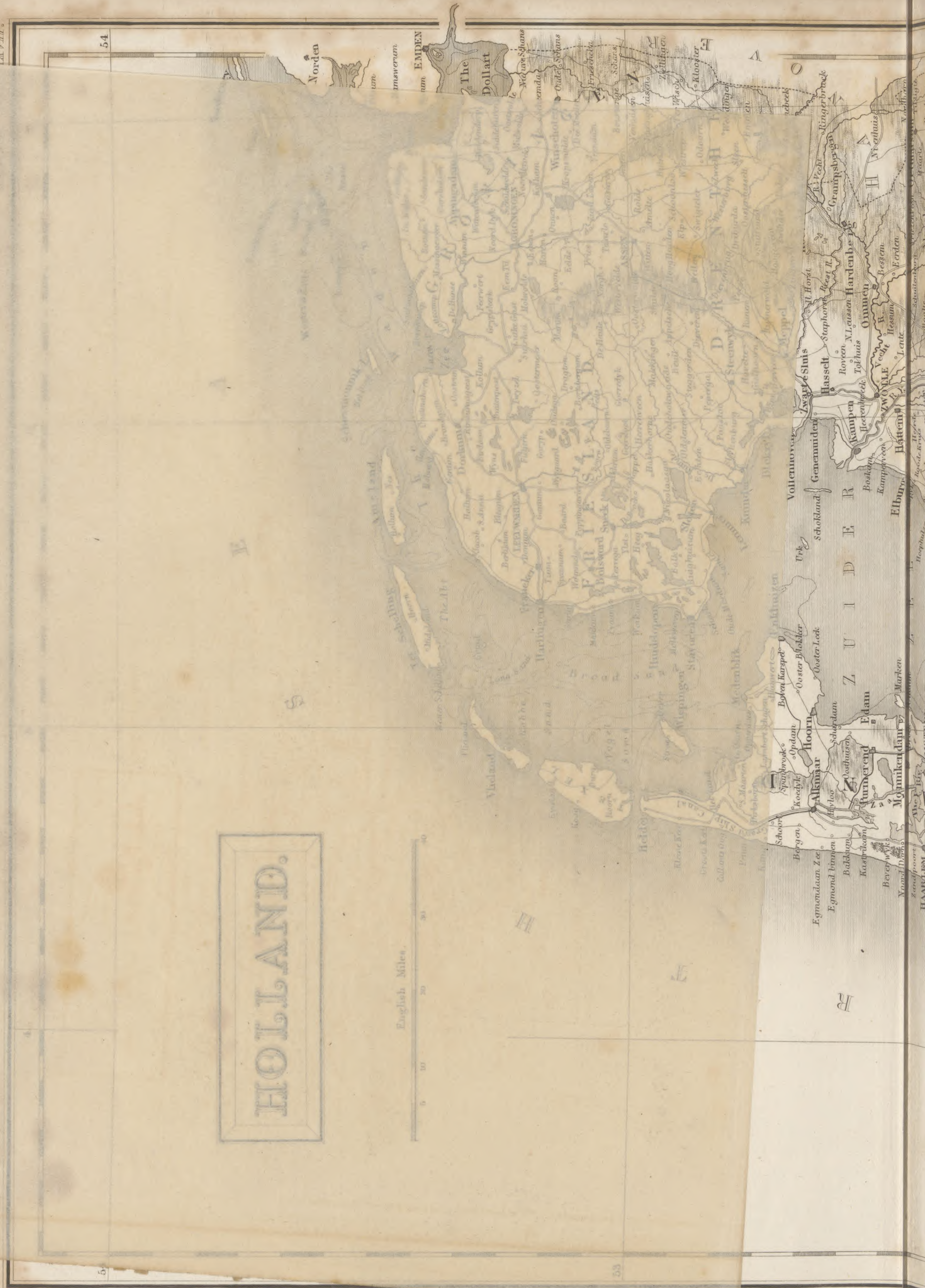


HINDUSTAN,
WITH
PART OF CAUBUL.

Engraved by S. Hall, Bury Str.t Bloomsb.y


HOLLAND.
English Miles.
5
10
20
30
40
4
5
6
7
54
53
S E A
H
T
R
Norderney
Juist
Eastern Ems
Western Ems
Ostland
Westland
Borkum
The Ransel
Rottum
Schiermonnik I.
Het Dorp
W a d e n
Ameland
Hollum
Nes
Ter Schelling
Hoorn
Midsland
Wester Schelling
The Abt
The
Vlieland
Grind
Long Sand
Robbe Sand
Broad Sand
Vogel Sand
Eyerland
Koog
Burg
Hoorn
T E X E L
Helder
Kleine Keet
Groote Keet
Callants Oog
Petun
Kamp
Bergen
Egmondaan Zee
Egmond binnen
Bakkum
Kastrikam
Beverwyk
Noord Dorp
Zandpoort
HAARLEM
Grand Ship Canal
Het Zand
S. Maarten
Dirksborn
Schoorl
Colburn
Opperdoes
Lambert Schagen
Spanbrock
Koedyk
Opdam
Alkmaar
Hoorn
Medenblik
Hauwert
Boven Karspel
Enkhuizen
Ooster Blokker
Ooster Leek
Schardam
Oosthuisen
Purmerend
Edam
Monnikendam
Marken
AMSTERDAM
Stroe
Oever
Wiepingen
Harlingen
Franeker
Donjum
Tzum
Spannam
Wommels
Surig
Makkum
Pyaam
Workum
Hindelopen
Molkweren
Stavoren
Scharl
Oude Mardum
Sondel
Lemmer
Kuinder
Blokzyl
Vollenhoven
Genemuiden
Urk
Schokland
Z U I D E R
Elburg
Hattem
Kampen
Heerenbroek
Boskam
Kamperveen
ZWOLLE
Hasselt
Zwarte Sluis
F R I E S L A N D
LEEUWARDEN
Bolsword
Sneek
Sloten
Balk
Ruighuizum
Heeg
Ylst
Parrega
Baard
Poppingawier
Gauttum
Berlikum
S. Jacob
S. Anna
Hallum
Bleegum
Holwerd
Hantum
Ternum
Dorkum
Brandgum
Oostmahorn
Oostrum
Rinsumageest
Birdaan
Kollum
Wyns
Buitenpost
Twyzel
Fickerk
Garyp
Wytgaard
Oudega
Oostermeer
Dragten
Bornbergum
Boorn
Beets
Oldeboorn
Akkrum
Geersloot
Gorredyk
Heerenveen
Haskerhorne
De Brock
Tjenappel
Nicolaasga
Oudeholtwoude
Oldelenmer
Echten
De Kuinder
Makkinger
Beuil
Appelsche
Steggerden
Peperga
Paaslo
Slykenburg
Steenwyk
Lanwer Zee
Saaksumhuisen
Hornhuisen
Lottscamp
De Hunse
Feerwert
Grypskerk
Em Til
Lutke Gast
Surhui
Molwolde
G R O N I N G E N
GRONINGEN
Winsum
Wittewierum
Appingadam
De Meden
Rottum
Godlinse
Sandeweer
Messingeweer
Garshuisen
Berum
Noord Dyk
Schildwolde
Woldendorp
Siddeburen
Oostwolde
Midwolde
Noordbrock
Kolham
Scheemda
Nieuwe Schans
Winschoten
Oude Schans
Kropsmolde
Dee Meeden
Veendam
Essen
Haren
Onnen
Eelde
Roon
Marum
Norgh
Fries
Zuid Laren
Taarlo
Gasselte
De Haule
Westervelde
ASSEN
Oosterwolde
Smilde
Witten
Amelte
Rolde
Hoog Haalen
Schoonloo
Elp
Beilen
Swigteler
Dieveren
Westrup
Odoorn
D R E N T H E
Dievenbrug
Westerborg
Zweel
Driburda
Sleen
Oosterhesselt
Emmen
Weerdinge
Ruinen
Havelte
Giethoorn
Wanneperveen
Meppel
Ruinerwold
Staphorst
Stuirzand
Hoogeween
Zwinder
Dalen
Zuidwolde
Il Horst
Koeverden
Schoonebeek
Reest R.
Vecht R.
Grampsbergen
Ringerbruck
Hardenberg
Ommen
Roveen
Tolhuis
N. Leussen
Vecht R.
Hessum
Bessem
Eerden
Lente
Neuenhuis
Nordhorn
H A N O V E R
Buinen
Bourtange
Schans
Fiesischeb
Vendausen
Tipsinghausen
Zellingen
Ter Wisch
Kloster
The Dollart
EMDEN
Rysum
Hamswerum
Pilsum
Norden
Almelo
Vaalteen
Haarle
Raalte
Schulenburg
Heerde
Voorsten
Roode Kruis
Nunspeet
Hoephuizen

Engraved by S. Hall, Bury Str.t Bloomsb.y


XVIII.
HOLLAND.
English Miles
0 5 10 20 30 40
54
53
5
4
EMDEN
The Dollart
Norden
GRONINGEN
LEEUWARDEN
FRIESLAND
DRENTHE
ASSEN
Harlingen
Franeker
Sneek
Bolsward
Sloten
Stavoren
Lemmer
Kuinder
Blokzyl
Steenwyk
Meppel
Zwarte Sluis
Hasselt
Genemuiden
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ZWOLLE
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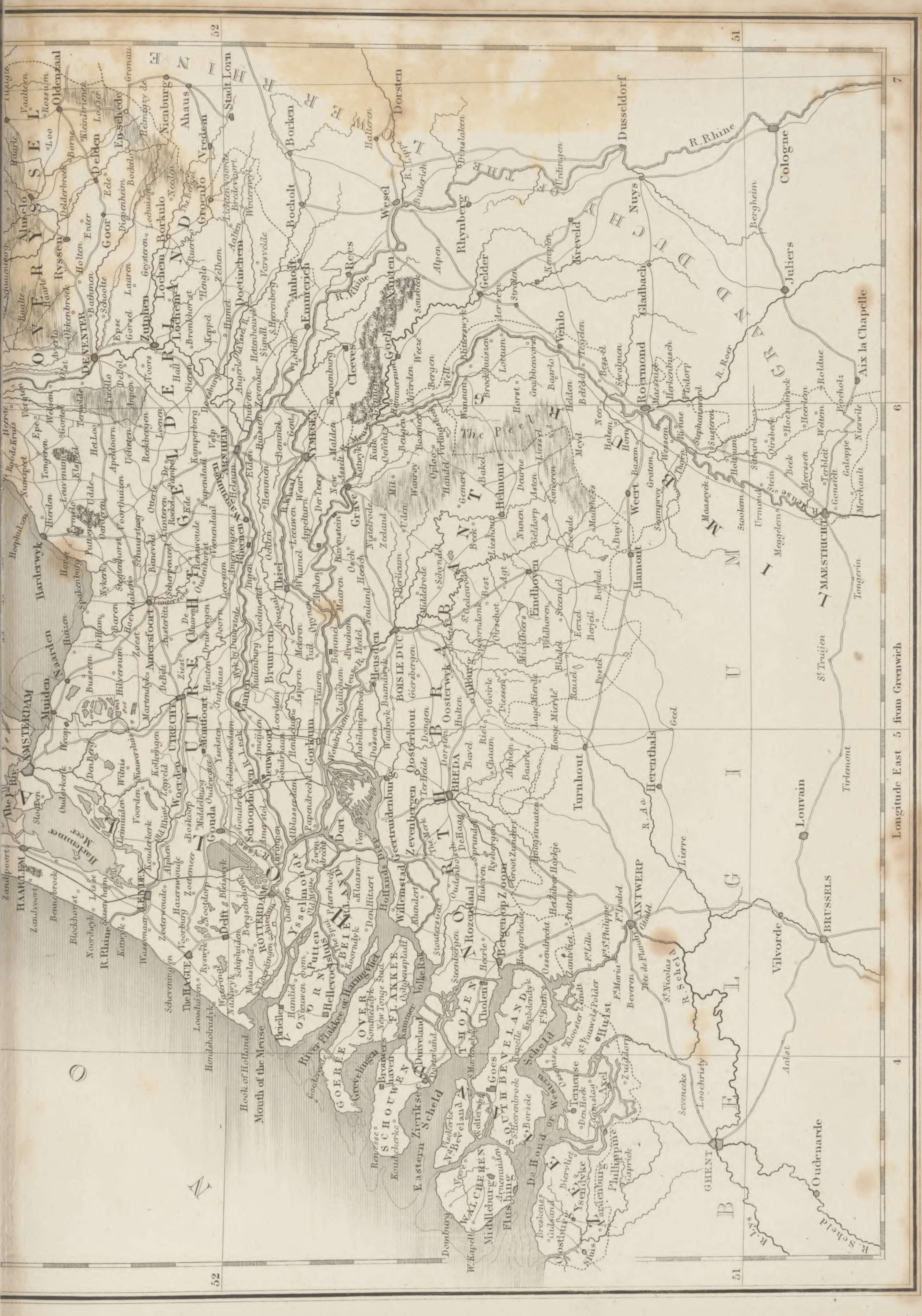
Hardenberg
Gramsberg
Urk
Schokland
Enkhuizen
Hoorn
Medenblik
Alkmaar
Purmerend
Edam
Monnikendam
Marken
Schagen
Wieringen
Texel
Vlieland
Ter Schelling
Ameland
Schiermonnikoog
ZUIDER ZEE
NORTH SEA
Egmond aan Zee
Bergen
Beverwyk
HAARLEM
AMSTERDAM
Helder
Great Ship Canal



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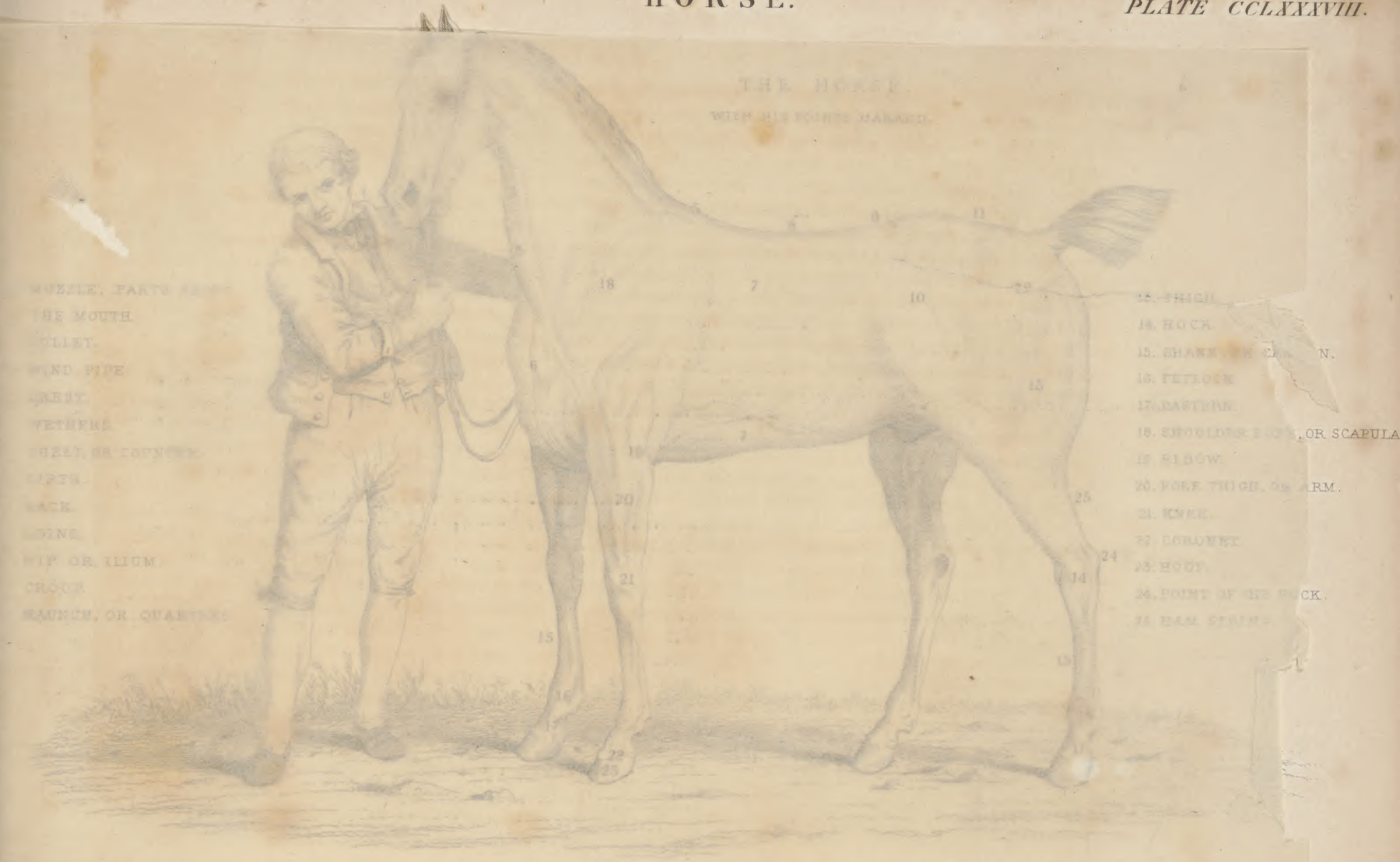
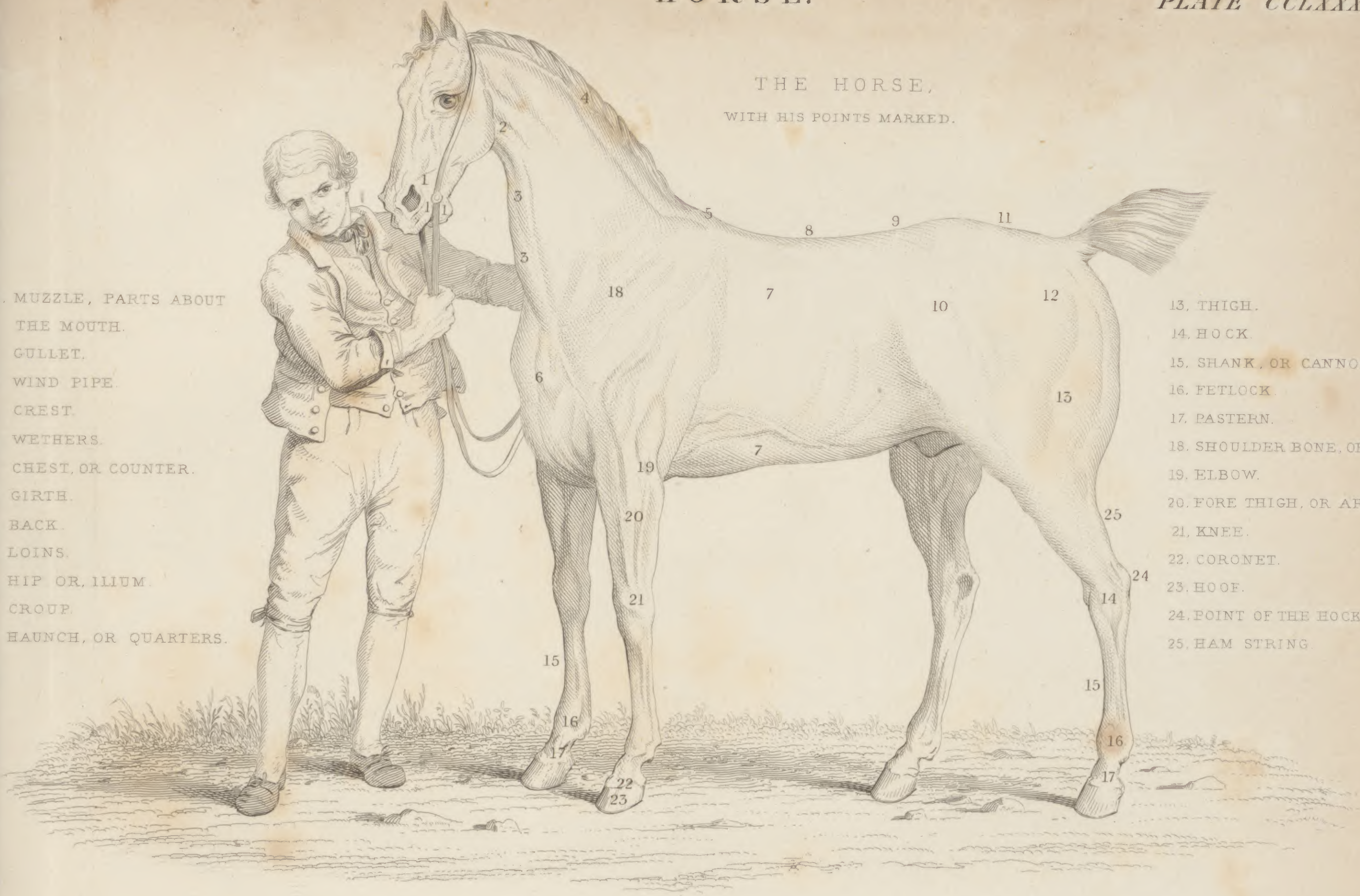


"PLENIPOTENTIARY." FROM A PAINTING BY A. COOPER, R.A.

HORSE.

THE HORSE,

WITH HIS POINTS MARKED.



1.1. MUZZLE, PARTS ABOUT THE MOUTH.
GULLET.
3. WIND PIPE.
CREST.
WETHERS.
CHEST, OR COUNTER.
7. GIRTH.
BACK.
LOINS.
HIP OR, ILIUM.
CROUP.
HAUNCH, OR QUARTERS.

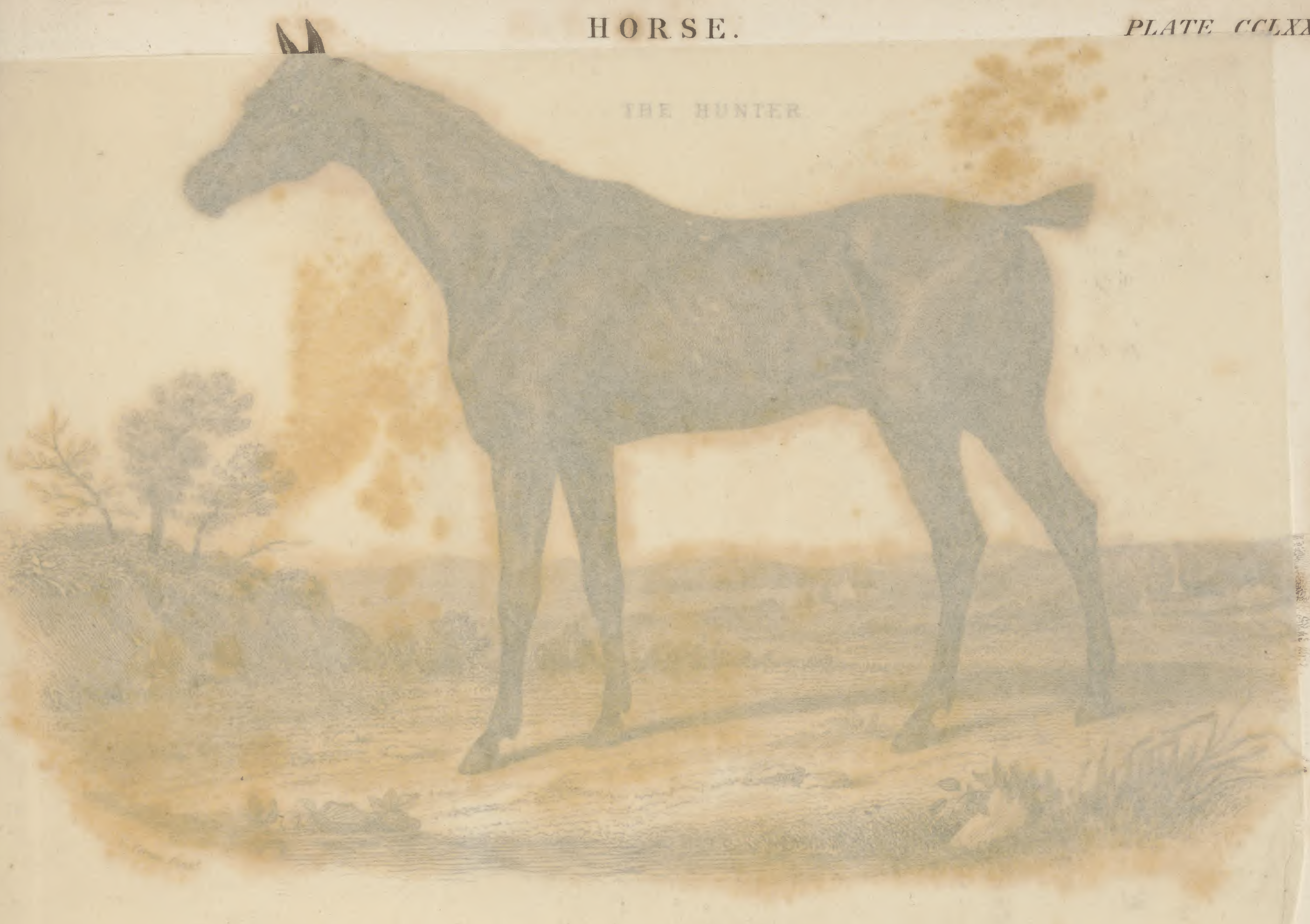
13. THIGH.
14. HOCK.
15. SHANK, OR CANNON.
16. FETLOCK.
17. PASTERN.
18. SHOULDER BONE, OR SCAPULA.
19. ELBOW.
20. FORE THIGH, OR ARM.
21. KNEE.
22. CORONET.
23. HOOF.
24. POINT OF THE HOCK.
25. HAM STRING.

THE RACER.

Eng^d by G. Aikman.

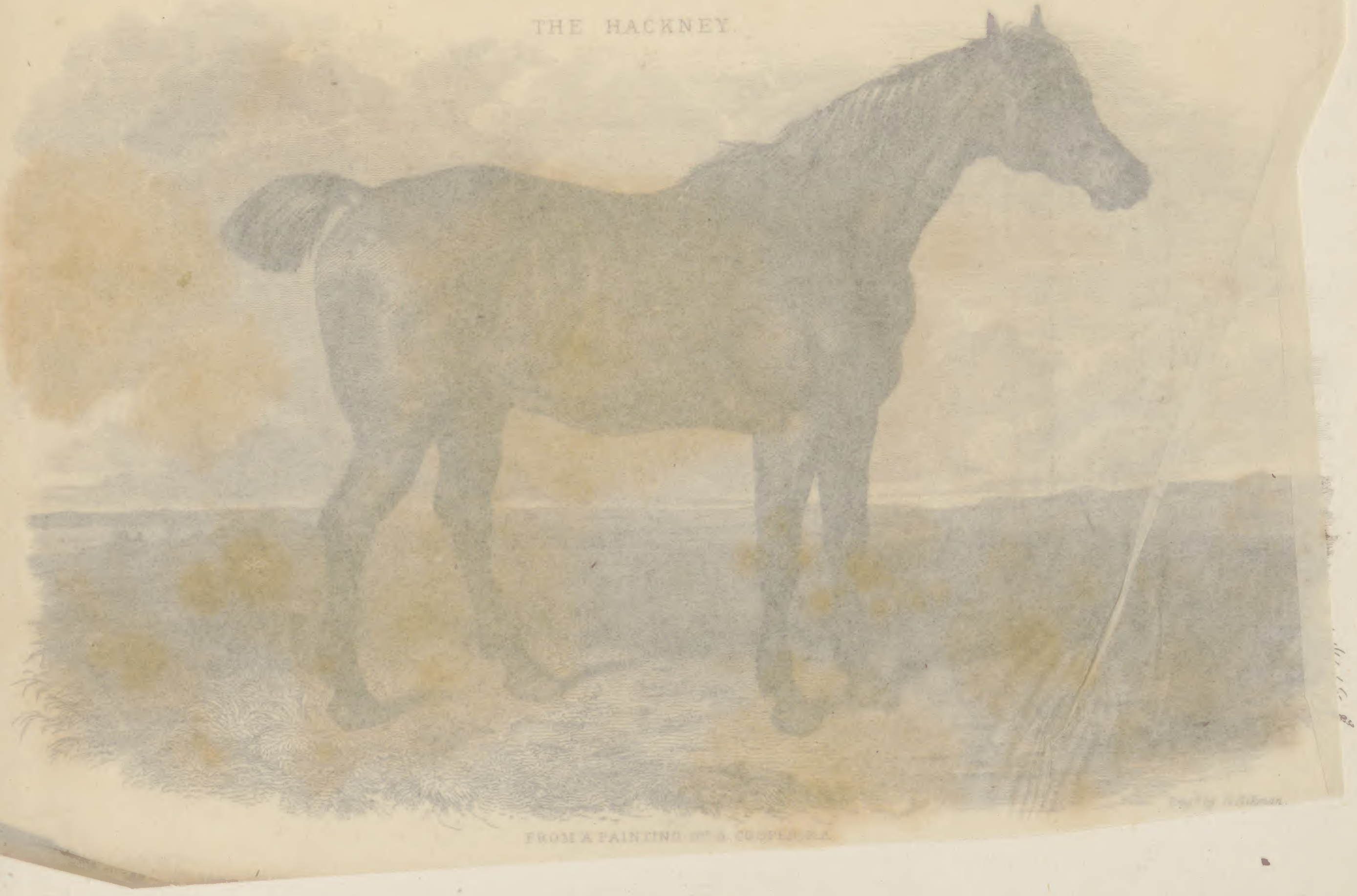
"PLENIPOTENTIARY." FROM A PAINTING BY A. COOPER, R.A.

THE HUNTER



Cooper Pinxt

THE HACKNEY



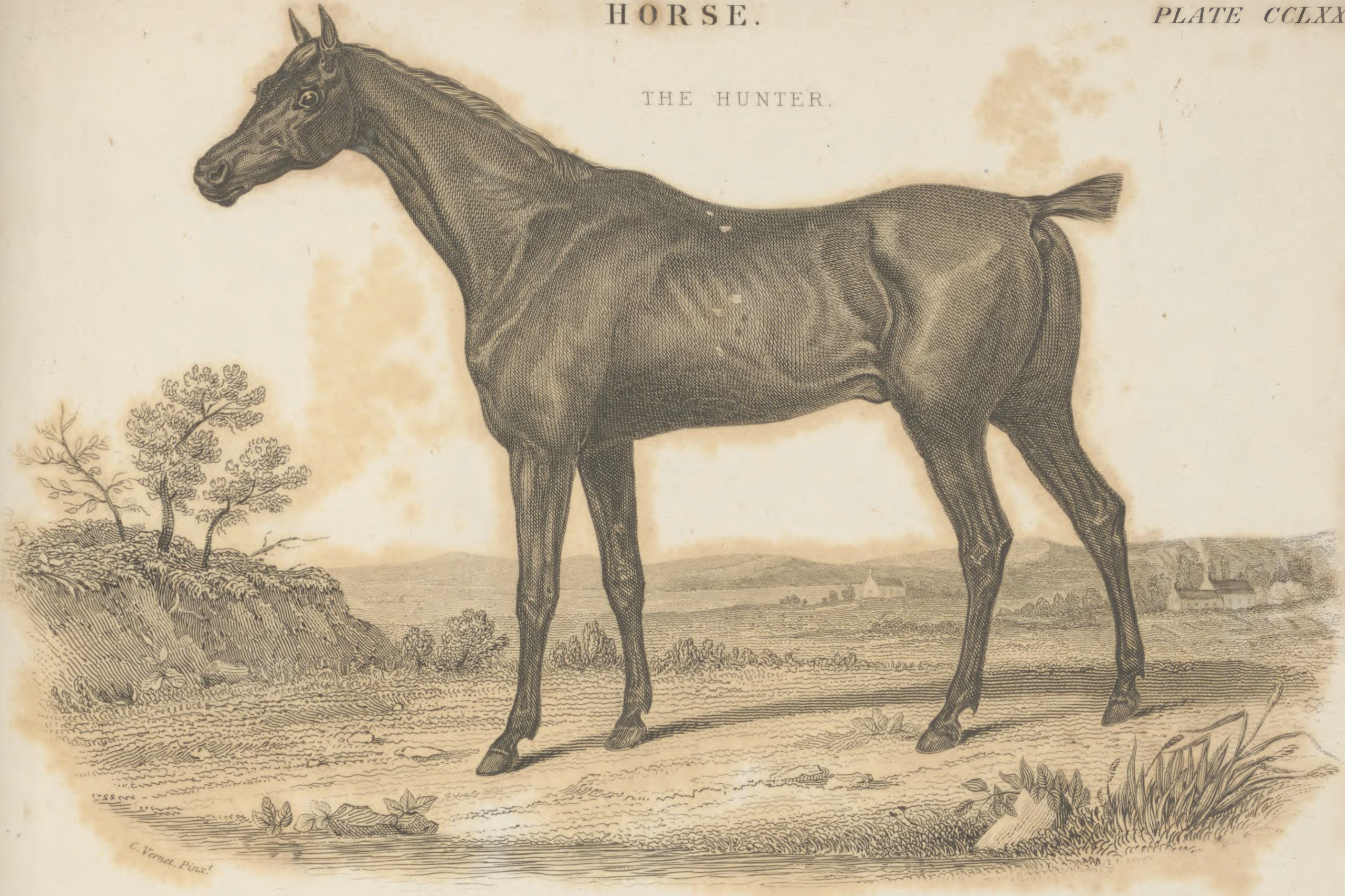
Eng'd by [illegible]

FROM A PAINTING BY A. COOPER R.A.

HORSE.

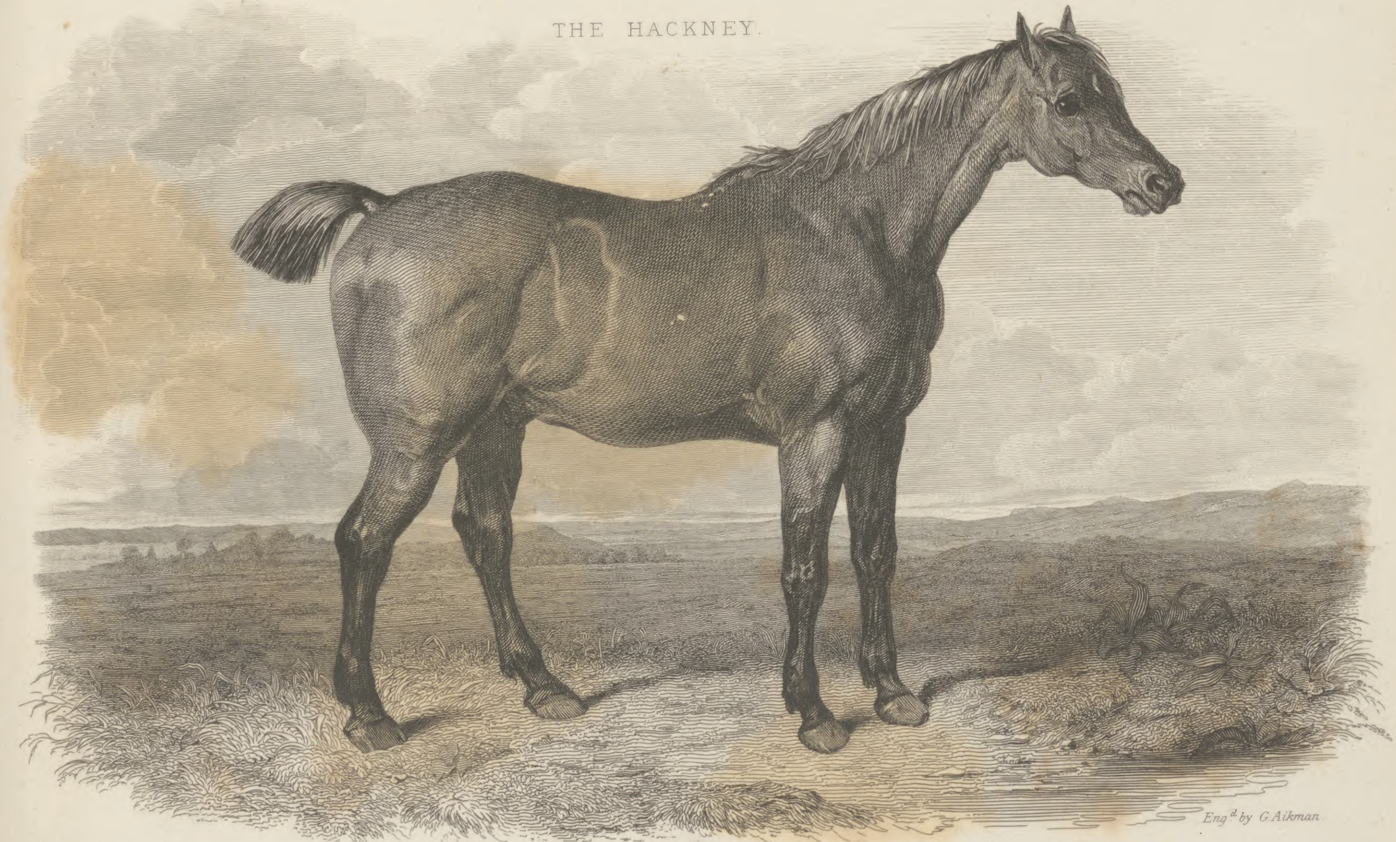
PLATE CCLXXXIX.

THE HUNTER.



C. Vernet. Pinx^t.

THE HACKNEY.



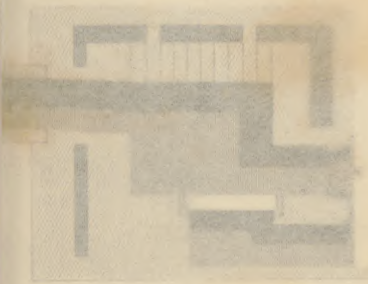
Eng^d by G. Aikman

FROM A PAINTING BY A. COOPER, R.A.

HORTICULTURE.

PLATE CCXC.

Fig. 1.



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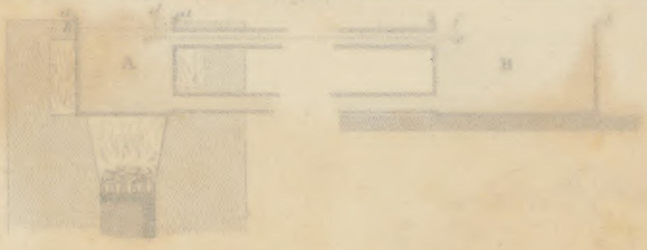

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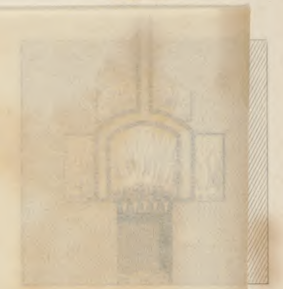

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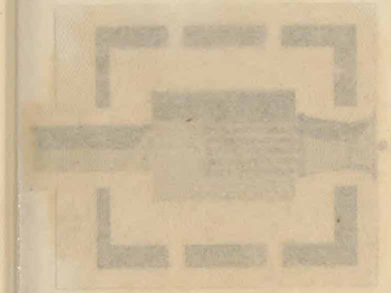

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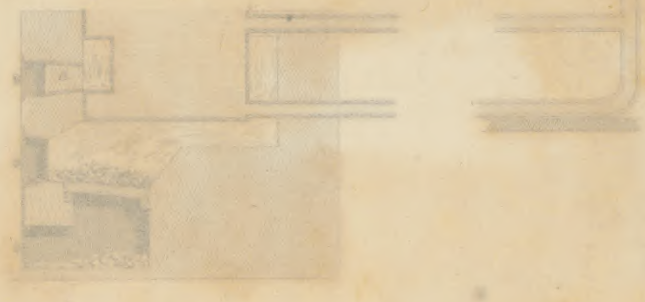

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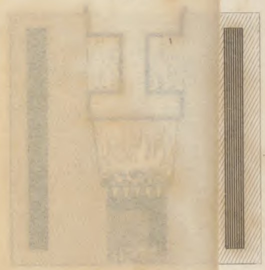

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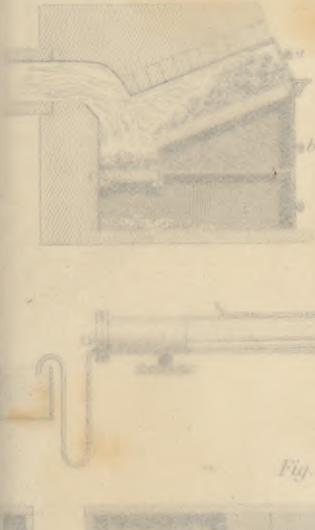

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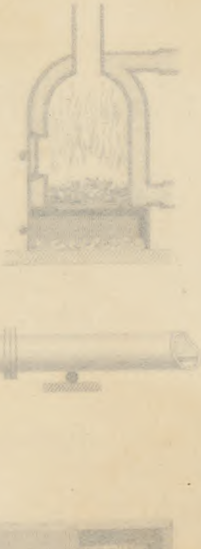

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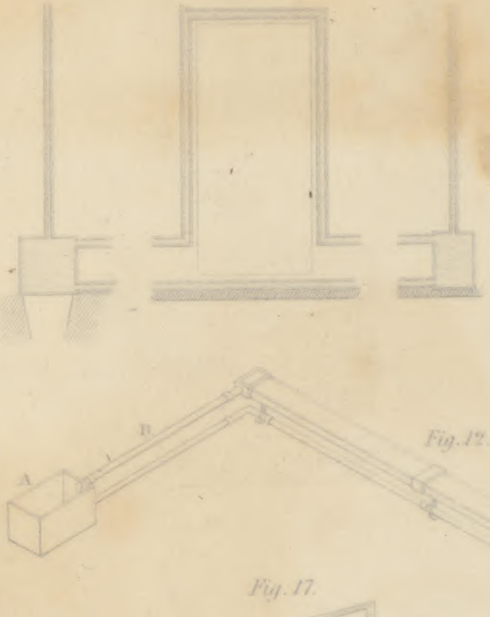

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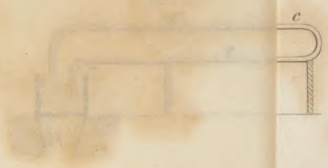

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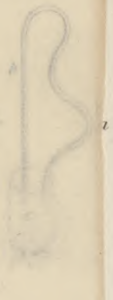

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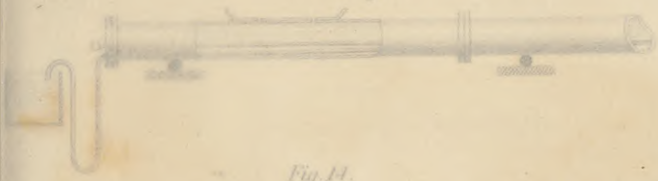

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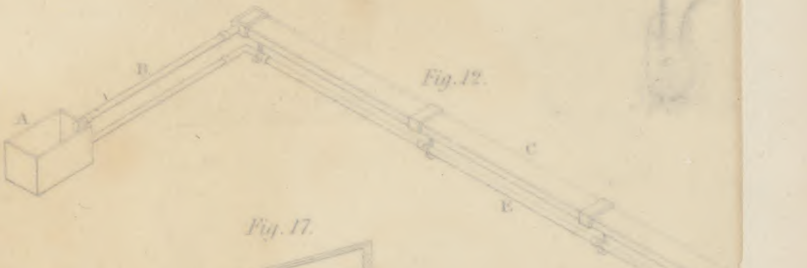

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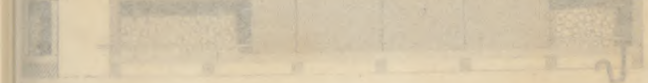

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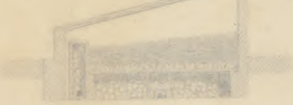

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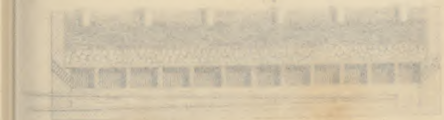

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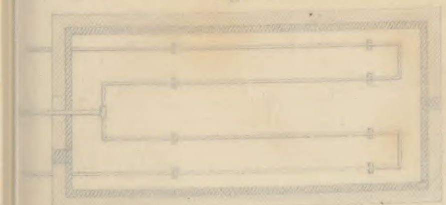

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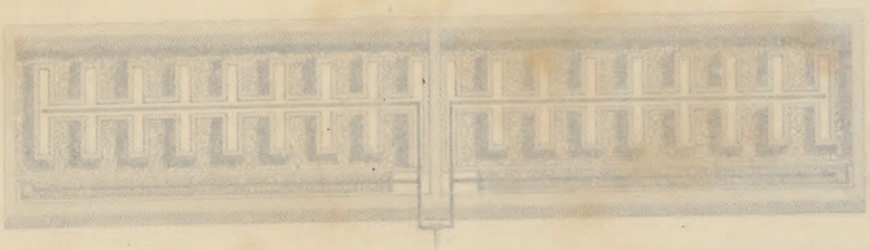

W. J. Smith, Pinxit, Edin.

Engd by G. Aikman, Edinr.

HORTICULTURE.

PLATE CCXC.

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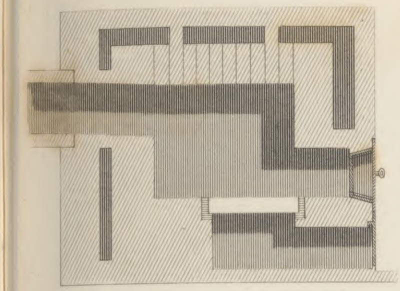

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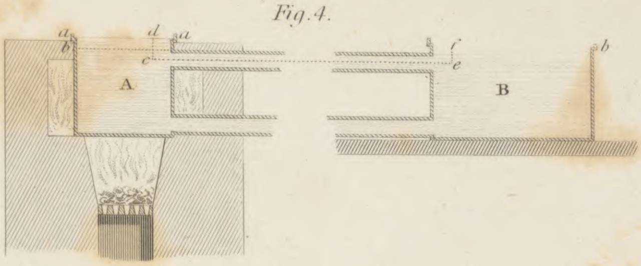

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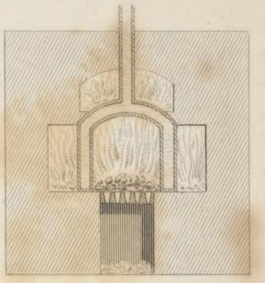

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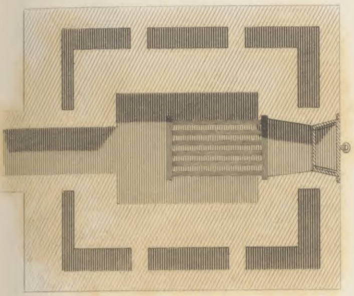

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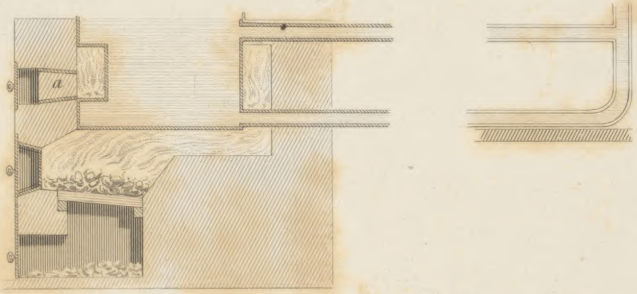

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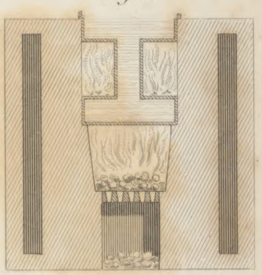

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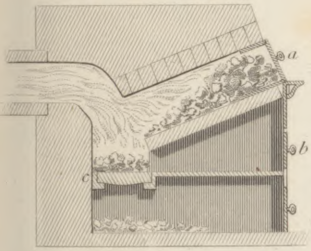

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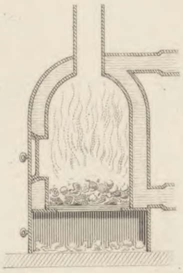

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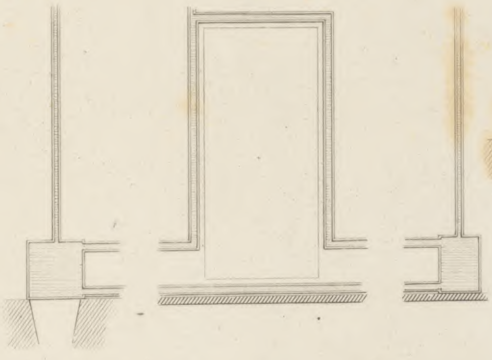

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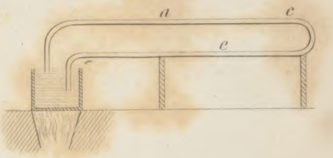

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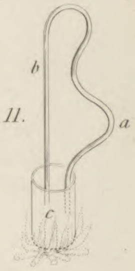

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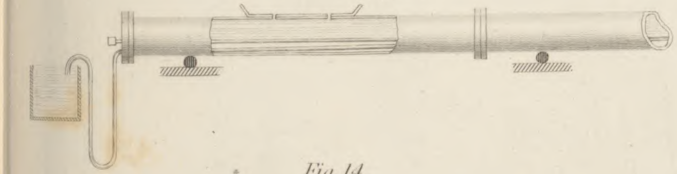

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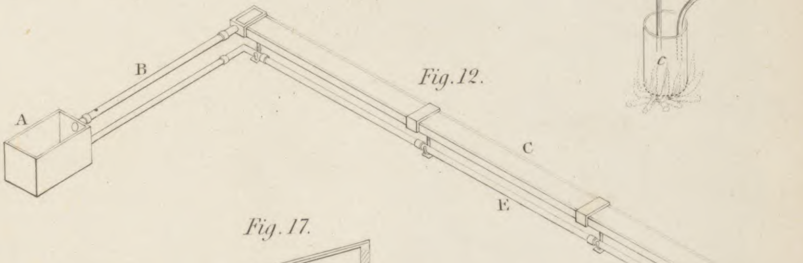

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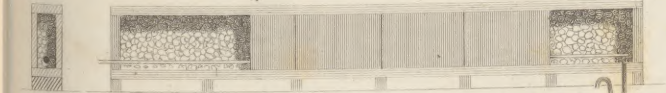

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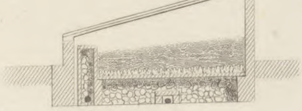

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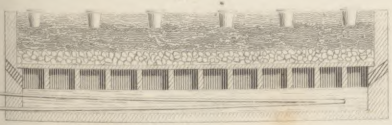

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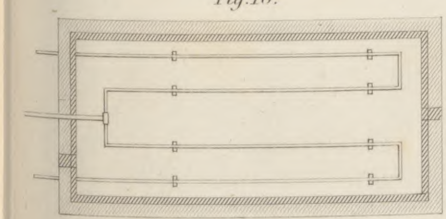

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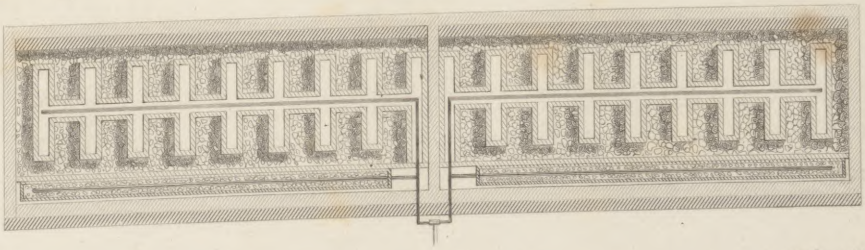
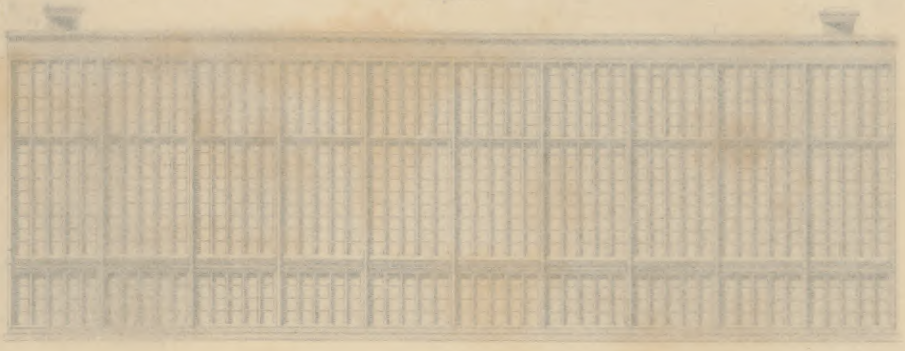


C.H.J. Smith, Planner, Delᵗ.

Engᵈ by G. Aikman, Edinʳ.

Fig. 2.



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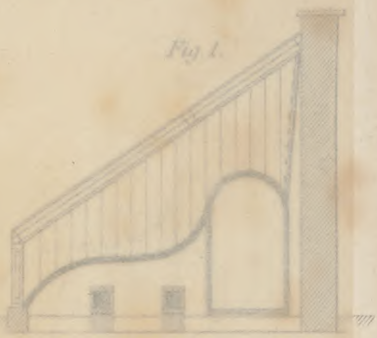

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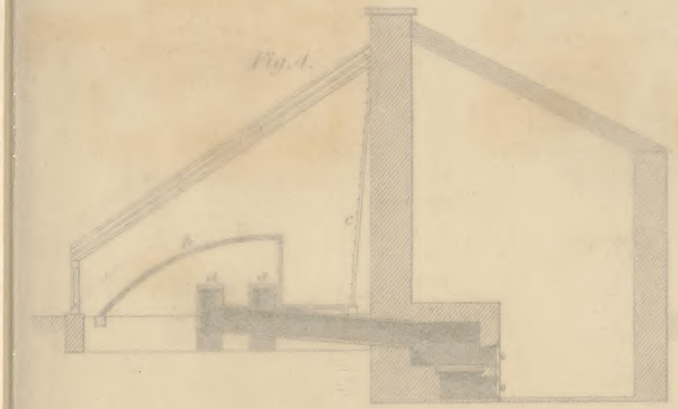

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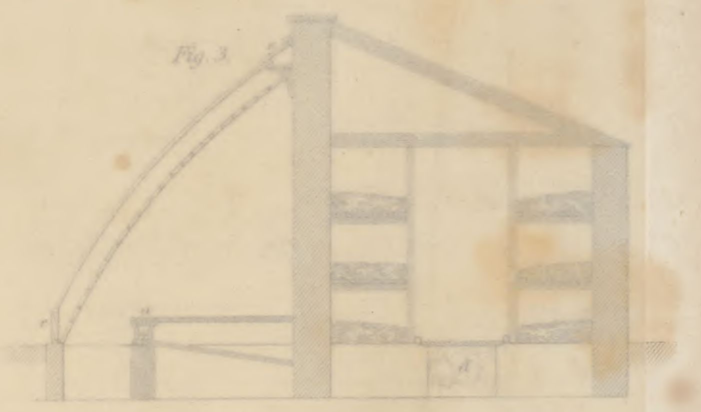

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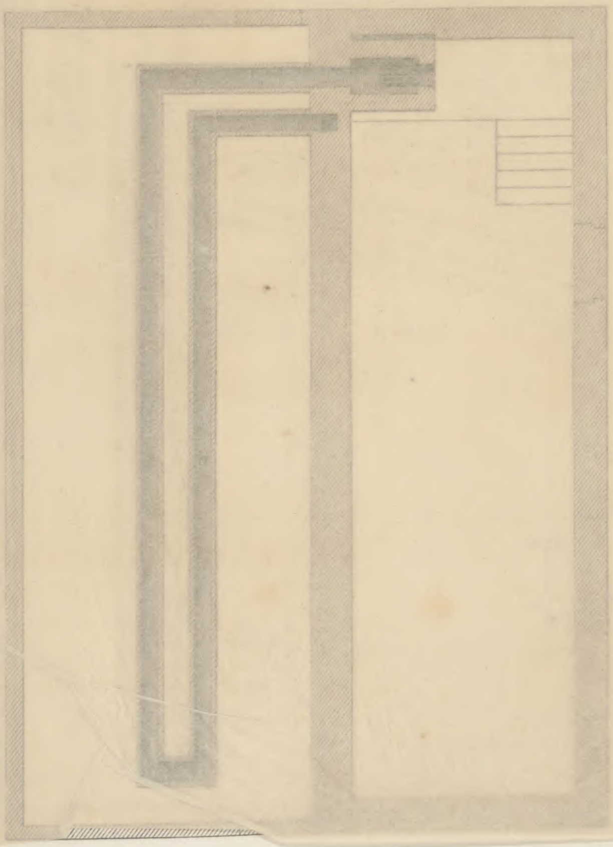

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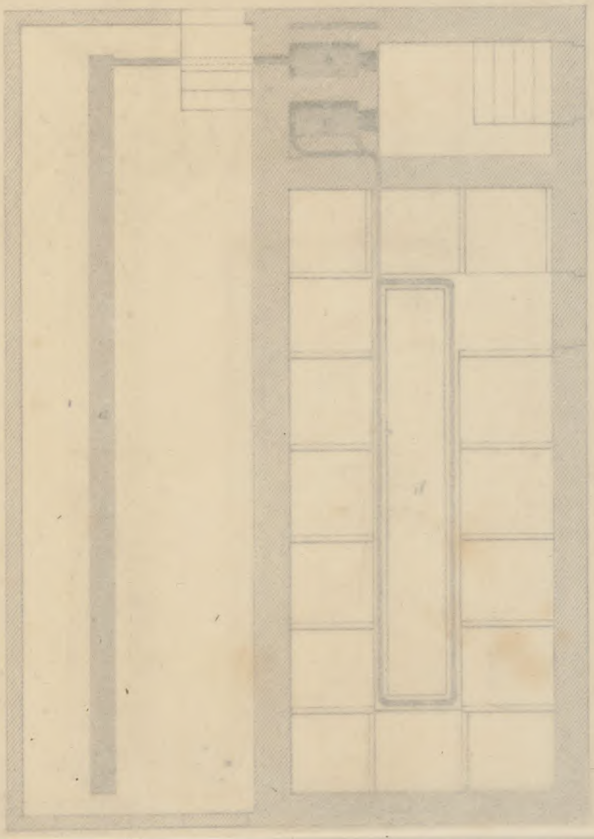
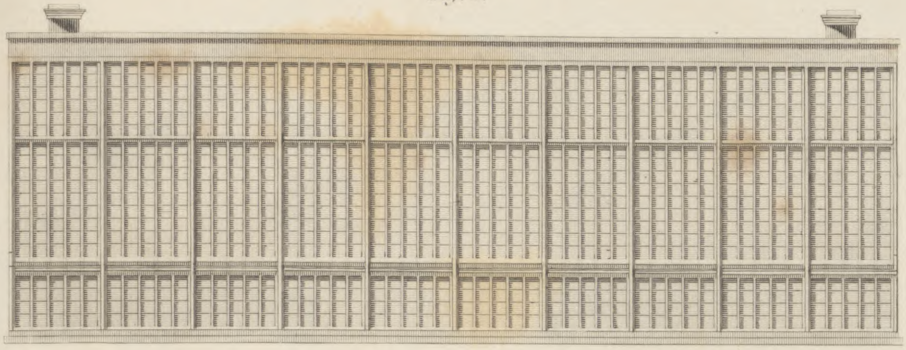


Scale

10 5 0 10 20 30 Feet

C.H.J. Smith, Planner, Delt. Engd. by G. Aikman, Edinr.

Fig. 2.



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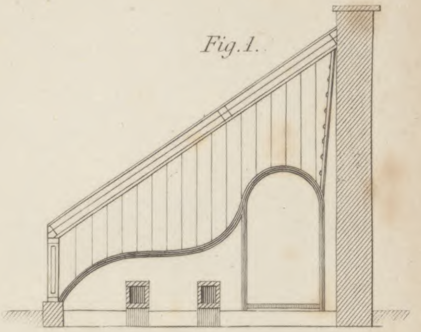

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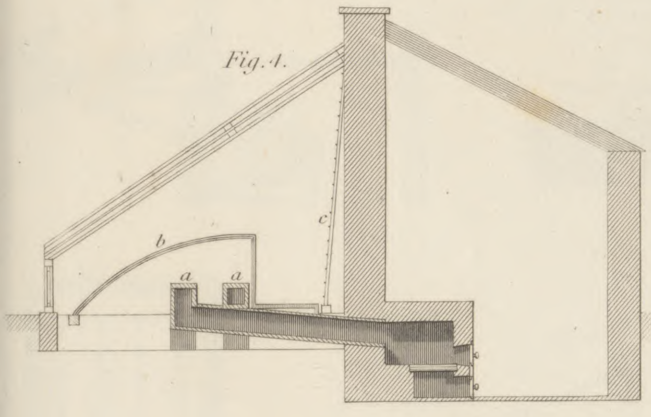

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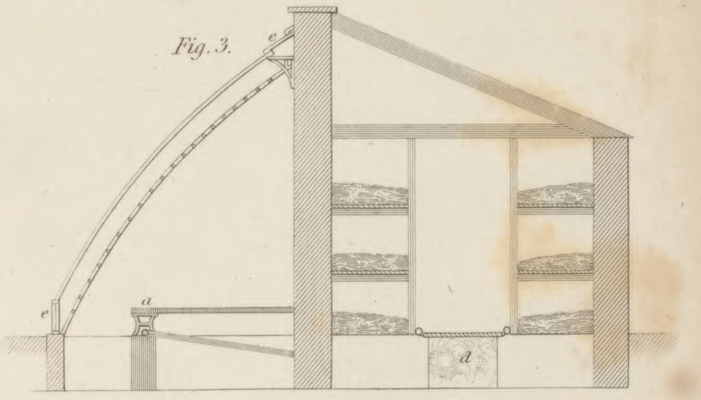

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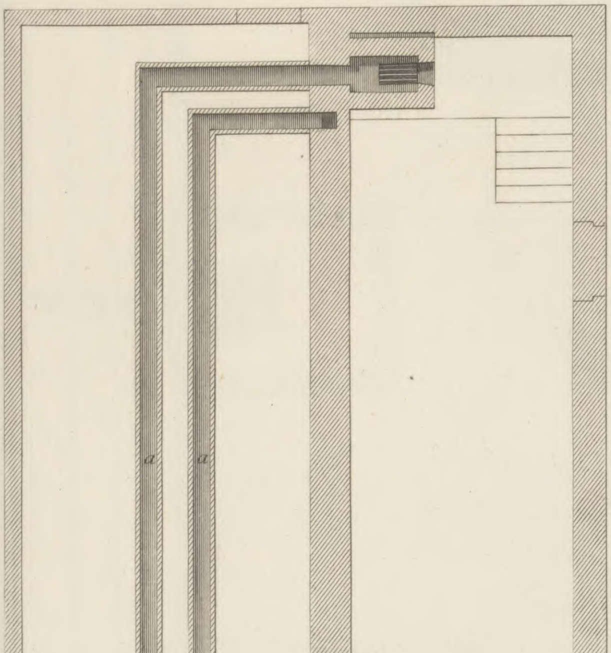

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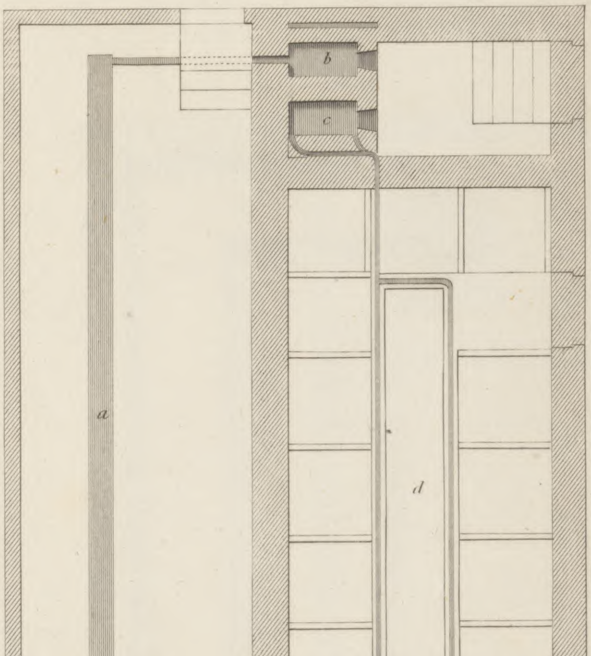

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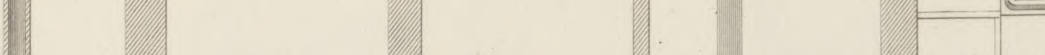
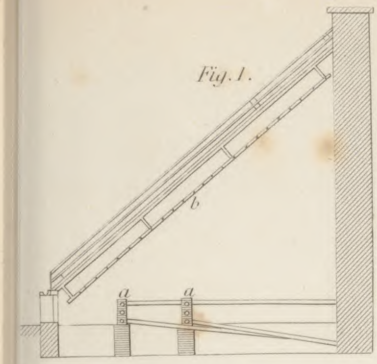


C. H. J. Smith, Planner, Del^t

Eng^d by G. Aikman, Edin^r

Fig. 1.



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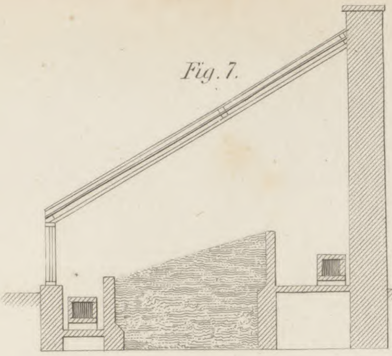

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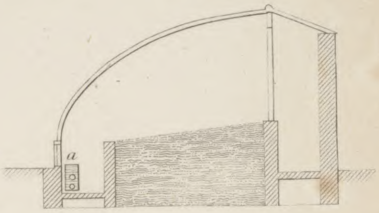

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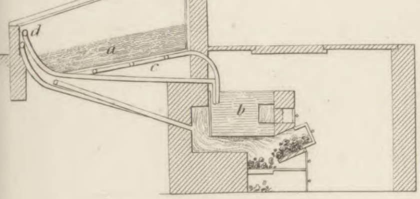

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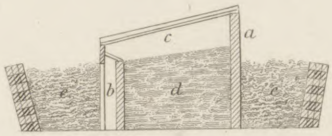

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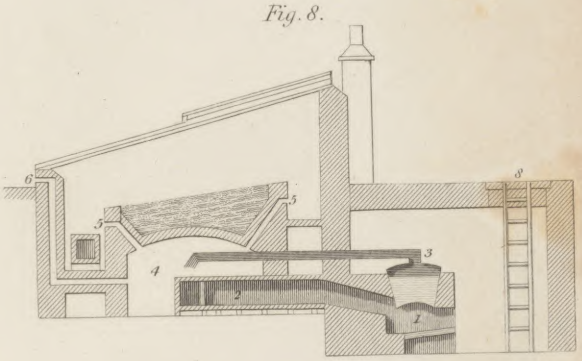

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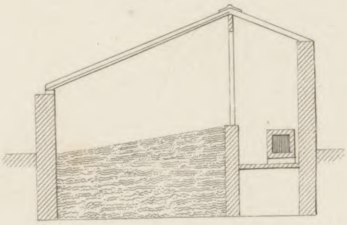

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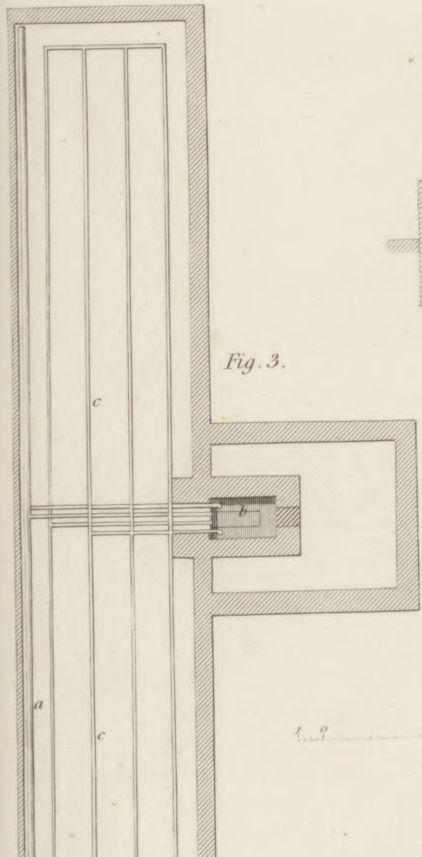

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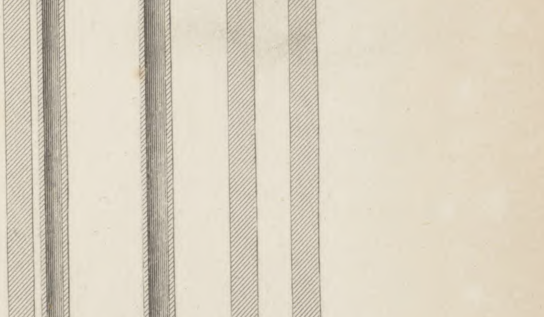

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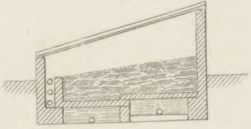

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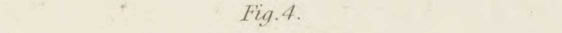

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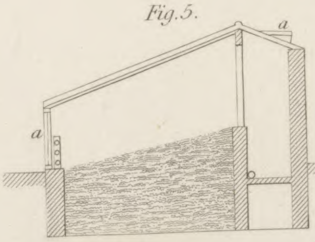

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H.J. Smith, Planner, Del.t

HORTICULTURE.

PLATE CCXCIII.

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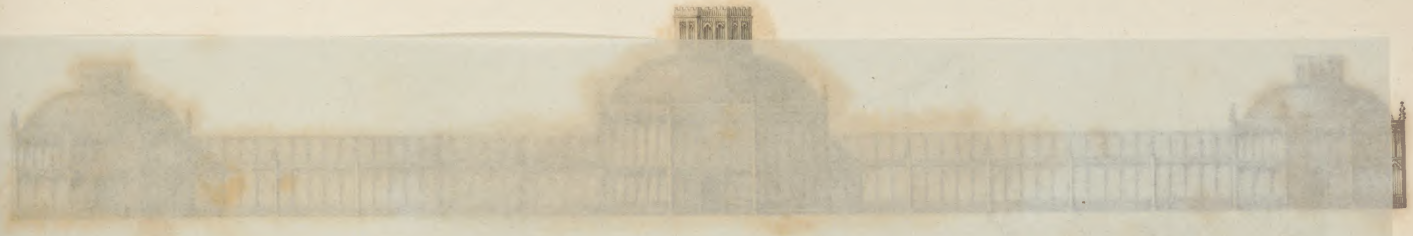

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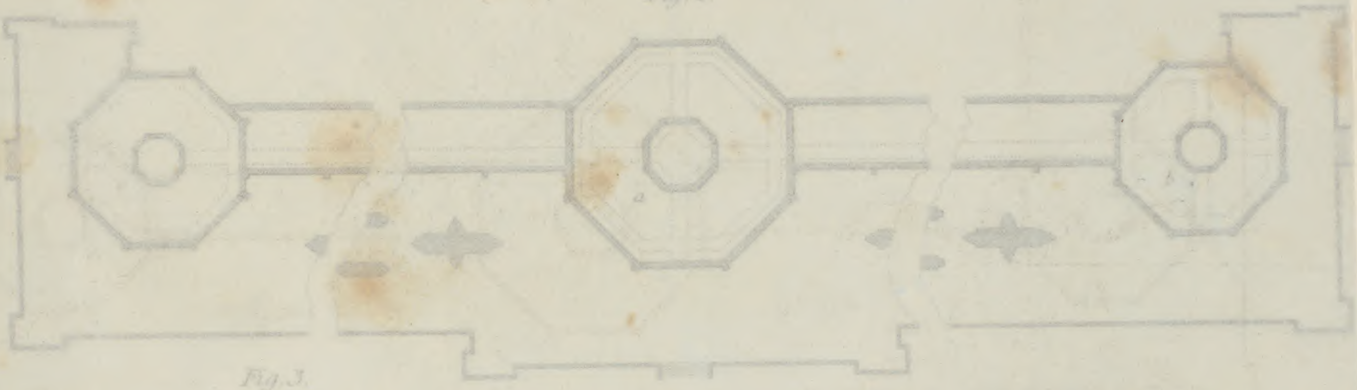

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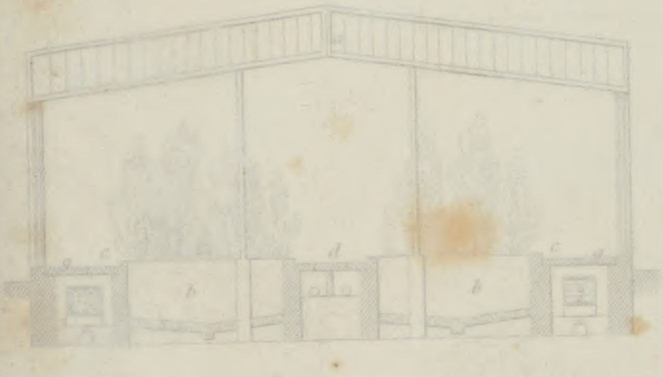

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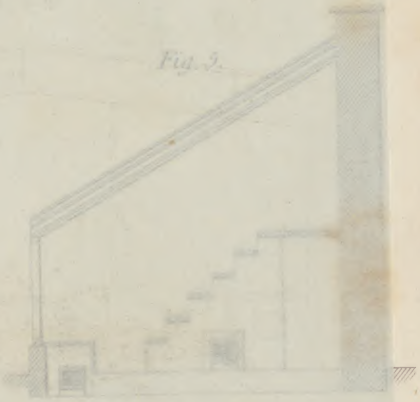

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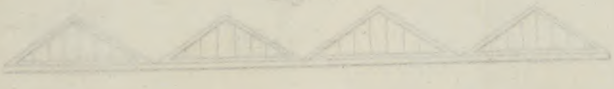

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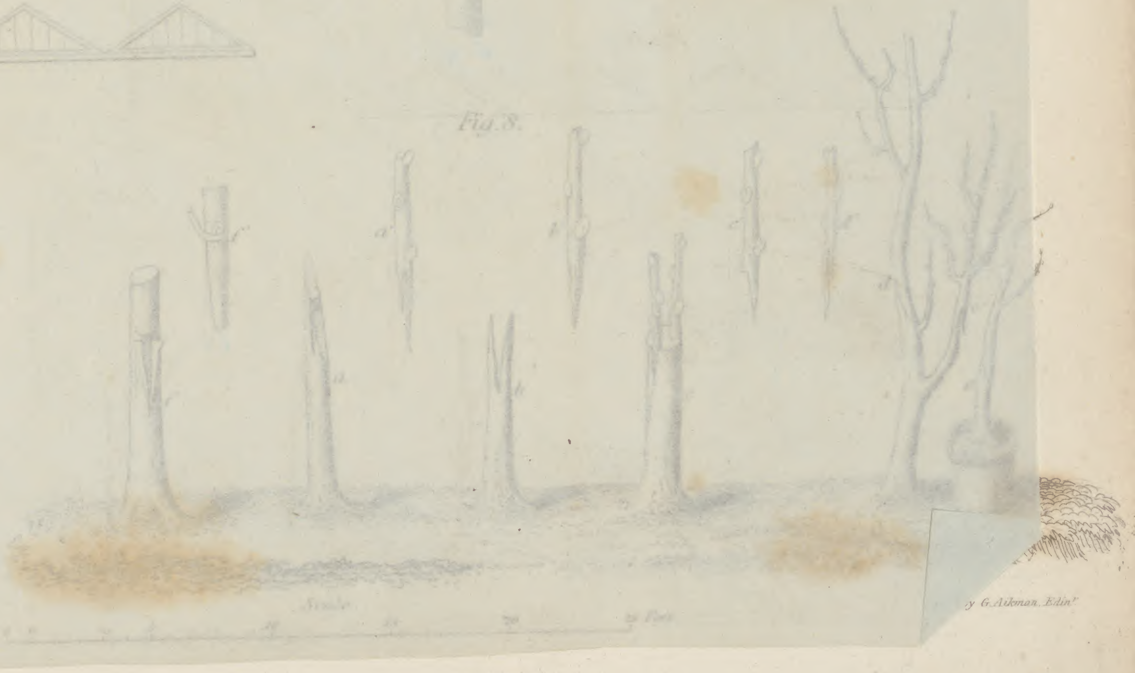

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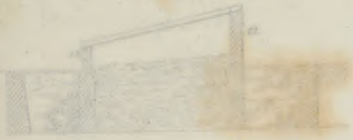

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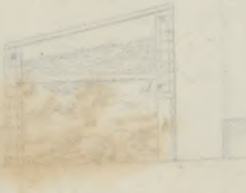

Scale

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y G. Aikman, Edinr.

HORTICULTURE. **PLATE CCXCIII.**

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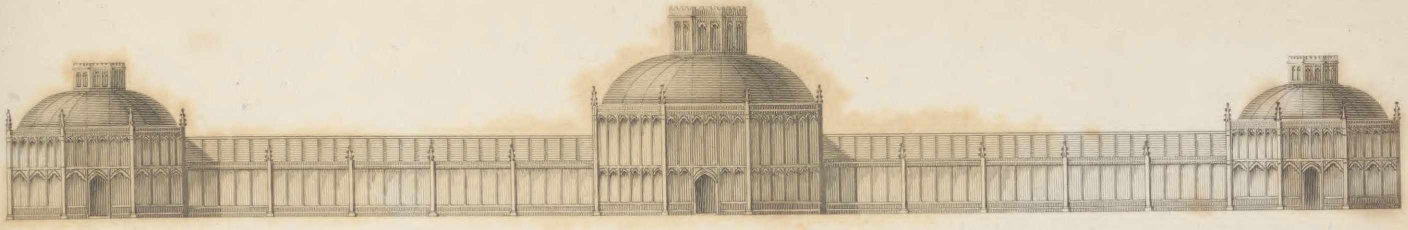

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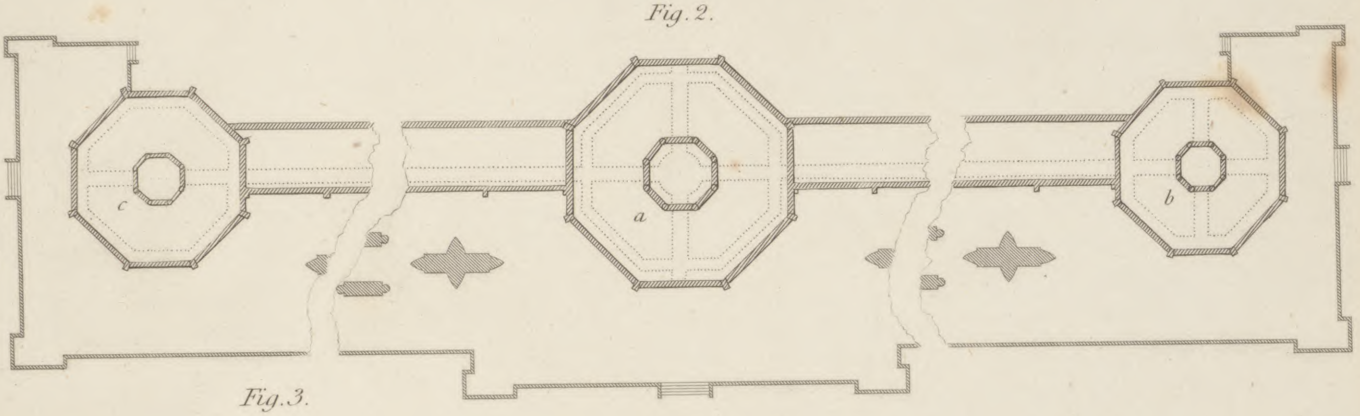

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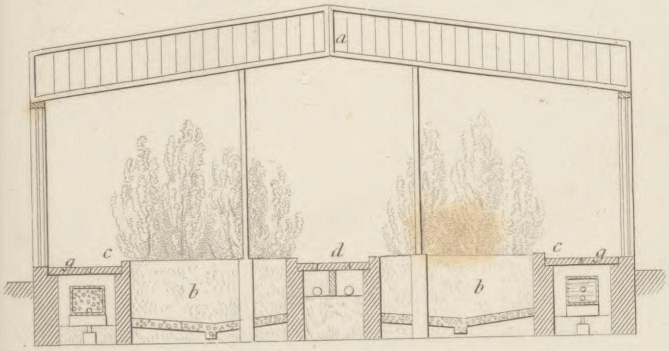

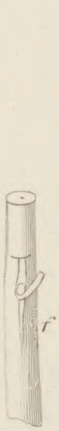

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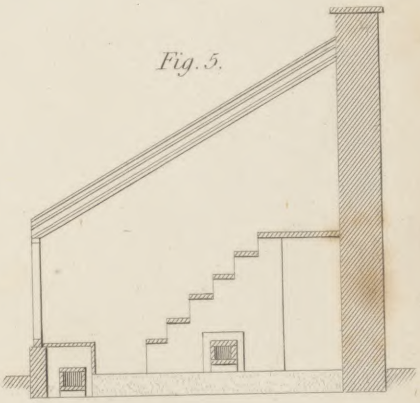

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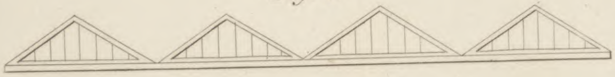

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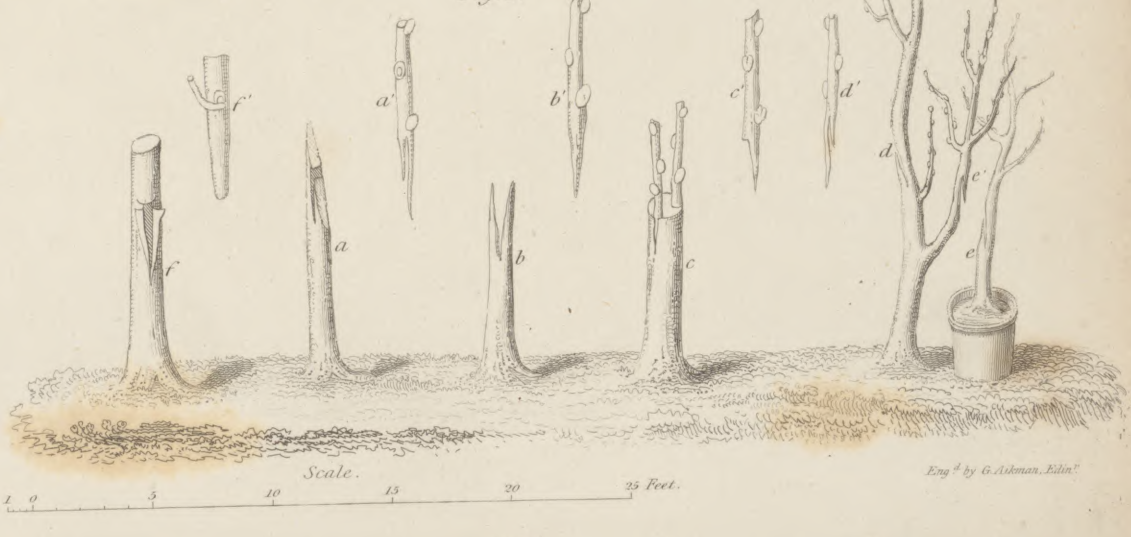

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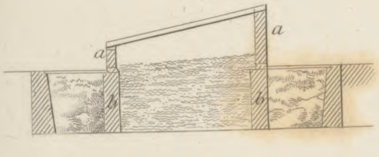

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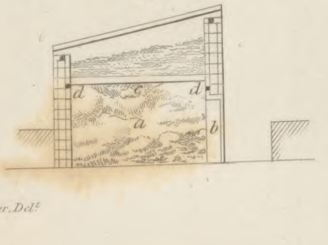

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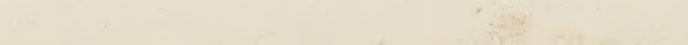

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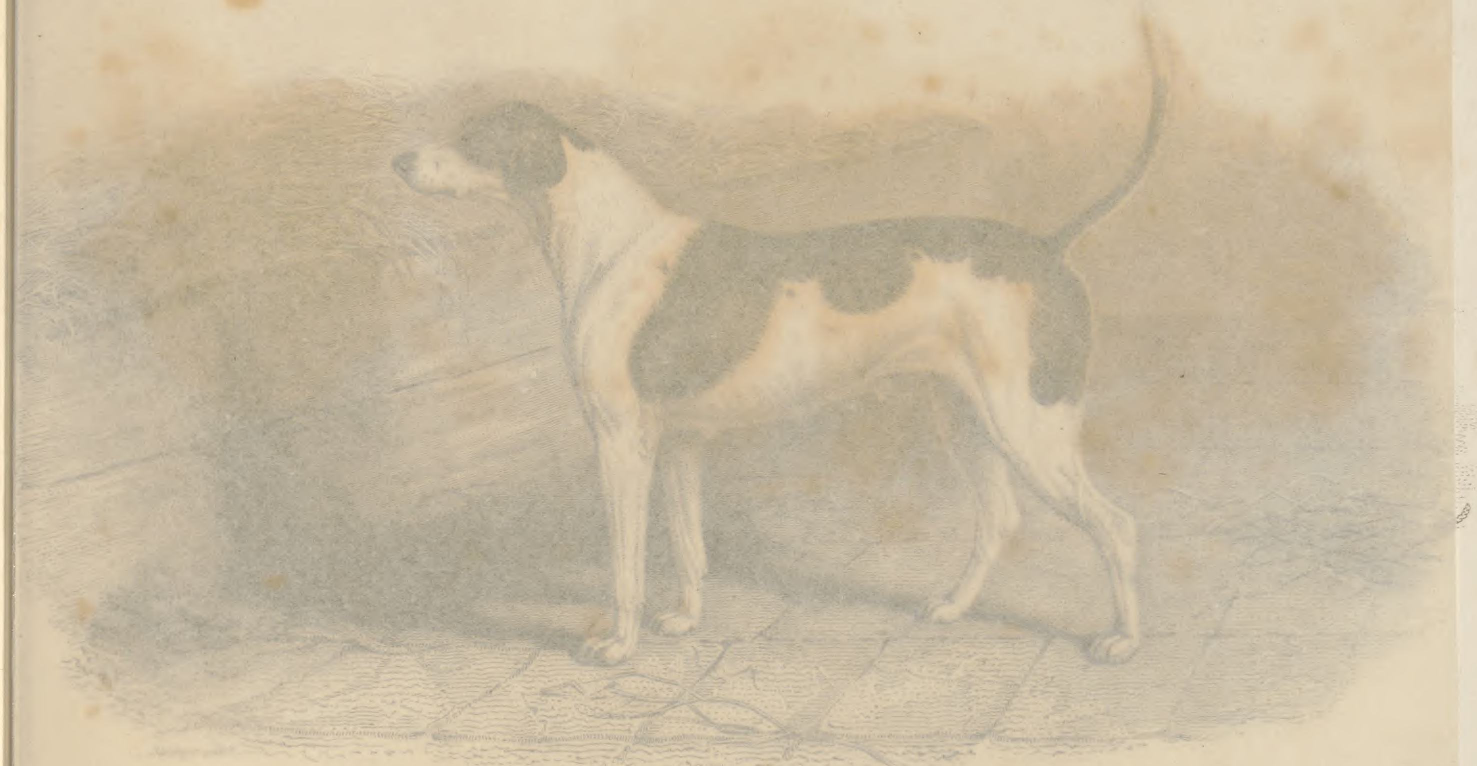
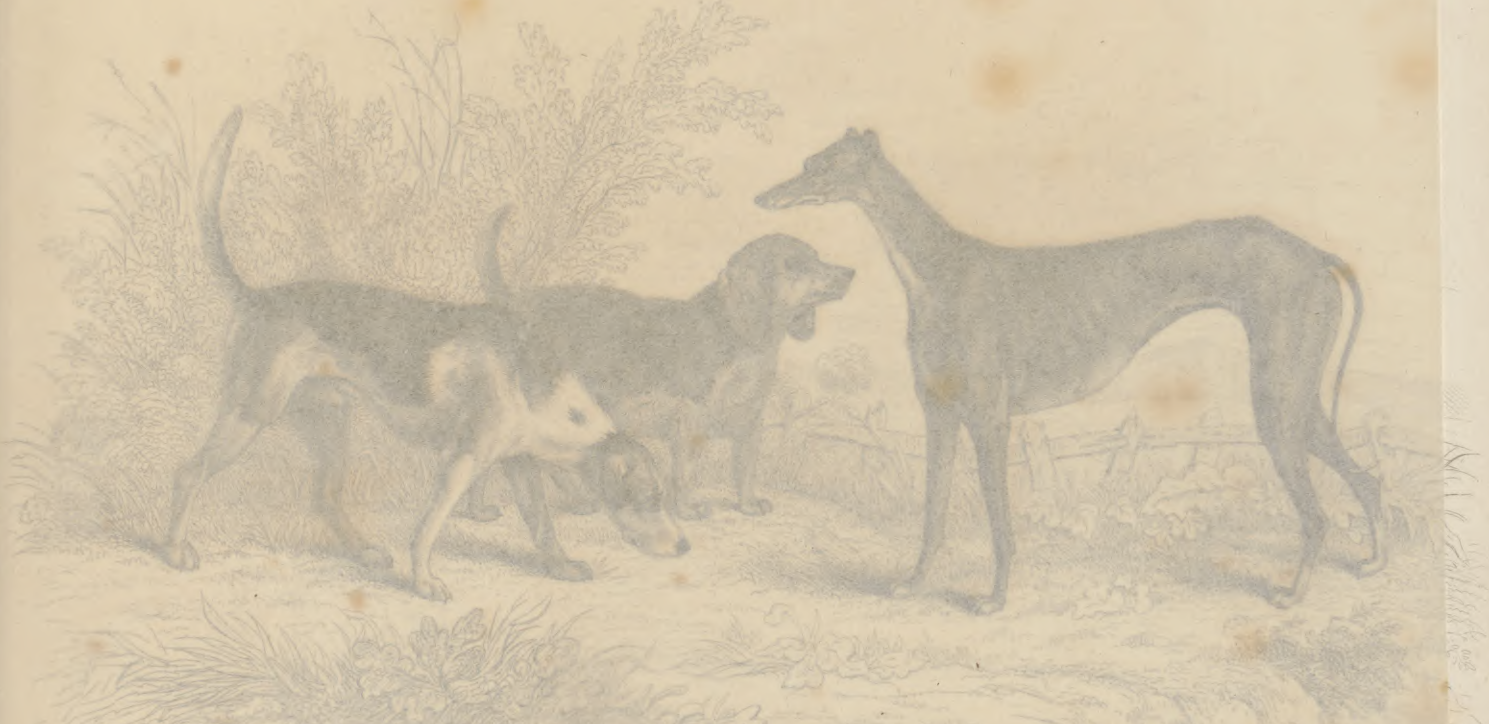


FOXHOUND.

"Nosegay," the property of The Earl of Kintore.



HARRIER. BEAGLE. GREYHOUND.

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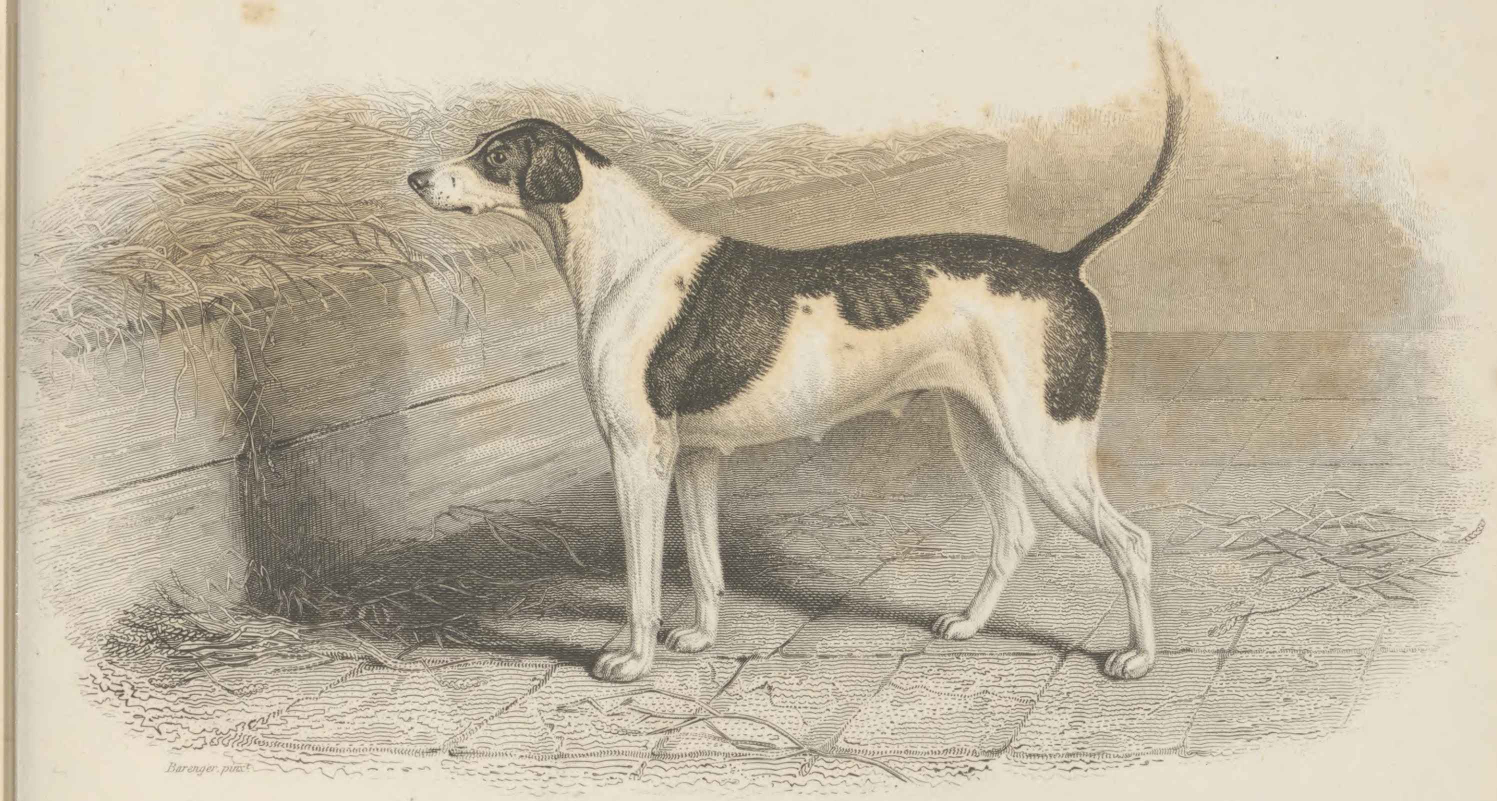
HOUND.



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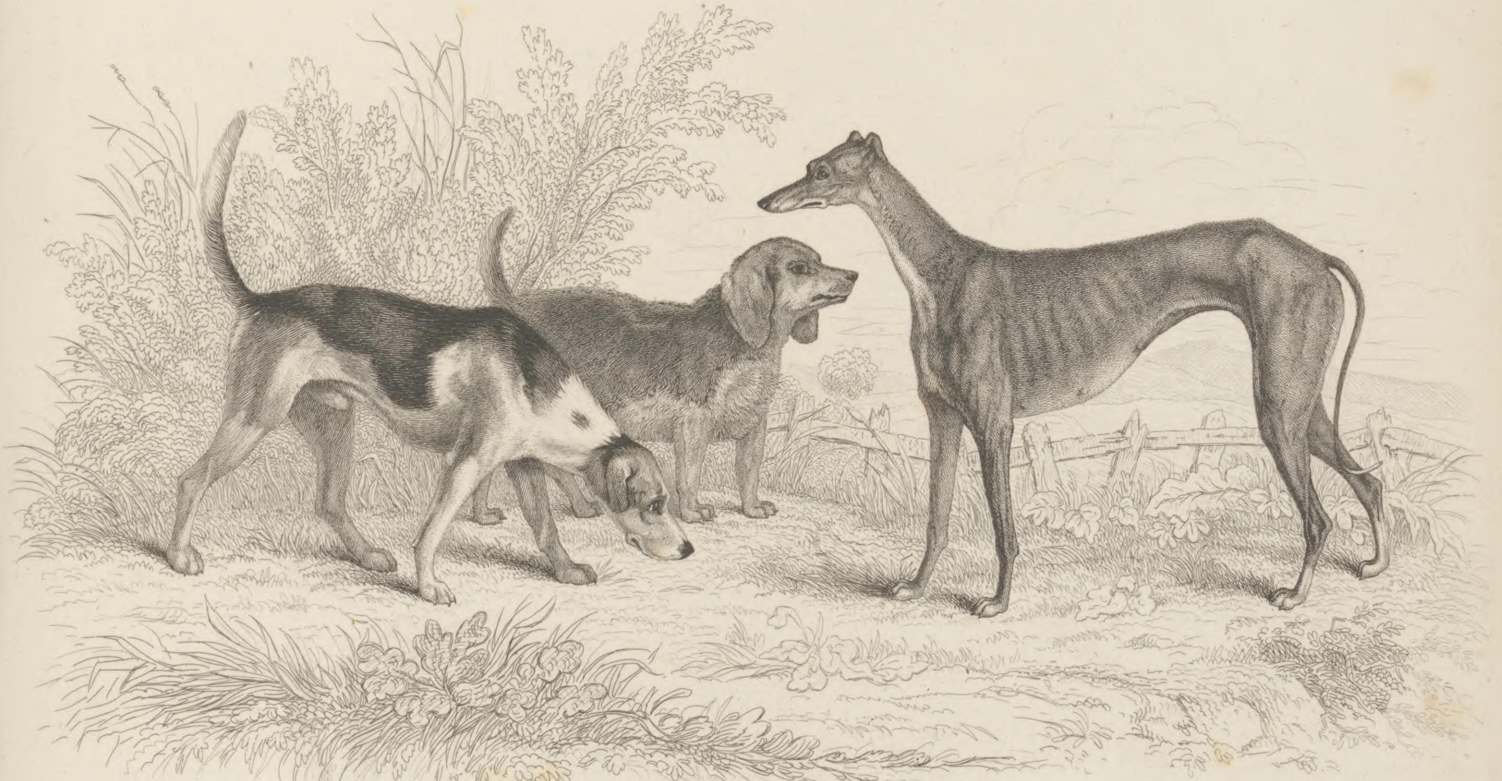

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